National Park Service
U.S. Department of the Interior

TRAINING MANUAL FOR
PROTECTED AREA PERSONNEL

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Contents

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DEDICATION

This manual is dedicated to all those persons who are, or have been, involved in the training of protected area personnel, in recognition of the fact that their work generally has been undervalued and little supported. It is hoped that this manual will motivate them, and constitute an important step forward toward achieving a more effective and professional cadre of trainers and, ultimately, more efficiently and effectively managed protected areas throughout the world.

ACKNOWLEDGEMENTS

PREFACE

During the last several decades, the United States National Park Service (USNPS) has been very active throughout the world in supporting the training of protected area personnel. The Service strongly believes that training constitutes an essential element of any institutional strengthening program designed to improve an institution's ability to develop and manage protected areas anywhere in the world.

The importance of training and of the need to have written training materials has been emphasized most recently in the IUCN General Assembly held in Buenos Aires, Argentina in 1994, and in the IV World Congress on National Parks held in Caracas, Venezuela in 1992. All of the participants in both events recognized that, in general, there has been a lack of both quantity and quality of training for protected area personnel. The need for partnerships and collaboration between those more fortunate protected area systems and those less fortunate ones was emphasized.

As a result, in 1993 the USNPS published an updated version of a 1989 Spanish language training manual. The focus of this Manual was on providing lesson plans and supporting documents for trainers involved in preparing training courses. Subsequent experience by both Latinamerican and USNPS trainers has shown that the Manual was an extremely useful tool for improving training quality. Due to the success of the Spanish language edition as a training support document, the USNPS decided to publish an English language version so that the materials could be available throughout the English-speaking world.

Many changes have been made to the original edition in order to shorten it and make it more relevant to a wider audience. Chief among them are:

- Less reliance has been placed on original Spanish language documents, and more on English language sources, especially USNPS.
- An emphasis on those topics that are particularly relevant today: tourism; relationship of local people and protected areas; administration and human relations; and environmental interpretation.
- While "Maintenance" has been downgraded in terms of its length and content and included in the Administration Unit, it is still considered to be a priority topic.

To the extent possible, USNPS will continue to promote and support training programs which strengthen local institutions' capacity to carry out their conservation mandates. We hope that this Manual will be a valuable tool in achieving that goal.

USING THE MANUAL

A. **OBJECTIVES OF THE MANUAL**

The main objective of this manual is to provide a curriculum which will serve as basis for the development of a systematic and permanent training program in the various protected area systems around the world where these programs are lacking. Nevertheless, it should be recognized that this manual is primarily concerned with the WHAT to train, and not with the HOW. The methods and techniques of transmitting the message (the WHAT) are just as important as the message itself.

B. **INTENDED MANUAL USERS**

This manual has been designed to be used by persons interested and/or involved in organizing training events for protected area personnel, i.e. trainers, heads of training programs, instructors. The persons who use the manual can be professionals of the central office of a protected area system, professionals in charge of individual protected areas interested in training their personnel, or professionals working for NGOs or local governments who manage protected areas. The ideas and the information presented in the Manual can be used by persons with a wide variety of technical and professional backgrounds, and by both public and private institutions. However, it should be noted that most of the Lesson Plans require that the user have some basic knowledge of the topic in order to use them effectively.

The Manual is useful for organizing events for personnel of any management category, although its orientation is more towards the more protected categories: national parks, reserves, monuments, wildlife refuges, etc. The criteria and methodological proposals can serve as the basis for preparing training programs for other management categories by adjusting the content to emphasize the sustainable use and extraction of natural resources.

C. **MANUAL'S APPLICATION**

This manual is designed so that the trainer or instructor can take advantage of its structure in the organization of a training course and in the presentation of the selected topics or themes. Obviously each country's and each protected area's situation is different, in terms of the most appropriate topics and themes, the technical level of the personnel, and in the economic and administrative capacity to organize training events. The Manual recognizes this fact; what is presented in each Unit is an outline for a logical, systematic development of the Unit's theme. The training organizer must adapt the content of the Unit and Lessons

to his own specific situation, taking into account:

- the purpose of the event, i.e. general orientation, creating a particular skill, qualifying personnel for possible promotion;
- most appropriate topics;
- the educational level of the trainees;
- the experience level of the trainees;
- length of the training event;
- available funding;
- available instructors, and their ability to teach the pertinent topics.

It is hoped that the Manual will become a working document for the user, and that he will make the needed modifications in the lessons and supporting documents so that they will more correctly reflect the specific situation which he is confronting.

D. **ORGANIZATION OF THE MANUAL**

The Manual is made up of 5 thematic units. Each unit contains a series of specific topical Lesson Plans related to the general unit theme, each one subdivided for the purpose of treating the topic logically and systematically.

Unit A: **Orientation**. This unit provides a general overview of protected area conservation, and presents an idea of what the role of the protected area personnel should be within the context of protected area administration and management. The content of this unit should be considered as an introductory course for personnel who are just beginning to work within a protected area system. No supporting documents are included with this unit, but instead they are cross-referenced with relevant Supporting Documents from other units.

The rest of the units deal in depth with 4 major themes considered to be of importance to protected area management and administration: protection, environmental interpretation, resource management and administration.

Each Unit is organized in the following manner:

TABLE OF CONTENTS: The titles of each lesson are listed; under each title are mentioned the Supporting Documents provided for that lesson.

TOPICS/LESSON PLANS: Each unit is subdivided into specific topics which are presented in the form of Lesson Plans, designed to adequately cover the information/topics that a person should know who has not received prior training in this field. Each Lesson Plan is presented in the following way:

Page Code: On the top of each page is a page code, which indicates

in order from left to right: the Unit title abbreviation and the corresponding letter (A,B,C,D,E); this is followed by the number of the Lesson Plan (1, 2, etc); this is followed by a dash (-), and then a number which corresponds to the page number of the respective section. Each Lesson Plan and Supporting Document has a separate page numbering system to facilitate its independent use. (See the "Deciphering the Code" section for a more complete description of the code.)

Objectives: The message or information that should be learned by event participants.

References: Sources of information which would be useful in developing the lesson and which are generally widely available around the world. The complete citations are given in the bibliography at the end of the Manual.

Presentation: Suggestions, ideas, concepts, comments, and information needed to develop the lesson plan in an organized, systematic manner. They vary considerably in the level of detail and treatment of their respective topics, depending upon the availability of information and other editorial factors. In general, the numbering system of the text corresponds to the numbering of the objectives.

Activities: Suggestions for directly involving participants in the development of the lesson plan, either during or after its presentation.

Supporting Documents: These are sources of information originating from a wide variety of sources: books, training documents, international conferences, or written especially for this Manual. The Supporting Documents contain information to help the instructor in developing the Lesson Plan and/or to provide information complementary to the Lesson Plan. In some cases, the instructor may want to use them as course Handouts.

The original sources for the Supporting Documents are indicated underneath the title. The complete citation can be found in the bibliography at the end of the Manual.

DECIPHERING THE CODE

A page code is placed in the upper corners of each page of the Supporting Documents. It can be deciphered in the following manner: first is the abbreviation for the Unit title (Orient., Protect., etc) and then the capital letter corresponding to that Unit (A,B,C,D or E); then the number corresponding to the Lesson Plan which it supports (1,2,3 . . .) and then a letter which refers to the Supporting Document and its location with regard to the other Supporting Documents for that Lesson, i.e. a,b,c, etc. This is followed by a dash and then a page number, which indicates

the page of the Supporting Document (all are paged independently).

For example, the following code: B1c-10 indicates that the Supporting Document is found in Unit B (Protection), Topic or Lesson Plan 1, and is Supporting Document "c", (that is the third one for that Lesson Plan); and the "10" indicates that it is the tenth page of that particular Supporting Document.

EDITORIAL NOTES

Within the Manual we have tried to use a constant and technically-correct vocabulary. However, due to the fact that dozens of authors from many different sources have contributed to the Manual, it is impossible to strictly follow this guideline.

For example, we have tried to use the term "protected area" usually shortened to "PA" when referring to national parks and other management categories in a general sense.

We use the term "participant" instead of "student" or "trainee" to indicate a more equal relationship between instructors and students, in recognition of the fact that adults with life experiences also contribute to the success of a training event.

We use the generic term training "event" for any kind of training, be it a course, workshop, seminar, or field exercise. If a more specific term is used, it is because that is specifically what was meant to be said.

We use the term Park Guard to be synonymous with Park Ranger or Warden. Since these terms have different meanings in different countries, we define Park Guard to be a lower to middle level staff member who is generally the person who carries out most of the field work.

In spite of the best intentions of the editor, it is possible that the use of the above mentioned words, and others, may not be as consistent as would be preferred, especially when they occur in documents from other sources whose editorial integrity we have wished to respect.

SPECIAL NOTE: The materials in this Manual may be used freely for training purposes. We only request that respect be shown for the persons or institutions that have authored the materials, and that when they are reproduced, that credit should be given to them, even if the documents are altered to adapt to local situations.

UNIT A

ORIENTATION

UNIT A

ORIENTATION

INTRODUCTION

The topics presented in this unit are those which the editor and
his collaborators consider to be fundamental for persons who are
beginning to work in a protected area system; ideally, they should
be presented with considerable detail in one or two training
courses lasting at least two months, culminating with a two or
three day field trip. During the field trip, knowledge obtained
during the rest of the course(s) should be put to practical use
and tested. Longer courses foster a group "esprit de corps" which
promote long-term group cohesion and identification with the
institution for whom they work.

However, there is usually considerable difficulty in adequately
presenting the topics during the amount of time usually available
for training events (one or two weeks) without their suffering
from superficial treatment which would preclude or severely limit
their comprehension by the participants. Therefore it may be
useful to consider the topics as comprising three different
sections, which can be taught as 3 one week events, or one three
week course (at a minimum).

Section I would include Lessons 1 through 7, i.e. those which are
related to the general work context of the employee, and which
together provide a framework within which he/she must carry out
his duties.

Section II would include Lessons 8 and 9; these are topics of
considerable importance, but due to the nature of their treatment
will require a specific time period, at least 3 days each, in
order to be given adequate attention.

Section III would include Lessons 10 through 15, more technical
topics whose teaching would have greater impact if the
participants have first been exposed to the topics in Sections I
and II and, additionally, some work experience, although it need
not be extensive.

No supporting documents are provided for this Unit; instead they
are cross-referenced to Lessons in other pertinent Units.

ORIENTATION

TABLE OF CONTENTS

UNIT B

PROTECTION OF PROTECTED AREAS

PROTECTION

TABLE OF CONTENTS

NEEDED PREPARATION

It is essential that most of the topics presented in this Unit be taught in conjunction with field exercises. These can either be taught on an individual basis with a corresponding field exercise, or several can be taught together in one more extended field trip.

The persons invited to this training event should be those who are really in charge of in situ protection activities in the protected areas. They should bring to the course equipment for field trips: backpacks, appropriate clothing (raincoats, heavy jackets, etc), tents, boots etc. They should also bring information (slides, pamphlets, management plans) about the protected area they represent, together with notions about how protection is, or should be carried out in their PA.

The instructors who provided the classroom teaching should also participate in the field exercises. It is essential that their be continuity of teaching personnel from the theoretical classroom to the practical field exercises.

UNIT C

ENVIRONMENTAL INTERPRETATION

ENVIRONMENTAL INTERPRETATION

TABLE OF CONTENTS

Lesson 9:   Signs and Exhibits: Planning and Design
      C9a: Signs for Parklands
      C9b: Wayside Exhibits Enhance Park Interpretation
      C9c: In Exhibits, Think in Levels, then Think Design
      C9d: 15 Steps Toward More Powerful Exhibit Texts
      C9e: Adding Interest to Exhibits
      C9f: Text Lettering Considerations
      C9g: Models

Lesson 10: Publications and Interpretation
      C10a: Guidelines for the Preparation of Interpretive
            Publications

Lesson 11: Public Relations and the Mass Communications Media
      C11a: Guidelines for Preparing Materials for the Mass Media
      C11b: Alternative Lesson Plan for Mass Media Relations

NEEDED PREPARATION

Participants should have a basic knowledge of the natural and cultural
resources of their protected area and of its present and potential interpretive
facilities; they should be familiar with the their PA's resource management
problems, if necessary by discussing them with the PA chief and others. They
should bring with them a package of materials about their PA and a 35mm camera.

PRACTICAL ACTIVITIES

Effective implementation of this Unit requires that participants spend a
significant amount of time carrying out some of the practical activities
indicated at the end of each lesson.

Probably the best way to organize these activity periods is by dividing the
participants in small groups according to their interests and abilities. They
will then work on a specific topic related to the overall assignment: e.g.
planning a nature trail, part of an interpretive plan, or an exhibit for a
Visitor Center.

The main objective of these activities is that each participant obtain some
practical experience in implementing the theoretical aspects of the particular
topic at hand. In order for this part of a course to be successful, instructors
must have on hand all of the necessary materials and equipment, and that it
take place in an appropriate location, e.g. a nearby protected area. Also
important is that the instructors who participate in the classroom also
participate in the practical field sessions.

UNIT D

RESOURCE MANAGEMENT IN PROTECTED AREAS

RESOURCE MANAGEMENT IN PROTECTED AREAS

TABLE OF CONTENTS

Lesson 9:   Management of Degraded Environments
      D9a: Restoration for Nature Conservation: When to Do It,
            How To Do It, and What Are Our Chances of Success
      D9b: Fire as a Management Tool
      D9c: Grazing By Domestic Animals as a Management Tool
      D9d: Introductions, Reintroductions and Translocations

Lesson 10:   Management of Cultural Resources
      D10a: Cultural Resource Management
      D10b: Integrated Management of Natural and Cultural
            Patrimony: Theoretical and Methodological Contributions
      D10c: Rules to Follow When Finding an Archeological Discovery

Lesson 11:   The Natural and Cultural Resource Management Situation
            in a Given Country

Lesson 12:   Futuristic Protected Area Management
      D12a: The World Conservation Strategy and Its Successors
      D12b: Institutional Options for Managing Protected Areas

NEEDED PREPARATION

Course participants need to:

- have received a general PA orientation course and be familiar with basic
ecological concepts;
- be persons directly involved in resource management;
- bring information to the course concerning the natural and cultural resources
of their respective PAs, and the management (or lack thereof) which is given to
them;
- bring the field equipment needed for the practical activities to be carried
out during the training course; instructors should also be prepared to
participate in the field activities.

The training event(s) should be carried out in a location near or within a
protected area which offers interesting and relevant resource management
situations. Several days of field activity should be planned in order to put in
to practice the theoretical aspects of the course.

UNIT E

ADMINISTRATION OF PROTECTED AREAS

ADMINISTRATION OF PROTECTED AREAS

TABLE OF CONTENTS

Lesson 12: Management of Goods and Properties

Lesson 13: Maintenance of Protected Areas
     E13a: Trail Construction and Maintenance

Lesson 14: Evaluation of the Administration and Management
             Protected Areas
     E14a: Questionnaire for Rating the Effectiveness of the
             Protected Area Manager
     E14b: The Use of Checklists in Evaluating Management

NEEDED PREPARATION

The topic of Administration has never been developed for the specific and unique situation of protected areas. It has been fully developed for private enterprise and the public sector in general. This Unit assumes that most administrative principles are equally applicable to all sectors, including protected areas; in fact, the editor believes that one of the major problems with protected areas is the lack of administrative expertise of its "administrators", and that applying some private sector administrative techniques to protected areas would greatly improve overall management success.

The Administration Unit has been designed primarily for middle and upper level staff who are responsible for some aspect of the administration of an individual protected area, or of a sector or district of a PA. The participants do not need to be upper level administrators; what is necessary is that they have administrative and supervisory responsibilities. The course may also be used to train administrative/supervisory personnel who are just beginning to work. A mix of experienced with new personnel may enrich a training course. Taking advantage of the knowledge and experience of all participants is essential to successful results in this type of course.

This Unit can be used by itself or in conjunction with supplementary reading. Most important is to have an instructor who is a specialist in the topic. There are private organizations and companies dedicated to carrying out seminars and other training courses for private sector business administrators, as well as for the public sector. What is presented here is simply an outline of the topics that need to be presented, and supporting documents that support the presentation. A specialized instructor may have his own course presentation. It may be necessary, however, to have extensive conversations with the instructor in order that he understand the special circumstances of protected areas and their staff.

Participants should also be asked to present case studies/problems to be discussed in the course or in work groups, and which will enrich the course and help the instructor to ensure that his presentation is relevant to the participants and their interests.

BIBLIOGRAPHY

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The designation of geographic entities in this publication and the presentation of the materials do not constitute an official expression of the participating organizations with regard to the legal status or boundaries of any country, territory or area.

The interpretations and conclusions expressed in this document are those of the respective authors and not necessarily those of the National Park Service or other participating organization.

Thematic Units

Training Manual for Protected Area Personnel

Thematic Units – Unit A: Orientation

Training Manual for Protected Area Personnel

Lesson 1

BASIC CONCEPTS AND HISTORY OF CONSERVATION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Define the basic concepts of conservation and demonstrate awareness of the need to conserve the country's and the world's natural resources.

2. Explain the need for conservation by presenting specific reasons and statistics.

3. Describe the main threats to conservation.

REFERENCES:

PARK Magazine, Vol. 5, no. 2, WORLD STRATEGY FOR CONSERVATION; V. 6, no. 4, BIOSPHERE RESERVES; Myers, 1979; Myers, 1984; Mackinnon et al, 1986; CARING FOR THE EARTH, 1991; Supporting Document D12a.

PRESENTATION:

1.1 Define conservation: Simple definition is "the wise use of natural resources." It is also defined as "the human management of the biosphere in order to produce sustainable benefits for current generations, while maintaining the potential to supply the needs of future generations."

Economic development is the modification of our environment and the application of human, financial and natural resources in order to improve quality of life and to satisfy human needs. In order to reach a sustainable development, one must consider the long term impact on natural resources. Sustainable development will be reached when conservation is completely integrated with development, and when these two concepts are no longer considered exclusive.

Define natural resources, renewable and non-renewable resources, sustained yield, and sustainable development. Explain the difference between sustainable development and sustainable growth. Demonstrate the relation and similarities between conservation and sustainable development. See D1a.

1.2 Talk about the history of conservation in your country: the pioneering efforts for protecting animals, national parks, legislation, etc. When did the conservation movement begin to gain strength? In Latin America and the rest of the world the movement started to gain strength in the 1960's. Mention the conservation achievements in your country and in the world, and indicate the principal environmental problems. (World Strategy for Conservation, and general references).

2.1 Why conserve species and communities? Discuss the ecological, philosophical, and practical arguments. In the philosophical arguments one should emphasize that the human specie is but one among millions of

species living in this world. We are "superior" in relation to our capacity for controlling and modifying the lives of other species. This implies a moral obligation to insure that our actions will take into consideration the rights of other species, and our obligation to preserve their existence.

In reference to the ecological arguments, it should be emphasized that we are part of a food chain in an ecological system in which all species are related to each other. When one specie is affected, directly or indirectly, others are impacted in the short or long term. Mention briefly some examples. There will be time to expand the discussion on ecological arguments in another session.

Mention practical arguments to justify the conservation of animals and plants: i.e. the possible discovery of a cure for cancer from a plant still unknown; the attraction of tourism to a protected area, etc. Emphasize the importance of conserving the great genetic/ecological diversity existent in different ecosystems in order to guarantee a long term existence. Emphasize that the integral and sustainable maintenance of this diversity is fundamental to supporting human life on the planet and security for a better economic and social future.

2.2 Present some data about the destruction of ecosystems which reflect the need for conservation. (See C1c).

3.1Discuss the problems caused by "progress" and its relation to the use of natural resources. Use examples from your country. Talk about the increases of population and consumption, and its impact on natural resources. What do we want? Quantity or quality in our lives? (150-180 people are born every minute in the world.) Are the natural resources of the planet inexhaustible? Will we be able to find other resources through advances in technology?

3.2Explain the function of the World Strategy for Conservation (1980) and the document Caring for the Earth (1991). See D12a.

ACTIVITIES:

1. Divide the group into teams. Give each team a section of the most important newspaper in your country, and ask the team to find references or articles related to the use of natural resources, conservation, or to problems associated with the inappropriate use of resources. Are floods, diseases, fires, droughts, etc. problems caused by the incorrect use of resources?

2. Ask the members of the class for the sources of energy used in their homes, and analyze with them how the use of these resources affects the country's natural resources.

3. Ask the participants to identify the origin (country and natural resource) of the materials and objects in the classroom. How many are made from natural resources from this country? How many are elaborated from non-renewable resources?

RELATED LESSONS:

Unit D (Res. Management): Lesson 1 and 11

Lesson 2

PROTECTED AREAS OF THE WORLD:
OBJECTIVES AND PERSPECTIVES

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Present the history of the protected areas of the world, highlighting the importance of their appropriate planning.

2. List and explain the management objectives for the main types of protected areas.

3. Indicate the future trends in management of protected areas.

REFERENCES;

IUCN, 1994; "PARKS": Vol. 6, no. 4, Biosphere Reserves; Mackinnon et al. 1986; Adams, 19990

PRESENTATION:

1.1 Present part of the history of the development of protected areas in the world. It began in the United States in 1872 with the creation of Yellowstone National Park. Focus on the establishment of protected areas in developing countries. Mention the reasons for the creation of the first parks.

Mention the great increase in protected areas since 1960, and explain the reasons for this increment. In 1995 the world has created about 2041 national parks; together with other protected areas there are more than 10.000 protected areas in the world, as categorized by IUCN's older classification system as categories I through V. (see E2f)

1.2 Describe the changes in planning and establishment of protected areas that have occurred in the last years:

- Systems of protected areas technically selected instead of areas selected in isolation.
- Systems based upon specific objectives and national priorities for conservation and sustainable development.
- Focus on ecosystems and life zones instead of on individual species.
- Holistic planning.
- Focus on a variety of management categories and not only on the management of national parks.
- Establishment of appropriate management practices for specific areas of world interest (see E2f).
- Increased participation of NGOs, the private sector, and the general public in all aspects of management and administration of protected

        areas.
-Improvement in the qualifications of the personnel charged with the
        complexities of administration of protected areas.
- Understanding the need to consider protected areas within their social-
        economic context, and as such the need to establish cooperative
        relationships with neighboring populations and authorities.

2.1Explain the management categories of IUCN (see E2g), focusing on the
        most relevant categories for your country. Explain that the number
        of categories is a result of the existence of different resource
        management situations. Emphasize the need to establish management
        objectives and to administer protected areas in agreement with the
        established objectives. Explain the differences between national
        parks and other areas of more flexible use (see E2f). Use examples
        from your country.

2.2Briefly explain the different planning levels for protected areas:

- Planning of a system of areas
- Individual management plans
- Special management plans (i.e. wildlife management)
 - Annual operational plans for each area

For more information on planning, see Lesson E2.

3.1Give a brief description of the perspectives and tendencies in the
        management of protected areas in the world (see E2f and D12):

- Biosphere reserves
        - World natural heritage areas
        - Establishment of cooperative networks
        - Border parks
        - Increased participation in and management of PA by the private sector.

ACTIVITIES:

1. Have the participants review their own national system of protected areas,
and determine if some ecological life zone needs to be included in order to
complete the system. While the participants likely will not have all the
necessary resources to complete this task and will need to be guided in the
process, this exercise will serve as a method to focus thought on this lesson.
Does the present PA system have the resources to manage new areas? What are
some of the other alternatives for managing new areas?

RELATED LESSONS:

Unit D (Management):   Lessons 1, 7, 11 and 12
UNit E (Administration):   Lesson 2

LESSON 3

GEOGRAPHIC AND GEOLOGIC PERSPECTIVES OF THE COUNTRY

OBJECTIVE:

By the end of this lesson, the participants should be able to:

1. Describe their country's geographic and geological characteristics, and list those that are protected in natural areas.

REFERENCES:

National textbooks and maps.

PRESENTATION:

1.1 Using slides and maps present a geographic and geologic overview of the country highlighting:

- Mountain ranges
- Main valleys
- Rivers
- Lakes
- Main cities
- Principal geological formations
- Highest mountains
- Snow line or glaciers
- Geological processes such as volcanos and natural erosion
- Principal network of highways

1.2 Locate the protected areas within their geographic-geologic context. What characteristics are included within the protected areas? What important characteristics are not protected? How are the protected areas connected with main roads and cities?

1.3 Briefly explain how the geographic location of a protected area influences its relation with the population of a specific region and with the management objectives of the protected area.

1.4 How has the existence of mining resources, exploited at present or only suspected, influenced the selection and/or use of protected areas?

1.5 Explain the importance of geologic and geographic characteristics in the selection and establishment of protected areas in the country, including:

a) their direct or indirect relationship with the biodiversity protected;

b) the recreational opportunities offered;

c) the educational opportunities offered;

d) the physical protection of the PA;

e) economic opportunities offered.

ACTIVITIES:

1.   Ask the participants to locate their own homes within a specific geographic-geologic context, and then to identify the closest protected area. Ask them to describe how the protected area has influenced the economy or daily life of the population in the region. If there has been no influence, then explain why not.

RELATED LESSONS:

Unit A (Orientation):   Lesson 5

LESSON 4

FLORA AND FAUNA OF THE COUNTRY

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the ecological associations and communities most representative of their country.

2. Indicate the species of flora and fauna in danger of extinction and the places where they are located.

3. Demonstrate awareness of the importance of genetic resources and indicate the main such resources that exist in their country.

4. Demonstrate knowledge of the terms "exotic species, native species, and endemic species" and be able to name examples from their country.

REFERENCES:

National textbooks; Oldfield, 1984; Mackinnon et al, 1986; IUCN "Redbooks" of endangered species; Hoyt, 1988; Maunder, 1992.

PRESENTATION:

1.1 Using maps indicate the most important ecological associations and zones in the country, highlighting those that are unique to the country. Indicate those that are under greatest pressure. Describe the processes or interrelations that make these associations and communities unique or interesting.

2.1 Describe some notable examples of interdependence between flora and fauna.

2.2 Describe the situation of species of flora and fauna that are in danger of extinction.

2.3. Describe the origins of the flora and fauna in the country, that is discuss aspects of biogeography. Have some species become extinct in the past?

3.1 What are the centers of biological diversity in the country? Describe where they are located. What are some of the "indicator" species? (for example: butterflies, birds, insects).

3.2 Explain the importance of genetic resources and indicate which are the

most well-known in the country and in the world. Describe the conservation situation of genetic resources in the country.

3.3Describe the protected areas system in the country in relation to the protection of species, vegetative communities, and natural ecosystems. Were there protected areas specifically created for the protection of endangered species? Are there still endangered species not covered by the protected area system?

4.1Define the terms "exotic, endemic, native, and indigenous species". What are the most important endemic and exotic species in the country? Use both scientific and common names. Describe the problem of exotic species, and the negative impact they can have on native species. (See D1a to review terminology).

4.2Describe existing commercial projects of wildlife or livestock management and of vegetative exploitation in the country. Explain if these projects are sustainable in the long term.

4.3Describe existing programs for controlling the exploitation of flora and fauna in the country.

4.4Mention which books and other publications would be useful for the participants.

ACTIVITIES:

1. Present a slide show about the flora and fauna in the country. Promote a discussion on particular situations of some of the species presented (endemic, in danger of extinction, introduced, etc.) Use scientific names for the most common species.

RELATED LESSONS:

Unit A (Orientation):   Lesson 10
Unit B (Protection):   Lesson 2
Unit D (Management):   Lessons 2, 3, and 4

LESSON 5

NATIONAL SYSTEM OF PROTECTED AREAS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   List the areas included in the national system of protected areas.

2.   Describe the background of the creation and development of the system.

3.Explain   the   objectives   of   the   system   of   protected   areas   and   the
      accomplishments reached.

REFERENCES:

Documents about the national system of protected areas.

PRESENTATION:

1.1Describe and analyze the existing protected areas in the country based
      on their representation of the flora, fauna, ecological regions,
      etc.

1.2Describe and analyze the existing categories of management in the
      national system.

2.1Present the history and evolution of the system of protected areas:
      first areas, reasons for their creation, problems. Explain the
      role each area plays in the protection or conservation of the
      country's environment.

3.1Present the objectives of the system of PA's. What relation does the
      PA system have with the national objectives for development and
      conservation.

3.2Discuss which government and non-government institutions collaborate with
      the system. Which are they and in what ways do they collaborate?

3.3Analyze the perspectives for the future (new areas, management
      partnerships etc.)

ACTIVITIES:

1. Present a slide show of the areas in the national system. Prepare an
outline of the National System of Protected Areas.

RELATED LESSONS:

Unit A (Orientation):   Lessons 6 and 7
Unit B (Protection):   Lessons 1,2 and 3
Unit D (Management):   Lessons 1, 11 and 12
Unit E (Administration):   Lesson 2

Lesson 6

ORGANIZATION AND FUNCTION OF A NATIONAL SYSTEM

OF PROTECTED AREAS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Describe the administrative structure and chain of command in the system.

2.Describe its proper functions and responsibilities.

3.Demonstrate understanding of pertinent legislation.

REFERENCES:

Documents covering policies, laws and pertinent regulations; organizational charts.

PRESENTATION:

1.1Utilizing organizational charts, describe the administrative structure of the PA system (national, regional and local offices).

1.2Explain the chain of command from the field personnel up to the highest authorities, and the functions and general responsibilities of each position.

2.1Describe the functions of each position in the agency. Be specific about the role of the field personnel in their interaction with the public, in particular with law violators. What is their jurisdictional territory and areas of enforcement? Make mention of established policies and other existing norms covering the actions of field personnel. What is the responsibility of the PA chief administrators in jurisdictional law enforcement processes? This last point should be discussed fully. (See Lesson B2.)

3.1Explain the legislation in force concerning the responsibilities of the officials of the PA, especially of those present in this course.

3.2Explain the relevant laws and regulations concerning infractions in Protected Areas. Discuss their effectiveness.

3.3 Explain the existing norms concerning the use of uniforms, identification cards and other pertinent topics.

- It would be advisable to present to new officials a realistic overview of the field working conditions. This overview should include conditions such as: lack of equipment, the need of field personnel to cook for themselves, difficult climatic conditions, special situations which require little or excessive amounts of work, etc. This part of the lesson should be presented by an experienced field worker with good communication abilities.

Ideas could be presented as to how to make better use of the daily routine or of free time. For example:

- Become a naturalist, observe and make note of the changes constantly occurring around them in a field notebook which is always carried with them.

- Make limited collections of natural objects from the area, with the idea of creating a base for a future program of environmental education (living specimen should not be collected, especially of rare or endangered species).

- Learn all that is possible about the area; borrow and read books from nearby libraries; speak with scientists and others who visit the area to gain from their knowledge.

- Present programs in the schools and before other organized groups in the region (after receiving authorization from supervisors).

- Maintain in good condition the infrastructure for which one is responsible. Although field personnel may have limited funds for this end, there is much that can be done by making continual and timely maintenance.

ACTIVITIES:

1. Concerning responsibilities of field personnel, present case studies or hypothetical examples, and together with the group analyze what the individual should do in each situation. To the extent possible, try to represent real life situations of the group, using role-playing in which one participant plays the role of an area visitor or law violator and another the role of the area guard. This exercise requires preparation, but it is a useful method for teaching while lightening the rhythm of a perhaps otherwise tiresome class.

RELATED LESSONS:

Unit B (Protection):   Lessons 2, 8 and 9
Unit E (Administration): Lessons 3 and 14

Lesson 7

INTRODUCTION TO THE MANAGEMENT OF PROTECTED AREAS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Define what is natural resource management.

2. Identify five reasons for natural resource management and the function of the PA in this sense.

REFERENCES:

Miller, 1980 (Spanish); Moore, 1984; MacKinnon et al, 1986; Corfield, 1984.

NOTE:

In the development of this lesson the information suggested in Lesson 1 of the Unit on Management of Natural Resources can be utilized. Focus on the reasons why resources of a PA should be managed. Present examples.

Also, mention should be made of programs (or subprograms) with which a PA should work (public use, management of natural resources, protection and administration) and the role of planning.

RELATED LESSONS:

Unit D (Management):   All Lessons
Unit E (Administration): Lesson 2

ACTIVITIES:

1. Each participant should present some activity of resource management in which he has participated, or of which he is aware. They ought to describe what the work entailed, and which were the objectives pursued in the short and in the long run.

Lesson 8

HUMAN RELATIONS: BASIC ELEMENTS

OBJECTIVES:

At the end of this lesson, the participants should be able to:

1. Describe the elements of good human relations in the carrying out of one's work.

2. Analyze the personal interactions which one maintains with co-workers, concessionaires, visitors and neighbors of a PA.

3. Increase their effectiveness as officials, by improving the manner in which they relate to other officials with whom they come in contact.

PRESENTATION:

Find a specialist in human relations or a sociologist to conduct at least part of this lesson or short course. There are various techniques that such professionals can use which are very useful in getting the major points across.

1.1 Describe the elements of human relations; relations with visitors, local residents, other users, concessionaires and co-workers (Supporting Document E6a and Lesson E3.)

2.1 Focus on the importance of the image of the PA and the role that officials play in creating this image. Each activity or statement made by PA employees is known and analyzed by others. When dealing with a PA, the analysis is even more detailed due to the possible conflict between management activities and relations with neighbors, concessionaires, etc. PA officials must be careful in what they do and say in order to not bring harm to the PA or to themselves. Clearly distinguish between **human relations** and **public relations**.

2.2 PA employees are subject to frequent observation and criticism from other people from 3 different points of view: his colleagues, local inhabitants, and PA visitors. All of them see the employee in a different way, and all help to create an image of what that employee is like.

PERSPECTIVE-LOCAL PEOPLE

PERSPECTIVE-   PARK   PERSPECTIVE-
COLLEAGUES   EMPLOYEE   VISITORS

PA IMAGE

The final image created of each of the employees in this manner, in its entirety, creates the image of the PA for the general public. The conclusion is then, that every PA employee MUST be concerned with the image that he projects to others, since it reflects upon the PA and all of the PA employees.

3.1 When difficulties surface among work colleagues, one must know how to solve the problems. It is important to emphasize the virtues of patience, mutual respect, and effective communication between individuals. A genuine understanding of personal problems and of the work done by others helps solve conflicts. When intervention is required, the directors of PA officials must display tact and comprehension when attempting to resolve personnel problems. Frequently a frank discussion between the involved work colleagues, moderated by the boss or director, can help to resolve problems.

3.2 The issue of dealing with conflicts between co-workers is best treated by specialists in this field. While such specialists usually work in private industry, similar situations and problems between co-workers exist in all types of institutions. In many cases the resolution of conflict among workers should include all involved persons even of different hierarchical levels. A short course of this nature should allow a minimum of three days in order to produce optimum results. It should allow for mechanisms by which agency personnel can recognize their own human relation problems and move to correct them. It also should provide techniques that the personnel can use after the course to resolve interpersonal problems that may occur. (See point E6a.)

4.1 This type of course also is quite beneficial for eliminating obstacles of hierarchy or administration which impede the ability of the personnel of a PA to act as a team. Work styles which promote problem solving, collective decision making, and active involvement of all personnel under the leadership of the director are invaluable. Such an administrative style, although rarely found, is becoming more common, particularly in the private sector where it is used with great effectiveness.

ACTIVITIES:

1. Ask participants to tell of work situations which led to conflicts among co-workers, and how these conflicts were resolved. Suggest alternatives to the mentioned problems.

2. Use hypothetical cases or simulated games designed to represent typical situations in which the official has to deal with a conflictive or complicated situation. The course participants should play the various roles presented. For example:

a. An Area Director with a park guard who missed work because he was drunk.
b. A new park guard on patrol with experienced guards.
c. An Area Director assigning responsibilities at the beginning of a workday.
d. A park guard with a rural neighbor found illegally hunting.
e. A park official with a visitor who has been cutting flowers.

f. Two park guards discussing who will take the vehicle to town to make purchases.

Lesson 9

BASIC COURSE IN FIRST AID

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the basic principles of first aid and how to act correctly when dealing with an injured person.

2. Carry out the necessary first aid in cases of respiratory problems, bleeding, bone fractures, and shock.

3. Mention at least four preventative measures for sicknesses.

REFERENCES:

National first aid texts (there are Red Cross texts in Spanish and other languages).

PRESENTATION:

Normally the basic first aid course requires 40 hours, and it is strongly recommended to set aside this entire time for the training. Often in courses for park guards and other officials of protected areas an abbreviated first aid course is given of 20 hours or less. However the results of this shortened course are less than optimal. Also one needs lots of practice with the first aid methods and procedures in order to be able to use them effectively. Since such practice requires time, it is recommended to:

1. Give a basic course of 40 hours to all officials;
- provide each participant with a book or other memory aid so that they can reference what they have learned after the course;
- repeat the basic course every three to four years in order to refresh the knowledge of the participants, OR

2. Train some staff from each PA, and then they will be able to transmit their knowledge to their colleagues in mini-courses carried out periodically in the PA. This may require some additional course time in order that these new instructors receive training in how to best teach this subject.

It is extremely important to identify a qualified instructor in order to teach first aid. Usually the Red Cross has instructors who can collaborate with such courses. Avoid the temptation to obtain any medical doctor, as frequently they do not have the techniques or practice required to teach such a specialized lesson.

In case there exist specialized first aid themes common in the PA of the majority of the participants (e.g. altitude sickness), these should also be

covered.

1.1   The content of the course ought to include:

- What is first aid?
- The 10 basic rules of first aid.
- Order of priority for treating an injury (breathing, bleeding and shock).
- How to transport the patient.

2.1Methods for diagnosing and treating respiratory problems (artificial
      respiration), hemorrhaging (discuss the use of tourniquets), shock, bone
      fractures, cleaning and bandaging of wounds and punctures.

3.1Present a section about preventative measures for maintaining one's personal
      health:

- Boiling water
- Washing foods
- Hygienic conditions in the kitchen and bathroom
- Diet
- Medicine and drug abuse
- Use of a medicine kit

ACTIVITIES:

1.   The participants should practice each part of the instruction together as
part of the course.

2.   Present hypothetical but realistic situations, asking that they answer and
act out what the situation requires.

3.   If time allows, take the group to the field and arrange hypothetical
situations with patients which simulate various types of problems which require
first aid. This ought to be included as part of the final practice of the
course.

RELATED THEMES:

Unit A (Orientation): Lesson 14
Unit B (Protecc.): Lessons 6 and 7

Lesson 10

PRINCIPALS OF ECOLOGY AND BIOLOGY

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Demonstrate understanding of the basic concepts of ecology and biology.

2. Apply the general ideas of ecology and biology to the particular situations of the PA in which they work.

REFERENCES:

Margalef, ; Starr and Taggart, 1981; Odum, 1971 (and later editions); US Peace Corps, 1977; Soule, 1986; Standard biology texts.

PRESENTATION:

This lesson should be a combination of group dynamics and lectures. Group dynamics should involve games or group activities designed to demonstrate environmental concepts.

1.1. Taxonomy. Explain how scientists differentiate among order, family, genus, species, etc. Describe the significance of scientific names and the necessity that the participants learn the names of the most common species in their PA's. Take the participants on one or more field trips in order to show them pertinent taxonomical characteristics.

1.2. The following concepts concerning ecological processes should remain clear:

- The quantity of air, water and soil that exists on earth is fixed. There will never be more.

- Plants utilize sunlight to produce sugars, starches and oxygen (through photosynthesis) that the rest of living organisms need.

- Some animals eat plants. Some animals eat other animals which eat plants. Some animals eat plants and animals (producers and consumers; herbivores, carnivores, omnivores, and decomposers).

- Any group of individuals of the same species in an area over a determined period of time constitute a population; whether a population of mice, a population of corn plants, or a population of human beings.

- Definitions of ecosystem, food chains, and food webs.

- All the populations of living things that interact and influence each other

in a given area, small or large, form an ecosystem.

- There are various cycles in an ecosystem, such as a food cycle, a water cycle, and a soil cycle.

- Man can damage an ecosystem through such actions as devegetating the land, polluting, burning, excessive hunting, etc.

1.3. Speak about the concepts of community, plant associations, and life zones.

1.4. Focus on the role of man in the ecosystem. How are the PA's a manifestation of the role that man plays in ecosystems? (Destroyer vs. Conserver)

1.5. Discuss the term **Biodiversity** (or biological diversity). It is an "umbrella" term which indicates the degree of variety in nature. Generally biodiversity is considered at three levels: genetic diversity, species diversity and ecosystem diversity. **Genetic diversity** includes all of the genetic information contained in the genes of plants, animals, and micro-organisms that inhabit the Earth. **Species diversity** is the variety of living organisms that inhabit the Earth (or a site or region). **Ecosystem diversity** refers to the variety of habitats, biotic communities, and biological processes in the biosphere.

ACTIVITIES

1. Divide the class into small groups and assign each group a small area near the meeting room asking them to inventory the species and non-living resources found in the area and to determine the dependent relationships that exist among them. This exercise can be extended over the entire length of the course, the results being obtained from observations taken at different hours over several days. Precise instructions are required for the exercise to be done correctly.

RELATED THEMES

Unit B (Protection): Lesson 2
Unit D (Management): Lesson 2

Lesson 11

INTRODUCTION TO ENVIRONMENTAL INTERPRETATION IN PROTECTED AREAS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the philosophy and goals of environmental interpretation.

2. Describe the importance of environmental interpretation for the PA's.

3. Describe the environmental interpretation activities which exist in the PA's of their country.

REFERENCES:

The same as for Lessons 1 and 2 of the Unit of Environmental Interpretation.

NOTE:

For the development of this lesson one can utilize the information suggested in the presentation and activities of the Lessons 1, 2, and 4 of the Unit on Environmental Interpretation.

Focus in particular on the following: the difference between environmental education, environmental interpretation, and information; the importance of recognizing how cultural factors influence the development of interpretation programs; the different methods for carrying out the interpretation.

All participants should obtain at least a superficial knowledge of how to improve their interaction and relations with the public; as such it would be a good idea to review Lesson 2, techniques of personal interpretation. If time allows, put the participants in a position where they can practice what they have learned with visitors.

Supporting documents: See those presented in Lessons 1, 2, 3 and 4 of the Unit on Environmental Interpretation.

RELATED THEMES:

Unit C (Interpretation): Lessons 1, 2, 3, and 4
Unit D (Management): Lesson 7
Unit E (Administration): Lesson 5 and 6

Lesson 12

ORIENTATION IN THE FIELD: USE OF MAPS AND COMPASS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Use effectively a topographic map.

2. Orient themselves in the field using a topographic map and compass.

REFERENCES:

The same as for Lesson 5, Protection Unit.

NOTE: (taken from a course organized by Bill Wendt, USNPS)

The information suggested in the introduction and activities of lesson 5 (Protection Unit) and their respective appendices should be utilized in the development of this lesson.

PRESENTATION:

After extensive practical experience with many groups representing different educational levels from primary through university, it has been found that practical orientation in the use of a map, of the compass, and of measuring distances by pacing, are skills not taught outside of the Boy Scouts and as part of the sport of orientation in Europe and increasingly in other countries. As such it is necessary to begin at a basic level and progress to the more complicated. Unfortunately it is impossible to shorten the require teaching time. Six hours are necessary for the basic course and 5 more hours of practice are needed in site design in order to leave a lasting impression.

BASIC MATERIALS:

The basic materials required are a geographic map, compass (preferably the Silva brand), ruler, and graph paper. As participants work better when are using their own compass, it is best if each participant has his own for this practice. The investment (more or less $7/person) is not much when dealing with technicians or professionals who will utilize this tool in their work.

TEACHING MATERIALS:

Materials required include an overhead projector, a slide projector (35 mm), chalkboard, and large paper with makers.

PROCEDURE:

The time should be organized in order to cover the following:

1.5 hours (in classroom in order to concentrate on the principles):

ORIENT. A12-2

-Understand the cardinal points on a map and on a compass (i.e. the system of 360 degrees).
-Understand the use of symbols on a map.
- Practice reading contour lines and transforming these graphically onto a page displaying the landform as a cross section of the horizon.
- Understand the use of scale and its application in measuring distances on the ground.
-Understand the orientation of the map on the ground and what is signified by the magnetic variation.

2 hours (classroom):

-Use of the compass (Silva brand) as a protractor (all the participants should remain seated).
-Use of the compass as compass. All of the participants should stand and practice finding bearings with the compass against their chests.

Finish the day early so that in the evening the participants can study the course materials with the promise of a quiz on the following morning.

2 hours (classroom and outdoors)

- Measure distances by pacing.
-Follow a polygon form on the ground which has at least 6 stations, each with its respective distances and compass bearings.

1 hour (optional)

-Orientation on the ground using topographic points (at least 45 degrees of separation and preferably with a third point of reference) on the horizon in order to fix the exact point where the group is located.

4 hours (optional)

Site design by groups of 6 people each. All the materials mentioned above will be needed along with an area of 1 to 2 hectares. In order to compare the optimal use of an area, it could be interesting if each group use the same area on which to designs one of the following:

- a picnic area.
-an area for camping with automobile access.
-an area for camping without autos, with only pedestrian access.
-an area for group camping.
-a parking lot next to a visitors center.
-an amphitheater for environmental interpretation with benches, screen, projection house, campfire, etc.

RELATED LESSONS:

Unit B (Protection): Lessons 5, 6 and 8.

Lesson 13

PATROLLING TECHNIQUES

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Describe why patrols are carried out.

2. Plan and execute successful patrols in their PA.

NOTE:

The information suggested in Lesson 6 of Unit B "Protection" should be utilized as the basis for the development of this lesson.

Mention the importance of field observations (see Lesson 2 of the Protection Unit, especially B2a).

Lesson 14

BASIC SURVIVAL TECHNIQUES

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the factors which influence the survival of an individual under difficult field conditions.

2. Demonstrate 5 survival techniques that they would use in difficult field conditions.

REFERENCES:

Setnicka, 1980; May, 1973; Supporting documents from Lesson 7 of the Protection Unit.

PRESENTATION:

1.1 Refer to the Supporting Document entitled "Psychology of Survival" (B7d) in order to point out psychological factors which influence one's conduct when under difficult conditions for survival in the field.

2.1 Speak in detail about aspects that should not be ignored when in the field: for example, the need to eat and to drink water and to be adequately dressed in adverse climatic conditions. Point out some of the ways to orient oneself such as the use of shadows and the location of mosses and lichens on tree surfaces which are found predominately on the south side in the southern hemisphere and on the north side in the northern hemisphere.

2.2 Present a list of edible wild plants of the country or the work area and give keys for their identification and preparation. Be certain that the participants do not confuse them with poisonous plants.

2.3 Speak about how to find water and how to construct temporary shelters.

ACTIVITIES:

1. Request that some of the participants present their own stories of being lost or of having to "survive" under difficult conditions. These should include explanations of how they got out of their predicaments. Suggest how they might have improved their situation.

2. In a sunny spot demonstrate the movement of the shadow of a stake and explain how one can orient himself by this shadow.

3. In the case that this course is conducted for personnel of a specific PA, one should point out the topographic factors (rivers, mountains, ranges) and

climatic factors (wind direction) which can help to orient oneself. Also discuss the edible plants found in the area.

RELATED LESSONS:

Unit B (Protection): Lessons 2, 4, 5, 6 and 7.

Lesson 15

THE USE AND MAINTENANCE OF EQUIPMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Explain the importance of routine maintenance of equipment and infrastructure.

2. Correctly use and maintain the most utilized equipment in the PA.

REFERENCES:

Notes from lesson E13.

PRESENTATION:

Use Lessons E13 (Maintenance in the Administration Unit) as a reference for the development of this lesson.

1.1 Explain the general importance of doing routine maintenance of equipment and infrastructure.

1.2 Explain the responsibilities of each individual for maintaining equipment in good condition. Choose the equipment that shows signs of greatest use, and give the participants the opportunity to practice with its use and maintenance (equipment such as: camping tents, backpacks, boots, sleeping bags, two-way radios, horses, small arms, motorcycles, and other vehicles). If deemed convenient, the most experienced wardens can be asked to give a demonstration on use and maintenance.

1.3 Discuss responsibilities for maintenance of buildings (offices and residences).

1.4 Explain the system of equipment inventory that each PA should follow concerning the use and loan of equipment.

ACTIVITIES:

1. There should be a practice in the use and maintenance of the equipment which is either the most commonly used or the most complicated to use.

RELATED THEMES:

Unit B (Protection): Lesson 8
Unit C (Interpretation): Lessons 7 and 9
Unit E (Administration): Lesson 13

Thematic Units – Unit B: Protection of Protected Areas

Training Manual for Protected Area Personnel

Lesson 1

PROTECTION OF WILDLANDS AREAS: ORIENTATION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   Explain what the protection of wildlands areas consists of.

2. Describe the situation in the PA system in terms of the protection of its
        natural resources.

3. Analyze the situation and prepare an outline for a protection plan for the
        PA they represent.

REFERENCES:

Mackinnon et al. 1986; Moore, 1984; Corfield, 1984; Supporting Documents to
this lesson.

PRESENTATION:

1.1 Explain what protection means. (See Supporting Document B1b for a
        definition). Explain that protection can be understood in two ways:
        from a narrow point of view (repressive), or a wider point of view
        (educational).

1.2 Explain what a protection program for a PA consists of (for this one can
        use Supporting Documents B1c).

- Protection of PA resources from human activities (ex: poaching, illegal
        extraction of firewood, etc.)

- Protection of PA resources from natural phenomenon (fires, floods, etc.)

- Protection of visitors and other users from natural conditions existing in
        the PA (e.g. dangerous animals, flash flood, volcanic eruptions)

- Protection of officials and employees of the PA while carrying out their
        work responsibilities (adequate equipment and training)

- Protection of visitors from other visitors (robbery, conflicting uses)

2.1 The protection of a PA will have a different focus and emphasis depending
        upon the management category. In scientific reserves protection
        activities may emphasize use restrictions, while in multiple use areas
        they may be more focused at controlling and regulating certain
        activities, rather than on their prohibition.

2.2 Explain the protection situation at the level of the national PA system,

including problems of colonization and illegal hunting as well as relevant legislation. What are the origins of the principal problems of the PA? Where do the participants believe that protection activities should be focused? One should guide the participants towards the conclusion that almost all protection problems which threaten the PA's integrity originate outside of the PA, in populated zones.

3.1 The protection program is only one of many that the PA has and that should be clearly defined in the Management Plan and/or Operational Plan. While the protection program is essential for the maintenance of the natural integrity of the PA, other programs - such as education and recreation - which deal directly with the public and can affect the public's attitude toward the PA, also support the objectives of the protection program. This interrelation and dependence of the programs in a PA should be emphasized (see Supporting Documents B1a and B1b).

3.2 Each PA should have a protection plan, which should be developed considering various factors (review Supporting Document B1c with the participants). Focus on the points of "critical areas" and of preventative actions, or the educational side of protection. It should be pointed out that protection plans are stronger when they are done by PA personnel for the various sectors of a PA, rather than for the entire area. It should also be stressed that to develop a good protection plan, one is actually preparing a small management plan. Reemphasize that all the programs and activities of a PA should be interrelated and complementary.

ACTIVITIES:

1. Show slides of aspects related to PA protection: guards, arms, field equipment, critical areas, educational activities, signs, visitors, etc.

2. Ask the participants to identify problems facing their PA, and the solutions they have found. Orient their experiences toward the role that educational activities can play in solving such problems.

OPTIONAL ACTIVITIES:

1. Visit a nearby PA and identify its critical areas, the principal problems which threaten these areas, and the activities pursued to solve the problems.

2. If time allows, have the participants develop a tentative protection program for their PA, or a sector of their PA.

Supporting Document B1a

PROTECTION IN MANAGED WILDLANDS AREAS

Adapted from article by: James Bellamy,
United States National Park Service, 1986

One of the basic objectives of protected areas is to **protect** them. It is a concept integral to their existence, for to not protect them generally means to lose them. Even the term "protected wildland area" directly implies protection. The need and the responsibility for protection is incorporated in most of the laws and decrees that establish wildlands area systems in most countries, and in the laws that create individual areas. We must protect them because the law requires that we do so. But there is a lot more to it. We protect them because we want to maintain part of the environment in perpetuity. We are convinced that to do so will bring many benefits to mankind and future generations. It is essential that all the participants understand why and what we must protect. The instructor should take several opportunities during the presentation of this module to review these concepts.

Let's consider the "why". We protect for the conservation of natural resources and cultural resources, both historical and archeological; for environmental regulation, including the protection of watersheds; the conservation of genetic material and the perpetuation of the species; for recreation and tourism, reflection and inspiration, scenic beauty; and economic benefits; for facilitating education and research; and for the knowledge and scientific benefits that we obtain from the resources.

It is also appropriate to consider the "What". We protect the protected area and its resources. We protect the resources from the people. We protect the people from the resources. We protect the people from the people. We protect the resources from the resources. Each of these must be carried out by the protected area staff.

Protect the Resources from the People

Although in most cases protected areas have been created in order to conserve natural resources, and also for the enjoyment of the public, the primary consideration must be for the conservation of the resources, and not the enjoyment of the public. If it were not like this, and if we were to allow people to destroy the resources, then in the end we would have nothing left to protect. However, in the short term, during cases of emergency, considerations for the well-being of people may take precedence.

Protect People from the Resources

Many visitors to protected areas don't realize the risks that are present. These risks can be waterfalls, the danger of drowning, of getting lost, of dangerous animals, of snow or rock falls, instability of ruins, and many others. We are obliged to inform them of these risks.

Protect People from People

This consideration presents us with the need to enforce the law, to ensure high levels of public hygiene and to regulate the concessionaires that operate

within the area. Unfortunately, even within the protected areas, there is crime and infractions of the law that affects visitors and area employees. In many countries, guards or rangers have legal authority to deal with these situations. In others, they do not, and must rely on local authorities to come to the area when these problems need to be dealt with.

In the same manner we have the obligation to protect public health by assuring that water quality is adequate, that sewerage is treated appropriately, and that food prepared by concessionaires is prepared in a sanitary manner. Additionally we have the obligation to ensure that the prices charged by concessionaires are fair, and that services rendered are of high quality. Many of these functions may be the responsibility of staff not directly involved with protection, depending on the organization of the area.

Finally, it is necessary to make periodic inspections to identify the dangers that have been created by the staff itself in the workplace or that can be found in the public areas such as buildings and roads. These dangers must be taken care of in order to minimize the risk to visitors as well as staff.

Protect the resources from the Resources

This involves the harm that the resources can cause to themselves. For example, the damage that a overpopulation of deer can cause to vegetation, the harm caused by a volcanic eruption to an endangered species of animal, avalanches and mudslides caused by earthquakes, the damage caused by exotic species of flora and fauna, the role of fire, the deterioration to ruins and historic monuments caused by the climate, and many more. In many cases, damage is caused indirectly by human influence. However, one type of resource is harming another. Philosophically, in some cases it is better to allow natural processes to rectify the situation; in others, it will be necessary to manipulate the resources in order to protect them. This will be discussed in the Natural Resource Management section of the manual.

Protection Mechanisms

There are several ways to carry out protection. In general terms they may be divided in indirect and direct means. The indirect means include environmental interpretation, and planning; the direct means include resource management, tourism management, and protection patrols. The key point is that there is a strong interrelation between the different forms, and that all are important in order to achieve proper protection.

Protection Work

The vast majority of protection must be done by guards or rangers, although all protected area personnel are involved in one way or another in this task. However it is the guards who are most directly involved in protection activities. They must completely understand what their responsibilities are and what their role is within the organization. It is important to develop a personal pride and a professional spirit of camaraderie among them, by teaching them the characteristics of a good guard, and making them feel that they have those characteristics. The other lessons in this module will help provide them with the skills needed to become good protection guards.

Supporting Document B1b

PROTECTION AND CONTROL OF PROTECTED AREAS: A CONCEPTUAL APPRECIATION

By: Alan Moore, Specialist in Wildlands Management

The Concept

Why do we protect some wildlands areas such as national parks and reserves? Aside from the legal obligations required by legislation and decrees, we protect them because society has determined that protected areas (PA) have sufficient important qualities to demand very special treatment, in order that they can be maintained for future generations.

The term "protection" does not mean that the PAs should be closed to all use. It means that PAs should receive the use for which they were established, whether it be the preservation of genetic resources, conservation of ecological resources or ecosystems, the provision of recreational opportunities, or areas for sustainable extraction of natural resources. It means that protection must go hand in hand with the management of the PA's resources; it constitutes the framework for **control** or **enforcement** which must exist in order for proper, effective management to take place, avoiding negative influences and illegal or non-compatible uses.

Figure 1: THE ROLE OF PROTECTION

```
                                    PROTECTION
                                    ACTIVITIES


                                    NECESSARY
  MANAGEMENT        MANAGEMENT       ECOLOGICAL/ANTHROPIC      PLANNED
  OBJECTIVES        ACTIVITIES       CONDITIONS                RESULTS


                                    PROTECTION
                                    ACTIVITIES
```
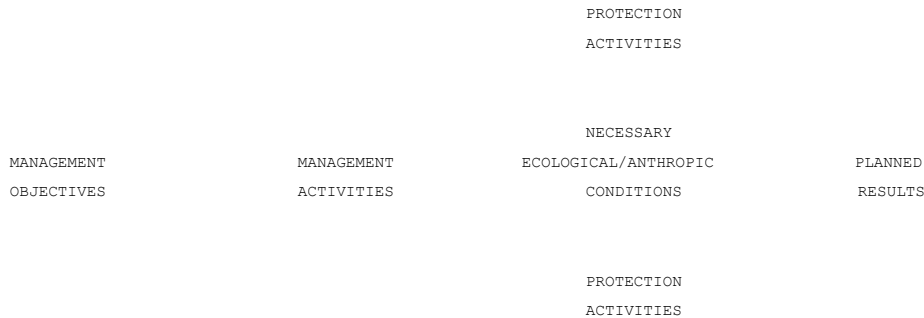
A major part of the problem of protecting wildlands areas is that they do not belong to any one in particular, but instead to the nation. To some people this means they belong to everyone, and therefore anyone can do whatever they want in them; while to others the wildlands areas don't belong to anyone; both are anarchical situations, inimical to the long-term welfare of the PA. The protection of these areas requires that this fundamental problem, which involves the PA administration's image, presence and prestige, be dealt with seriously and professionally.

On the other hand, in almost all PAs there are users who utilize them appropriately in one way or another, generally for recreational purposes, but also for many others: scientific, educational, training, resource extraction, etc. The PAs' administrations have the dual responsibility to ensure that

these activities are carried out in a sustainable manner, but also to minimize the possibility that the users will have conflicts with the PA's resources which will cause them personal injury, e.g. attacks from dangerous animals, climatic factors which could surprise the user, or dangerous cliffs in user sites. Obviously, the PAs, by their very nature, contain an infinity of risks for the visitor, and it would be impossible to eliminate all of them; it is probably undesirable to do so. However an effort should be made to avoid or minimize as many as possible and to be prepared to confront the others.

A definition of **wildlands area protection** could be the following:

"Those activities of control and orientation of human actions which help to ensure the compliance with the management objectives established for a particular PA, including activities which tend to reduce those human actions or natural conditions which put the user at risk."

Protection activities are varied and their implementation depends upon many factors. Nevertheless, in general terms, they can be characterized in two ways: **orientational** and **repressive**. These two types of activities can be subclassified as **indirect** and **direct**, according to how they reach the visitor/user.

Figure 2: CLASSIFICATION OF PROTECTION ACTIVITIES

```
                                      DIRECT

                   ORIENTATIONAL

   PROTECTION                          INDIRECT
   ACTIVITIES                          INDIRECT

                   REPRESSIVE

                                      DIRECT
```
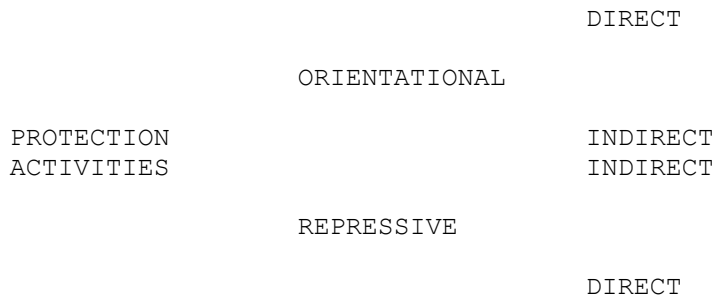
Orientational activities are those related to the information given to, or the education of the user concerning the rules and regulations of the PA, permitted behavior, risks and dangers present in the PA, and other conservation topics, which are intended to guide his/her behavior with regard to the PA. Repressive activities would be those concerned with the supervision and control of human activities and natural situations which would have an adverse impact upon the intended management objectives for the PA, including the user's experience in it as defined by those objectives.

Orientational versus Repressive Activities

At the system level of protected areas, as well as at the individual PA level, policies should be prepared regarding the types of protection activities to be implemented, and the attitude that PA personnel should take when confronted with specific protection problems. (This in addition to the general concerns originating from threats and conflicts with other institutions, public and private, arising from the lack of respect which they may demonstrate for the jurisdiction of the PA system over its PAs.) These policies can be expressed by means of laws and other legal documents or simply by administrative actions

and internal communications which indicate a coherent and consistent line of thought. The ideal situation is a combination of both.

In general, it is believed that repressive type actions are counterproductive for protected areas unless they are accompanied (and hopefully preceded) by a solid educational activities directed at the user or potential law-breaker. It is essential to avoid creating enemies among users and neighbors of the PAs, and if possible, educate them so that their comprehension and good will aid in protecting the PAs. This is not always possible, and repressive actions are necessary, not just as a last resort to protect the PAs, but also to demonstrate the seriousness of the PAs' administration to achieve its objectives. In reality, the PAs are a microcosm of the rest of the world, where police presence is essential for maintaining public order, even though society continues to struggle to minimize the need for it.

In some PAs which have sufficient technical and economic resources, priority is given to the positive (orientational) activities. Normally these are the PAs with administrations that recognize that the management of their PA cannot be isolated from its socio-economic context, and that to obtain optimal management results it is essential to work together with the local population and PA users. This concept is fundamental for modern management of PAs, and repressive actions should constitute a secondary, albeit necessary and complementary, element to the orientational activities.

However, the reality in most PAs to the present time has been to emphasize the repressive actions, both because they are easier to implement, and because the technical capacity to carry out a good educational program is lacking. The ideal situation is to achieve a balance of both.

Supporting Document B1c

FACTORS TO TAKE IN TO ACCOUNT WHILE PREPARING
A PROGRAM OR PLAN FOR THE PROTECTION OF A PROTECTED AREA

By: Alan Moore, Specialist in Wildlands Management

1. Identify significant natural and cultural resources

-Carry out resource inventory (see Lessons B2 and D2)
     -Identify critical resources: endangered species, genetic resources
          which may have some potential for human use, important habitats,
          communities or ecosystems, watersheds, archeological sites,
          historic buildings.

2. Identify protection problems and their causes:

     -Natural factors: unstable soils, erosion, flooding, drought, natural
          fluctuation of wildlife populations, diseases, fire.
     -Human factors: hunting, capture and sale of wildlife or plant species,
          grazing, agriculture, fire, recreational activities.
          Human factors should be characterized according to:

               - Identification of individuals or groups
               - Identification of community or other site
               - Socio-economic level
               - Type of impact, and its physical source (in or outside PA)
               - Access points to PA.

3. Identification of CRITICAL SITES in the PA, that is, where the resources
identified in point 1 have the greatest problems in surviving, where the
greatest pressures are placed upon those resources, or where the resources in
general of the PA are subject to irreversible negative impact. For example:

- Intensive visitor use sites
- Access points: roads, trails, rivers
- Vegetative recuperation sites
- Sites susceptible to natural catastrophes (floods, fires, mudslides,
     avalanches, volcanic eruptions)
- Sources of potable water
- Habitat for endangered species
- Sites where illegal resource use occurs (hunting, forest product extraction
     etc).
     - Points where visitors have greatest risk of encountering dangerous
     animals, getting lost, etc.

4. Selection of Control Mechanisms

     -Education programs
-Signs, publications
     -Water quality monitoring
     -Location of access points in places where critical sites would be
          avoided
     -Strategic location of guard posts

        -Patrolling
        -Purchase of fire fighting equipment
        -Training of personnel
        -Preparation of emergency contingency plans
        -New laws and regulations
        -Safety program for visitors and employees (identification of
              hazards/risks. information/education, training and acquisition of
              proper equipment).

5. Basic considerations for the selection of control mechanisms:

        -Availability of funding
        -Availability of staff
        -Training needs
        -Equipment and transportation needs
        -Need for a Safety Program which would involve the following
              components:

              a.Periodic inspection of identified hazards and risks in the
                    buildings, roads, trails and public use areas.
              b.Hazard elimination/reduction
              c.Ensure that safety equipment exists and is functioning
                    appropriately (e.g. fire extinguishers, rescue equipment)
              d.Adequate safety information provided to visitors concerning
                    risks (e.g. fog on highway, forest fires, animals)
              e.Contingency plans prepared: e.g. fire fighting
                    system/organization, search and rescue teams available.

Lesson 2

RESPONSIBILITIES OF A PROTECTED AREA GUARD

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Describe the hierarchical and administrative system within which they are
     working.

2.Mention at least eight responsibilities corresponding to their service in
     the PA.

3.Describe the strong and weak points of the legal framework which defines
     their functions in relation to the protection of the PA.

4.Explain what monitoring of natural resources means, and describe two
     activities that should be done to carry it out.

5.Explain why this activity is important for the protection of wildlands
     areas.

6.Carry out procedures necessary to monitor existing resources in their PA.

REFERENCES:

Pertinent laws and regulations; Corfield, 1984, Ch. 10; Moore, 1984; "PARKS",
Vol. 7, no. 3; Mackinnon et al, 1986.

PRESENTATION:

1.1Define the administrative hierarchy with respect to PA protection, from the
     warden who confronts an infraction on the ground to the imposition of
     sanctions. Locate the position of each of the participants within this
     hierarchy. Present a schematic diagram of the hierarchy.

2.1There are a series of general rules applicable to the situation of wardens
     in the PA. These rules are part of the **SERVICE** of the wardens to the
     PA:

          Serve the public
          Exemplify good conduct
          Report on that which is observed
          Volunteer information and interpretations to the public
          Investigate situations which are out of the ordinary
          Control through your presence and intelligent actions
          Engage in observing the conditions of the PA

     Comment on each of these points.

2.2.Additionally, the following more detailed functions and responsibilities

have been developed for PA guards and other equivalent staff:

- Know well every sq. centimeter of the PA
- Be able to walk and orient himself at any time under any climatic conditions
            in the PA
- Maintain himself in good physical condition, through regular exercise
- Be familiar with the laws and regulations which apply to the PA
- Know how to proceed when infractions of the law are incurred
- Know the activities of, and make recommendations to the other programs which
            complement PA protection
- Be acquainted with, and be able to relate with local inhabitants
- Be capable of explaining to the users and local inhabitants the reasons
            behind PA laws and policies which affect them.
- Be able to use the field equipment necessary to work in the PA
- Be trained in the search and rescue techniques applicable to the PA
- Be able to promptly and correctly utilize first aid techniques
- Be familiar with the PA's natural history, and make pertinent observations
            about it
- Be able to follow instructions
- Be able to organize and carry out effective patrols
- Know how to inform supervisors in writing of what has been done/observed in
            the field.

2.3 As for the Chief Ranger, he/she should carry out the following functions:

- Provide organization, leadership and training to the law enforcement and
            other protection rangers;
- Provide technical and conceptual guidance with regard to all of the
            functions assigned to his rangers;
- Establish objectives and work plans, and make sure they are fulfilled;
- Delegate responsibilities appropriately;
- Establish rules for the appropriate implementation of protection work;
- Maintain good relations with other pertinent public agencies, and local
            inhabitants;
- Work together with his rangers in the field when possible;
- Translate orders and policies from superiors into effective work in the
            field.

2.4 The warden must serve two different groups: his superiors and the public.
     At times this duality of service can cause difficulties since some laws
     or established policies are difficult to interpret to the public, and it
     is the warden's responsibility to his superiors to see that these same
     rules are applied. It is important that all the personnel of a PA be in
     agreement as to how to act in all situations, but especially those in
     which strict allegiance to the law could be impossible or very
     problematic. In this way conflicts over interpretation of how to act in
     complex or difficult situations can be avoided. It should be emphasized
     that personnel should never publicly criticize their superiors or a
     policy or law. The official policy concerning these situations should
     be discussed.

3.1 Explain the laws and rules that relate to the protection of PA. According
     to these rules, define the role of the warden in relation to protection.
      The wardens should carry with them a copy of the laws and rules that
     support their activities in the field. A good protection program should

define in detail the functions of the wardens, considering the laws and general policies as well as the specific rules and conditions of each PA.

4.1   During the development of a management plan for a PA, an inventory, albeit preliminary, should be done of the natural and cultural resources of the area. Often this inventory and description of the PA is superficial, based on a revision of available literature and on some brief visits to the field. It is the role of the warden, who is always in the PA and knows it better than anyone else, to continue the monitoring process, reporting on all that is found during his patrols. The process of inventory and monitoring never ends, especially as natural resources are dynamic and always in a state of change. As such the field observations of the wardens over the years help to follow those changes. Make the distinction between monitoring and inventory.

4.2 Within a PA one of the functions of a warden normally includes the collection of basic data which is sent to his superiors who are responsible for classifying and utilizing it. It is obvious that the observations and experiences of the wardens constitute the basis for determining future management actions. As such the wardens should take care that their field observations are well-made and routinely reported in writing (Supporting Documents B2a, B4b, E5a and E7). Point out the importance that the warden write down what he observes, and that he learn to recognize that which is unique and important. Emphasize the importance that some administrative mechanism exist to transmit and utilize this information.

With the participants, review the field sheet for registering field observations, point by point.

4.3 Discuss with the participants the following responsibilities of a PA guard/warden with regard to the monitoring of natural resources; are these reasonable? Are they being carried out now? Can they be carried out?

- Be able to identify the principal species of flora and fauna of the PA.
- Be familiar with seasonal and other routine changes which occur with the movements and other aspects of the natural history of these species.
- Be knowledgeable of associations and symbiotic relationships which exist between species of flora and fauna, and between species of flora and fauna and certain environments; i.e. which species normally occur in association with others.
- Be acquainted with the habits and places where the fauna of the PA normally can be found.
- Be aware which species are in danger of extinction, both in the PA and in the surrounding area. Be familiar with their tracks, excrement and other signs of the presence of these species.
- Inform immediate superiors of observations via routine reports.
- Know how to collect permitted specimens of fauna, flora, insects and geology, and be familiar with the rules which govern specimen collection.
- Be familiar with the archeological and historical resources of the PA, or that may potentially be found there.

PROT. B2-4

- Be able to locate on a detailed topographic map those places where
            observations have been made.

5.1As to issues of protection, it is clear that if we wish to protect natural
       and cultural resources, then we must know them: what they are, where
       they are located, and in what condition they are found. Those in charge
       of protection in a PA should maintain specific files on the different
       resources and have located on a map the critical areas where the
       protection program should focus its efforts. Speak with the
       participants about the existing data collection and data filing system.
        Together with them analyze if this system can be improved.

ACTIVITIES:

1. Ask the participants to describe the legal problems that they have had when
carrying out their functions.

2. Develop a discussion concerning any doubts concerning the legal action of
the warden and other legal aspects important for the protection of the PA.
Use this discussion to orient future lessons over more specific aspects such
as patrolling techniques, protection and the visitors, firearm use, etc. The
lesson can be begun with this activity, and later other considerations and
points can be developed in an ordered fashion.

3. Have the participants prepare a form for use in reporting field conditions;
make sure they include the following points: Name of observer; Date; Time of
observation; Place; Climatic conditions; Species observed; Number observed;
Sex; Color of specimen observed; Size; Observed health; State of development
(for flora, whether it is flowering, in fruit etc); Behavior/activity (fauna);
other observations.

4. In order to meet the third objective of this lesson, walk with the
participants on a road or path and ask them to register their observations on
the field sheet prepared previously. Ask for their reports and discuss the
results.

5. Ask the participants if they know of natural conditions in their PA that
are in a state of change for whatever reason: natural or man caused. What are
the indicators which signal that change is or has taken place?

Supporting Document B2a

OBSERVATIONS AND FIELD NOTES

(by Claudio Chehebars, Ecological Research Group,
Nahuel Huapi National Park, Argentina)

OBSERVATIONS AND FIELD NOTES

Unlike with vegetation, it is a long process to gain a good overview of the fauna in an area. In the absence of special research projects, in most cases there will be a steady accumulation of "accidental" and fragmented observations resulting from hikes or patrols made in the area.

The objective of this document is to offer suggestions to help in making observations and to get the most from them.

FIELD OBSERVATIONS

Fauna possess certain characteristics which complicate getting prompt and systematic information.

- it is mobile and fluctuating
- a large percentage of species have nocturnal or twilight habits
- many species display elusive behavior and are difficult to observe even in
      daylight
- generally the fauna of an area is made up of a few abundant species and many
      rare (or uncommon) species

Because of these characteristics, it should be clearly understood that the accumulation of observations can give a good, but only partial, overview of the fauna in an area. To have a more complete knowledge requires special techniques.

A warden's observations can contribute in four important ways:

1) The quantity and the identity of the species in the zone (in general or of
      a particular group of species).

2) The abundance of the species (in absolute terms if possible, or in relative
      terms).

3) The distribution of the information discussed above with respect to types
      of habitat. For example, in closed forest there are x number of
      species, while in the palm forest there are y number of species; or in
      the grasslands there is a group of bird species different than in the
      forest; or a certain species is x times more abundant in the swamps than
      in the woodlots.

4) The trends over time of the information discussed 1) and 2) above: that is
      the monitoring of the fauna. For example, the mallard ducks have
      doubled in population during the last three years in a certain area; or
      the number of sightings of bears have dropped by half over the last two
      years, etc.

In general, periodic hikes or patrols can provide this sort of information, as long as the observations are adequately recorded in the FIELD NOTES.

FIELD NOTES

(Based on the "Instruction Manual - Field Notes, M. Christie, 1980).

Essentially it is the process of putting on paper, precisely and objectively, all observations made in the field. Although this can be tedious and it tends to include the empirical impressions of the author (which are valuable), it helps to reduce the subjective deviations over time in the memory of the observer.

There are two possible ways to organize the Notes, but it is always recommended that they be systematic and detailed. It is suggested that they be organized in sections:

a) <u>Diary</u>: It is indispensable at the end of each day, or observation period in the field, to write the Diary or General Register of Observations and Activities. The pages should include the heading "DIARY" and your name, date, and location. In the Diary facts should be entered such as: weather condition, activities done, itineraries, hours of observation or hiking, habitats visited, topography, general impressions, or information that involves many species. Also a list should be included of species seen, with an estimated number of the number of individuals in each.

b) <u>Specific Records</u>: These are optional. They consist of notes on different pages for the different species observed. Specific Records can be established for species of greatest interest (endangered species, exotic species, species being studied, species of special interest, etc.). This allows for easy access to species specific information, chronologically ordered, without having to comb through the entire Diary. Observations could include: nature of the immediate habitat, details of the field identification, gestures and traits, behavior, voice, reactions when facing danger, mating habitat, nesting sites, habits of searching for food, diet, if the species appears to be a resident or not, etc. Repeated observations should be noted each time, whenever the opportunity arises, for each type of animal.

Make observations about the interactions and interrelations: what do the animals eat, in what plants do they seek refuge, what other species accompany them, etc?

Make the entries as detailed as possible. For example, note other plants or animals associated with that which is the focus of observation. Be as specific as possible: write "conifer" or "wide-leaved tree" if the species of tree is not known. When referring to an animal: is it on the ground, on the trunk of a tree, or on a limb? How many individuals are there in the group? How many calls per minute? How many times does it take food to the nest? How many plants are there per square meter?

At first, when beginning to learn to identify species, perhaps it is best to

make detailed descriptions of the appearance of the species being observed. Be aware that the appearance of many species changes with age or during different seasons of the year. As often as possible, take note of the time of day, especially in the Specific Records. Besides being useful information, it helps to keep order among the pages and allows for a rapid location of the information.

If registering second-hand information (something that you did not observe), write down the source of the information: "Name of Person said . . .".

c) Catalogue: Optional. Collecting specimen is not a normal activity for a park warden. Nevertheless, there are times when dead specimens are found which one wishes to identify or which could be useful. A catalogue is indispensable for ordering these items collected and facilitates enormously the communication with museums or specialists.

The format of a catalogue is identical to that of the specific records, except that the title of each sheet is "CATALOGUE". The catalogue contains information which refers exclusively to the collected items and faithfully contains the data which is written on the labels which should be attached to the items. When beginning a collection, the Catalogue should be opened with sequential numbers of each sample or item. The scientific name should be included if known, or the most exact description possible. This name should not be put on the label: if you are not sure of the identification, it should be done by an expert. The name of the collector should be included, as well as the exact location of the collection, and the date. A specimen without this information HAS NO VALUE.

There is additional information which increases the value of the material. For example, measurements (such as the weight of vertebrates which is changed in their preparation), color, diet (if the stomach is opened), sex (this is lost in birds during their preparation), reproductive state (size of gonads), habitat, and others (sounds, associations, collection method, etc.).

d) Thematic records: Optional. Separate notes can be made separately concerning aspects such as impacts from tourism or others, depending upon the interest and concrete needs of the area.

One's memory is a traitor: whenever possible, notes should be written in the moment that the observation is made. For this it is useful to have a small, field notebook in which to write, later rewriting the notes more permanently. For example, if a group of estimations of abundance of ten species of animals plus data about where and how many wild cattle were seen are not written down immediately, they will become totally confused when trying to make notes later the same evening.

Do not write down the identification of a species if you are not 100% certain. If uncertain, make the most detailed description possible of what was observed. The humility to not risk an uncertain identification is very important: no data is preferable to bad data.

The descriptions of location should be exact, so that another person can use them to find the same place.

Supporting Document B2b

WHAT IS MONITORING

(Translated from original Spanish from MANUAL DE GUARDARECURSOS,
prepared by CONAP, Guatemala)

Monitoring is the way that a park ranger can achieve a better scientific
knowledge of his protected area, both for himself and his supervisors.
Monitoring is the systematic collection of information in an area of
everything that the ranger finds and observes, during patrolling or in any
other moment during his work, with regard to natural resources, and special
events such as fires, floods or diseases, which occur within the area. This
type of information collection serves as the basis for studies and management
of the area.

Why is monitoring important? Nature is constantly changing. Therefore it is
important that the ranger do monitoring all the time, collecting the needed
information and delivering it to his supervisors, who will classify it and use
it in the appropriate way. With this information technicians and managers can
see the changes occurring within an area's ecosystem and also know if the area
is suffering from damage caused by human activity. This helps in the
management of flora and fauna for:

- Protection of endangered and threatened species
- Control of exotic species
- Recuperation/restoration of degraded areas.

MONITORING OF VEGETATION

Plants are extremely important for the life of a protected area. For this
reason a ranger should get to know all of the different species of plants in
his protected area, their normal situation and the changes that normally
affect them. This information is valuable when it is used together with
wildlife observations. Little by little the accumulation of information about
plants and animals helps us to understand the habitat of the plants and how
they relate to the animals.

This doesn't mean that the ranger must do detailed studies on the vegetative
life in all sectors of his protected area.

How does One Carry Out Vegetative Monitoring?

To carry out good vegetative monitoring, the ranger should do the following:

1.Identify all the species of plants that exist in his area (or sector where
    he works) and make a list with their common and scientific names.

2.Estimate the abundance of each species (rare, infrequent, common, abundant).

3.Using a map, or making a sketch, indicate the locations where the plants can
    be found.

4.Observe and write down whether or not the plant is flowering or has fruit.

5.Observe and note whether any animal (including birds and insects) uses it for food and which part of the plant is eaten.

6. Observe and note the state in which the plants are found: do they have rotten branches, disease, etc?

7.Observe and note the characteristics of the place where the plant grows: is it flat or sloping; is the soil sandy or muddy; is it in the shade or sun; in dry places or wet?

8.Observe and note how the plant is distributed on the ground: does it grow in groups or separately; is it spread over an entire space, or only in special sites?

9. If the plant is damaged, try to find out the cause.

MONITORING OF WILDLIFE

Wildlife is important for nature, since animals are part of the food chain, and any change in their lives affects other characteristics of the area.

Knowledge of wildlife species helps the ranger to better understand his protected area. If there are any species that are disappearing or that are sick, then his supervisors should be informed, in order to find a solution to the problem. Therefore the ranger should collect information about an area's wildlife in order to:

1.   Make a list of all the area's wildlife.

2.Estimate the abundance of the different species and how it changes in the course of the year.

3.Understand the habitat and local distribution of the different species.

4.Determine which species are residents and which are only there occasionally.

5. Know which animals are introduced by humans, and how they influence the area's ecosystem.

How To Do Monitoring of Wildlife

In order to carry out good wildlife monitoring, the ranger should do the following:

1.Identify all the animals in the area and make a list of their common and scientific names.

2. Estimate the abundance of each species within the sector where the ranger works.

3. Indicate on a map or sketch the places where these animals are normally encountered.

4.Identify the animals which always can be found in the area, and those which are only there at certain times (migrants).

5.Write down information about their reproduction: courting habits, egg laying, birth of young and how they are taken care of. It is important to note dates, number of eggs per nest and the number of young which hatch or are born.

6.Note the food that the animal is eating.

7.Observe and note details concerning the animal's health: healthy, fat, skinny, limping, unconscious, dead, wounded, weak, etc.

8.Observe and note how the animal is behaving. This information is important because it could vary throughout the year, and indicate when it is most important to protect them: for example, animals in courtship, giving birth, feeding young, eating, howling, growling or making other noises.

9. Observe and note any damage that the animal may be doing to the area.

10.If dead animals are found, try to discover what caused their death, and write it down in the report.

Lesson 3

VISITORS AND PROTECTION OF WILDLANDS AREAS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Identify at least three factors which influence the type and the quality of visitation permitted in a PA.

2. Identify and explain in detail at least five mechanisms used to control and manage visitation in a PA.

REFERENCES:

Mackinnon et al, 1986; Moore, 1984, chapters 8, 10, & 12; "Parks": Vol. 8, no. 4; Vol. 9. no.2; Vol. 1, no. 4; Vol. 6, no. 1; Vol. 7, no. 4; Vol.5, no. 3; Graefe et al, 1990.

PRESENTATION:

1.1 The type and quantity of visitation in a PA varies a great deal according to the management category of the area, the management objectives, its location, etc. For example: in some biological reserves, visits are prohibited; in others visitors are permitted to carry out a wide range of activities, some of which might not be permitted in a national park. Review this concept with the participants and ask them which activities are permitted in their PA, making comparisons among them. The principal point is that wherever visitors enter a PA, administrators must manage and control their activities within a framework established by the management objectives of the area.

1.2 It should not be forgotten that most PA are for use by people only under certain restrictions. Explain those factors which determine the quantity and the activities of public visits allowed:

-Management category of the PA (discussed above);

-       Management plan and system of zoning;

-Carrying capacity (this is a concept somewhat difficult to explain -see section 2.3 and Supporting Document B3a).

1.3 Discuss with the participants the general role of tourism, and its importance for the PA (these include economic benefits for the PA, the region, and the country as well as the education that the tourists receive - see Lesson D8). Differentiate among the different types of tourists and the different management that they require:

-       Local people: Short visits. Great necessity to educate them, orient them, and provide them with direct and indirect benefits. Sometimes

they require more supervision. Should be an important support group for the PA.

- National tourists: Generally longer visits. They also need to be oriented as to the significance of the PA within the PA system, and its importance to the country. Can be an important support group for the PA.

- International tourists: Often make longer visits as they have more money, or sometimes shorter visits because they lack time; there can be language and other cultural barriers; often they come in tours organized by national tourist agencies; sometimes good collaboration can be established between these agencies and the administration for the protection of the PA.

- Discuss both the good and bad aspects of tourism. (See Lesson D8, especially D8e).

1.4 Recently the concept of **ecotourism** has been developed. While tourism operators widely use this term in their propaganda to promote tours to any type of natural area, conservationists have defined it as a model of nature tourism, especially appropriate for the PA. According to the evolution of this concept, ecotourism is characterized by the following:

-it has a minimal impact on the environment (utilizing practices and techniques that are "environmentally friendly");
- it is respectful of the cultures that the tourist meets;
- it contributes economically to the local communities;
- it contributes economically to the PA where a visit is made, and for the conservation in the region or country;
- it has an educational focus, both for the tourist as well as for others, and it tends to reenforce conservation concepts.

The PA are the focus of most ecotourism, and for their own protection they should encourage that organized tourism in their boundaries have an ecotourism orientation. (*See Lesson # and its Supporting Documents for more information on ecotourism).

2.1 Why must public visits be controlled?

-To protect the PA from activities of the visitors; for example, wood cutting, poaching, collecting, vandalism, fire, etc.

-To protect the visitor from the natural risks in the PA such as cliffs, ravines, caves, waterfalls, dangerous animals, extreme weather conditions, etc.

-To protect the visitor from other visitors; for example, robberies, automobile accidents, and conflicting activities (such as a football game in a picnic area).

2.2 Explain that public use is permitted under certain rules in almost every PA, but the PA also has objectives related to the conservation and protection of the resources within them. For this reason public use must be controlled. There are various possible methods for managing visitors.

- **Trained personnel** is the key for any effective management. The mere presence of an official is sufficient in many cases to avoid problems and for giving a good impression. "Someone is taking care of this area!" All the other methods presented depend upon the quantity and quality of personnel.

- **Information and interpretation**. With adequate information most visitors will collaborate with the protection needs of the PA and will avoid many problems affecting their own security.

- **Signs and publications** form part of a good system of interpretation and information to guide visitors in their activities and to make them conscientious with regard to nature conservation.

- The **circulation system**, or road and trail system, that the PA has to a great extent determines where visitors will congregate. In this way they can be directed to sites desired by the planners. The use of barriers made from natural materials can help direct visitors.

- The **maintenance of roads, trails, and public areas** greatly influences the actions of visitors. On one hand, a poorly maintained road is not attractive to most visitors who will avoid using it. On the other hand, the presence of garbage, or poorly maintained signs and other facilities creates a negative image in the mind of the visitor who will then be less likely to care for the PA; that is, garbage creates more garbage. If the visitor finds a pristine appearing site, he is more likely to leave it in that condition.

- **Laws and regulations**, i.e. strict enforcement, should be the last tool used to protect the PA; using other techniques first is easier and less problematic.

- Another way to regulate public use is through **administrative controls** such as requiring permits for the use of certain sites or activities, the temporary closure of certain sites during critical periods or of sites that have received negative impact and need time to regenerate.

- A **safety program**, which identifies risks and dangers for visitors and then reduces the problems with information, patrols, and visitor management, is essential if it is desired to allow visitors to maximize their enjoyment of their visit while minimizing problems for themselves and the PA staff.

2.3 All visitors cause impact in a PA. The question is whether or not the impact is acceptable or not. **Carrying capacity** is a concept used in a PA where visitation is considered either to have passed, or to soon pass, the capacity of the PA (or site within the PA) to receive visitors without causing unacceptable degradation to the natural or cultural resources. Many factors must be considered to determine the carrying capacity of an area, or of sites within a PA. With the participants review the Supporting Document B3a.

Given the multiple factors to consider and the difficulty of setting concrete

numbers, and still leave flexibility in the management of a PA, it has been concluded that it is not so important to arrive at a precise number which represents the CARRYING CAPACITY of the PA, but rather to set a certain level of visitation. The desired level should be determined taking into account that several parameters relating to acceptable change in the area/site's physical environment and in the level of visitor enjoyment and quality of his experience must be set, and then monitored for compliance. This is called Limits of Acceptable Change (LAC). A set of management activities must then be designed to maintain those levels and assure proper monitoring and consequent administrative reaction to unacceptable changes in those parameters. This implies that the personnel must maintain a system, of both periodic and formal observation (keeping written records), of predetermined parameters in those sites where visitors concentrate. It also implies that management mechanisms exist for adjusting the tourist flow if conditions require, and that there is the administrative agility, ability and desire to implement the mechanisms. *See lesson # and its Supporting Documents for further information.

3.1 Briefly speak of the evaluation and effectiveness of visitor management, for example:

-Fulfillment of policies and rules (infractions, sanctions, etc.)

-Media coverage of aspects of tourism in the PA (press, radio, and television) as well as of protection issues that affect tourist activity in the area.

-Review of comments and observations made by visitors, whether verbally or written.

- Review of site deterioration due to tourist use: trampling of vegetation, reduction in fauna, etc.

ACTIVITIES:

1. Ask that each participant describe the type of visitor that arrives at their PA and what methods are used to control their actions and to protect them. What other activities could be developed to improve the management of this activity?

2. Visit a nearby PA and observe the visitors. Define the factors which determine where they go and what they do in the area. Later determine if they are causing problems for the protection of the PA, and what could be done to avoid those problems.

Supporting Document B3a

CARRYING CAPACITY AND LIMITS OF ACCEPTABLE CHANGE

Carrying capacity, in the context of public use, can be defined as the level of public use that can be supported in a given area or site with high levels of visitor satisfaction with their experience and with an acceptable level of environmental impact. Carrying capacity estimations, as well as any other means for dealing with protected area visitation, must concern themselves with three main factors:

1. Environmental Factors: Direct or indirect impact, long or short term, upon a PA's natural features and processes. This factor must be evaluated using the following considerations:

-Size of the PA and the utilizable space for visitation (zoning).

-Management category of the PA, which indicates in general terms the amount of degradation that can be accepted.

- Environmental fragility; endangered species; fragile soils; vegetation or animals that could be threatened by certain types of visitation.

-Topography and vegetative cover; in open environments, the visitor is very visible which reduces carrying capacity, since his visibility creates more impact on animal species and other visitors looking for a more solitary experience.

2. Social Factors: This factor relates primarily to the comfort and enjoyment of the visitor, i.e. visitor experience.

-Visitor flow: distribution of visitor sites and visitors themselves; concentrations, groups or individuals: which situation is best for the environment? which situation is best for optimizing visitor enjoyment?

-Opinions and preferences of visitors: Do they like the type present use situation? Do they feel that the PA is too crowded? Did they find the PA disappointing in some way? Sometimes it is advisable inquire about visitor preferences and expectations via a formal survey, carried out by a specialist.

-Availability of facilities: number of hotels, restaurants, camping sites, etc. are factors which influence the number of possible visitors. When the economy of local communities is impacted by visitation, this must be taken into account in determining carrying capacity.

3. Management Factors: The facilities and personnel available to manage public use are determining factors in many cases as far as limiting visitation is concerned. This is frequently called **management capacity**. By manipulating management factors, carrying capacity can be reduced or increased.

-Design and location of trails, roads etc, in order to distribute public use

>   so that the resource can better absorb the impact. At times it
>   will be necessary to "harden" certain heavily used sites so they
>   may better resist high concentrations of public use: pave trails,
>   place railings. This sort of decision should be taken after a
>   serious and prolonged analysis of all the alternatives, and of a
>   cost-benefit analysis.

-Reduce conflict between competing uses by better organizing the use of PA
           spaces (zoning).

-Change visitor attitudes and behavior by informing visitors about PA
           management and problems.

-Improving the durability of the most used sites, hardening trail surfaces or,
           on the other hand, not maintaining them in order to reduce use.

-Limiting use (prohibitions, requiring permits, special use fees, rationing
           (by time or space).

-The presence of uniformed personnel in critical sites can help considerably
           to diminish negative impacts, since the visitor tend to behave
           better when in the presence of authority. Additionally, personnel
           have the possibility of talking to visitors, explaining PA rules
           and problems and thus improving the PA's image.

The Limits of Acceptable Change Framework

(Taken from a publication produced by the US Forest Service,
Department of Agriculture, Washington, D.C.)

GOAL: Develop comprehensive, integrated direction to guide the management of human
           activities in wilderness to meet the intent of the Wilderness Act and
           other relevant legislation. Effective Wilderness management planning
           requires both a technical analysis process limits of acceptable change
           (LAC) and consensus (public involvement).

WHERE DID THE LAC PROCESS COME FROM?

 ° Developed at the Wilderness Research Unit - Forest Service Intermountain
           Experiment Station, Missoula, MT

° Grew out of frustration with carrying capacity approach

° Research found that the relationship between the amount of use and impact
           was not simple. Factors such as behavior, type of use, location of
           use, and timing affect impact as much or more than amount of use.

° LAC attempts to focus on objectives that were lost sight of when trying to
           determine carrying capacity.

WHAT IS THE LAC PROCESS?

° It is a process, not a plan or a standard.

° It is a framework for thinking.
° It focuses on **desired conditions** and defines what is and is not acceptable
	and develops a strategy to prevent unacceptable conditions.
° It is a planning tool that helps make decisions such as desired future
	conditions, management area allocations, standards and guidelines,
	and monitoring requirements (which become part of forest plans,
	general management plans)

Basic Premises:

° Some change in conditions is inevitable.
° The focus is on human-induced change.
° The effects of human activities are most important. ° Diversity within the
	wilderness is important to maintain.

Core Concept: (See figure)

**Step 1:	Identity issues, concerns, and special values.**
This step identifies the primary concerns management should focus on. The role
	of the area in a regional and national context should be explored.

Step 2:   Define and describe opportunity classes.
Opportunity classes describe the setting visitors can expect to find in the
        wilderness. Defining opportunity classes ensures diversity within
        the wilderness and helps describe desired future conditions. This
        spectrum approach accommodates varying definitions of the
        wilderness experience.

Step 3:   Select indicators.
Indicators are specific elements of the wilderness setting that change in
        response to human activity. Examples are bare ground at campsites,
        lichen species composition and encounters between groups.
        Indicators provide quantifiable documentation of quality or health
        of the area.

Step 4:   Inventory conditions.
The inventory establishes the range of conditions that currently exists in the
        wilderness. The inventory is guided by the indicators selected in
        the previous step.

Step 5:   Specify standards for each indicator.
In this step the limits of acceptable change are quantified into measurable
        objectives. Standards specify the amount of impact we are willing
        to tolerate in each opportunity class. Standards are very important
        because they become the triggers for corrective management action.

Step 6:   Identify alternative opportunity class allocations.
In this step alternative ways of managing the wilderness are identified in
        terms of the proportion of the wilderness devoted to different
        opportunity classes i.e. different types of activities.

Step 7:   Identify management actions for each alternative.
This step identifies the management actions that would be necessary to bring
        the existing conditions up to standard under each alternative.
        This helps display the costs associated with each alternative.

Step 8:   Evaluate and select an alternative.
This step displays the benefits and costs associated with each alternative so
        that the decision-maker can select an alternative.

Step 9:   Implement actions and monitor conditions.
A wilderness action plan is prepared based on the selected alternative which
        outlines what needs to be done to bring existing conditions up to
        standard, who will do each action, when it will be done, and how
        much it will cost. A monitoring plan is an important part of the
        action plan, so changes can be tracked over time.

Overview of Limits of Acceptable Change

FRAMEWORK AND PREMISES OF LAC:

Conclusions reached by researchers who worked for decades to develop a
   recreational carrying capacity for wildlands led to the formulation of the
   LAC process. Some of the underlying assumptions behind using a limits-based
   planning process are these:

Change (to the physical and social environment in the wilderness) is
   inevitable. Any human use is going to create some impact; the idea is not
   to stop time, but to minimize that impact by determining how much of it is
   acceptable.

The focus must be on human-induced change, not natural ecological change. In
   wilderness management, the implicit judgment is that ecological change is
   compatible and human-induced change may not be. Examples of human induced
   change in wilderness include introduction of non indigenous plants or fish
   and alteration of ground vegetation due to grazing, camping, or trail
   construction. Transitory changes to the social setting may also occur from
   heavy recreational use and aircraft overflights (noise).

Focus further on those human-induced changes that (1) are potentially serious
   impacts on the wilderness and (2) managers can do something about. We
   frequently concentrate our efforts on changes in established campsites that
   may not be significant to the overall health of the wilderness simply
   because they are obvious visual intrusions that we can do something about.
   On the other hand, the effects of acid precipitation may be a serious
   threat to wilderness ecology, whereas the most we can do is monitor and
   document changes.

Some human-induced changes that LAC typically addresses are structures and
   developments, trail conditions, campsite conditions, grazing effects (use
   and species composition as well as trampling), and indicators of crowding.
   Although efforts are being made to consider uses other than recreation, it
   is often the focus of LAC. Recreation is one thing that can be influenced
   by management successfully, and the LAC process was developed to address
   negative effects of recreation on wilderness.

It is desirable to preserve diversity of settings hence the concept of
   "zoning." The location of trails and trailheads, destinations, vegetation
   and topography, and other factors influence the pattern of use in nearly
   every wilderness, and the resulting variety of settings is not only
   inevitable, but desirable. This does not mean that the less pristine zones
   in the wilderness are to be managed as "sacrifice areas," rather, it simply
   recognizes that mainline trails and major destinations will continue to
   attract more use than remote areas far from trails. One of the most useful
   aspects of zoning is to identify those pristine areas that managers often
   overlook in their efforts to confront the problems of heavy-use parts of
   the wilderness.

THE CORE CONCEPT OF LAC:

The steps presented in this handout boil down to the following question that
   we're trying to answer: *What conditions are acceptable, and if we haven't*

achieved them, what do we need to do? In order to answer this question, the LAC process focuses on objectives. Setting **objectives** is a difficult but crucial step in this (or any) planning process; three of the nine steps deal with developing increasingly specific objectives. Although the nine basic steps of LAC will be presented in sequence. the process is not linear. The diagram below illustrates the continual **feedback** and adjustment **that may be needed**, depending on the answer to the core question: whether standards for acceptable conditions were met or not.

LIMITS OF ACCEPTABLE CHANGE, STEP BY STEP

STEP 1 - IDENTIFY ISSUES

Identifying the issues includes:

° issues already raised through public input, forest plan, existing
        documentation.

° issues raised in citizen task group,

° unique features and values, specific locations,

° outside influences (new roads, timber sale activity),

° threatened and endanger (T&E) species,

° resource degradation (existing conditions unacceptable).

Existing conditions: concentrate on human-induced change to natural systems.

Consider effects on many aspects of the wilderness environment:

° Meadows encroached upon by forest due to fire suppression?

° Forage in poor condition due to overgrazing (1) by recreation or commercial
        livestock, (2) by wildlife overpopulated because we have extirpated
        predators?

° Change in stream courses due to grazing, removal of beavers, etc.?

° Presence of nonnative plants, fish, wildlife?

° Damaged soil and vegetation in established campsites?

° Social impacts: crowding, trail encounters, conflicts between users?

This short list of examples is not to imply that we should ignore larger
   issues hike acid precipitation) if they are serious threats. We should
   state the issues, and we may choose to monitor them, even though there is
   little that on-ground managers can do about them. We will at least have the
   information needed to be part of a larger effort to manage these problems.

Issues will be developed by managers and task group members within these general assumptions:

1.   Change is inevitable. Any use will result in some impact.

2.   Focus on human-induced change (not natural, such as fire, avalanche, etc.)

3.   Focus on the changes that management actions can do something about.

4.   Remember that within a wilderness, a variety of settings and conditions is desirable.

STEP 2 - DEVELOP AND DEFINE OPPORTUNITY CLASSES

Opportunity classes are the mix of settings desired in the wilderness. Don't confuse this step with a simple description of present conditions. It is not to say the present condition cannot be the desired condition (especially in the case of "pristine stones'). Completing this step is a prime opportunity for the task force members and managers to create definitions that will enhance current wilderness conditions.

Helpful hints: Don't tie opportunity classes to features that don't describe experience (for example, "river corridor," doesn't work well).

Opportunity classes help us describe and manage for conditions that will meet visitor expectations. Our ultimate goal may be to maximize the pristine class, but it is unrealistic, and probably undesirable, to lead people to expect pristine conditions everywhere in the wilderness.

Opportunity classes display the diversity of settings in a non judgmental way. Wilderness zoning does not mean accepting deteriorated conditions.

It helps to avoid labeling the classes until the group arrives at a narrative description of them. Describe them in terms of their physical setting, social setting, degree of challenge, solitude, and risk. All should sound desirable and inviting. This is important to avoid use of the "least pristine" class as a sacrifice zone. This class should be consistent with the Wilderness Act, while recognizing conditions that make it different than pristine. The chance to correct unacceptable conditions within it Win come when standards are developed in Step 4.

Think of opportunity classes as subsets of recreation opportunity spectrum (ROS) classes, most of which will be subsets of the "primitive" ROS class.

Although the group will have a map of the wilderness to refer to, it is best to describe the opportunity classes in as much of a vacuum as possible, so value judgments and preselection of location (Step 6) do not creep in.

It's OK to pick a few issues and restate them as "objectives," or "criteria" (to borrow from NEPA) if this will make it more clear to the group that the key issues will be used to identify indicators and to drive alternative selection.

STEP 3 - SELECT INDICATORS

An indicator is a measuring stick to recognize changes in conditions over
    time. To be effective, an indicator must be:

1.   Easily measurable

2.   Relevant to issues, to wilderness quality

3.   Specific

4.   Significant

5.   Sensitive -- changes easily noticed

6.   Reliable

7.   Responsive to management actions

8.   Cheap to measure

Indicators are selected to respond to issues (step 1). There is no requirement
    to develop an indicator for every issue -- many issues don't lend
    themselves to being easily monitored.

Select issues that are the most important (from what will probably be a long
    list) for monitoring the overall health of the wilderness. For example, if
    you are looking for an indicator of overall physical health, would you
    measure blood pressure or rate of hair growth?

Indicators need to be stated in measurable units, so standards can be easily
    applied. A good example of something that doesn't work is to simply say
    "trail condition." What about it? Depth of tread erosion? Width? Number of
    bottomless bogholes per mile? These are the components of trail condition
    that are measurable.

Pick a few indicators that can lead managers to a conclusion about trends and
    conditions. Don't gather a huge amount of data that we don't need. We can't
    afford to spend the time monitoring everything, so it's important to choose
    a few (less than 10 I'd say) reliable indicators.

We have some indicators already described in the forest plan. We might find
    that they are not leading us to conclusions, and we may have to alter them
    as we work through the LAC process. Here's what we have now: Frissell
    class, social encounters, trail density.

OK indicator, but not very precise. Could work well if the same experienced
    person conducted inventory for all sites.

This is described in terms of number of probable encounters per day. A good
    measure, but will require intense fieldwork to monitor.

Miles of trail per unit area. Not sure if this will be useful to describe
    wilderness health.

STEP 4 - INVENTORY CONDITIONS

Inventory the conditions that are described by indicators. By selecting a few
   important indicators in Step 3, we can focus our inventory efforts. We have
   already decided what information to collect, and we avoid the trap of
   collecting a lot of data that we don't need.

It's important to do the inventory before we set standards, so we have a sense
   of existing conditions and can set meaningful, realistic standards later.

A logical progression implementing an on-the-ground inventory might go as
   follows:

1. **Gather Information already collected and use what we can**: what's in the
            file in the office - range conditions, code-a-site, etc. Ask
            experts, resource specialists, other agencies what they have.

2.   **Identify inventory needs**: Design method: location, frequency,
            sample size needed. Focus on areas where we have the least
            amount of information.

3.   **Determine how to inventory**: adapt the methods successfully used
            elsewhere. Consult written reports, others working on LAC.

4.   **Train field personnel**: data gathering method must be repeatable and
            accurate. Accuracy is good if indicators are well defined and
            people are trained.

5.   **Data management:** one person responsible for collection,
            documentation, safe keeping. Use data general (DG) for large
            volume of data.

6.   **Analyze the data**: pick up trends, patterns, things that will direct
            management action and help set priorities. For instance, What's
            the average distance of campsites from lakes -- does that tell
            us something about the effectiveness of our regulations? What's
            the average size of the barren core in our heavy-use camps -does
            that lead us to conclusions about user behavior or party size?

STEP 5 - SET STANDARDS

A standard is a predetermined point reached for a specific indicator that
   triggers management action. Example: personal weight maintenance. The
   indicator is weight gain. The standard is 5 lbs. When a person gains 5
   lbs., he has reached the standard for weight gain; at that point he must
   take action to reduce the poundage.

Standards represent the heart of the LAC. They describe what is minimally
   acceptable, not what is desired. A standard is a contract between the
   manager and the public that states the degree to which we will compromise
   wilderness preservation goals to accommodate use. Action must be initiated
   when a standard is reached.

Standard-setting involves attaching a number to each indicator described in
   Step 3. A standard is written for each indicator and will vary by

opportunity class for most indicators. A common exception is air quality,
for which a common standard applies to the whole wilderness.

Standard-setting is a difficult step. There is no universally accepted
standard for how much impact is tolerable at a campsite. This is where
group consensus plays a vital part. Because standards will be to some
degree arbitrary, acceptance by a diverse group makes them far more
credible than if agency managers developed them alone.

Standards must be attainable (not too high) but must not justify degradation
of the wilderness resource (not too low). They should direct movement
towards the pristine, unless current conditions are ideal. Standards do not
have to be achieved immediately, but should be attainable within a
reasonable (agreed-to by the group) time. They will be reevaluated every
few years to determine if they need to be changed, either because desired
conditions have not resulted, or the conditions have improved.

Within an opportunity class, a standard will apply everywhere. Management
actions required to achieve it may vary, but the standard does not.

STEP 6 - IDENTIFY ALTERNATIVE OPPORTUNITY CLASSES

Identify several alternatives driven by the various issues and map these on
the existing area, using the opportunity classes described in Step 2. This
is what we did for the forest plan design sessions.

If group members want to take an overlay and draw their own alternative that
will help broaden the range and let all interests have input. Example, in
Bob Marshall Wilderness, the Montana Wilderness Association, two back
country horsemen clubs, and others drew their own alternatives. Although
the interests of these groups seem different from each other, on 80% of the
wilderness they agreed.

It helps focus group attention on compromise if we let everyone who wants to
draft their own alternative. If we overlay them, we can see how much
agreement there is. It helps to specify to those who want to map
alternatives that they should map only that part of the wilderness they are
familiar with.

Each alternative should include a narrative statement of its general theme.
For instance, one may be to maximize the pristine opportunity class as
quickly as possible; another may be to disperse more trail use into the
pristine areas. Description of desired condition, theme experience, and
philosophy of each alternative is helpful. (Don't use worn-out benchmark
alternatives labeled "maximum this-or-that" -- write a paragraph or two.)

Alternatives will be easier to overlay when we get to mapping a preferred
alternative, if we set some common mapping standards. Such as:

1.   Alternatives will be mapped at same scale, using a base map of the
             wilderness with topographic contours and clear plastic overlay
             material.

2.   Use land type boundaries or drainage divides to define the edges
             of opportunity classes.

3.   Set a standard width for corridors.

4.   Set a minimum size for mapped opportunity classes.

STEP 7 - IDENTIFY MANAGEMENT ACTIONS

By comparing the existing conditions to standards developed, we have found where problems exist. There ale many ways to handle a problem, and probably the best involves a combination of actions.

Look at possible actions in terms of their desirable outcomes and undesirable side effects. This is like a cost-benefit analysis and can include real costs, such as how much it will cost to hire the field personnel needed to complete the management anions. Some other things to evaluate:

1.   **Effectiveness**: will taking a given action have the desired result?

2.   **Acceptability**: it may work, but will it be acceptable to wilderness users?

3.   **Enforceability**: If we close a trail, create a regulation, or take similar action, how well are we able to enforce it?

4.   **Long-term commitment**: what is the probability that we will be able to see an action through a several-year cycle?

Standards written in Step 5 will direct management actions needed to attain them. One way to select the appropriate action follows:

1.   Describe the issue being addressed in each standard.

2.   Write the standard.

3.   Write a problem statement: i.e., the standard is not being met.

4.   Alternative management actions to correct problem. One way to do this is with group brainstorming. Write all suggestions down for the group to see, then go through them later and prioritize them by which actions would be the most desirable in terms of trade-offs described above.

STEP 8 - EVALUATE AND SELECT PREFERRED ALTERNATIVE

What criteria will we use to evaluate alternatives? To select one? This is probably best decided by going back to the key issues, and evaluating alternatives based on how well they address those issues.

Task group members need to feel involved in the final decision, but must also understand that it is the agency line officer's role to make the selection of the preferred alternative. This is why it is so important to continually get line officer consent to the direction the group is going. A surprise decision at the end of a 2(or more) year process will torpedo the entire effort.

If all can agree on evaluation criteria, selection of an alternative will not be so controversial. Overlay of alternatives mapped is likely to find agreement over a large part of the wilderness; where alternatives agree. go ahead and map as the preferred alternative. Then concentrate on areas of disagreement.

To boil down to a preferred alternative in the task group setting, try:

1.   Working together to reach consensus. If it's an argument over one opportunity class (say, whether to put a certain trail corridor in a primitive or semiprimitive opportunity class), look at how well one meets objectives compared to the other.

2.   Where consensus cannot be reached, agree to disagree. Document the arguments of all parties and provide whatever information will help the line officer make a decision.

Avoid voting: it creates a win-lose atmosphere.

STEP 9 – MONITOR AND IMPLEMENT MANAGEMENT ACTIONS

This step is a repeat of Step 4 on a scheduled basis. Re inventory the selected indicators, evaluate standards that have been exceeded. Evaluate whether the management actions are effectively restoring acceptable conditions. Implement actions, including a schedule for completion. Include evaluation of the management action's effectiveness -- need to know what is/isn't working.

Review: annual task force meeting is important for continuity. Keeping the task force involved beyond the initial completion of these steps is an incentive for the Forest Service in our continued commitment to managing the wilderness within the limits of acceptable change.

Situations that call for more frequent monitoring:

1.   Places where we know standards are close to being violated.

2.   Situations where we suspect change is likely to be rapid.

3.   Places where our data is poor or nonexistent.

4.   Situations where our ability to predict the effects of management actions is low. Maybe we are trying some new strategy and don't know how it will work.

5.   Places where the conditions have suddenly changed, like a new access point.

A detailed monitoring plan is necessary to direct and prioritize work. Here is an idea for how to develop a monitoring scheme:

1. Issues and objectives drive monitoring plan. State why you are monitoring.

2. Start with data already available; review what's been done. Fill in critical data gaps with new inventory.

3. Decide what to monitor from most important indicators (from step 4).

4. Describe how to monitor, sampling and measurement methods. Document!

5. Train the field people, volunteers, or students who will be doing the monitoring.

6. Go do it!

7. Create a data management system. It is best to have one person responsible for managing it. Make copies of completed forms, keep them with responsible people! For large amounts of data that you want to analyze, use computer system.

8. Analyze the data -- look for trends, patterns, serious problems that may suggest management action needed. Example: on Gallatin Forest where over 300 wilderness campsites have been recorded. we looked at average distance from lakeshore/stream and it was 50 feet (regulations say 200). Obviously, the regulation isn't working and maybe it isn't appropriate.

9. Use the information and analysis! Use it to direct annual work   planning, identify places in need of education effort. patrolling, restoration, etc.

10. Evaluate the effectiveness of the indicators we are monitoring. Are they telling us what we want to know?

Supporting Document B3b

INDICATORS FOR THE LAC PROCESS

(Adapted from: USDA Forest Service, 1992)

One of the most critical and difficult steps in the Limits of Acceptable Change (LAC) process is the selection of indicators. An indicator is a specific parameter that can be monitored to determine whether management objectives are being met. To be an indicator, a parameter must be stated in a specific enough manner to be monitored unambiguously. Management objectives are often stated in quite general terms. The basic rule of thumb is that a parameter is specific enough to be termed an indicator when it is clear how it should be measured.

Desirable Characteristics of Indicators

1. Measurable. Indicators should be quantitative - subject to measurement.

2. Reliable. Indicators should be capable of being measured precisely and accurately (repeatable measures by different personnel)

3. Cost effective. Indicators should be capable of being measured cost-effectively, generally by field personnel using simple equipment and techniques.

4. Significant. Indicators must relate to significant conditions or features of the wilderness (or PA). A good indicator should be capable of detecting changes that, if they occurred, would be considered serious problems.

5. Relevant. The types of change that are to be detected through the monitoring of indicators should be confined to changes that result from human activities, although other indicators may be selected for PAs with management objectives that minimize other types of impact.

6. Sensitive. Indicators should focus on sensitive components of the PA resource - components that provide an early warning system, alerting managers to deteriorating conditions while there is still time to correct things.

7. Efficient. Indicators are most efficient when they reflect the condition of more than just themselves, because this reduces the number of parameters that must be monitored.

8. Responsive. The types and/or causes of changes that are to be detected through the monitoring of indicators should be responsive to management control.

POTENTIAL INDICATORS

The following indicators have been proposed in different PAs, primarily in the USA. Some are better than others, but they give an idea of what might be used.

CAMPSITE CONDITIONS

- Trees mutilated or stripped of limbs
- Sq. meters of barren core
- Number of sites per given area
- Occurrence of fire rings and charcoal, litter, or human waste
- Distance between campsites
- No. of campsites within sight and sound of each other
- Campsite location within area of impact to sensitive areas such as lakeshores, streams, trails etc.
- Degree of soil compaction

TRAIL CONDITIONS

- Depth of tread below surrounding ground or grade of tread
- Width of trail
- Exposed roots
- Linear feet of trail where drainage is not controlled and erosion is ongoing
- Number of boggy portions of trail over 1 meter in length (that have created the need to step around).
- Number of social trails per Km of length.

SOCIAL CONDITIONS

- Amount of time visitor must wait for x activity/opportunity
- Number of encounters on trail
- Number of days per season that a campsite is occupied
- Group size
- Complaints
- Return visits
- Percent of time in sight of other parties
- Complaints from private land owners

VEGETATIVE CONDITIONS

- Tree damage
- No. of exposed roots
- Change in number of species and natural vegetation due to trampling, grazing
- Noxious weeds
- Diversity as a measure of desirable condition

WATER CONDITIONS (see Lesson B11)

WILDLIFE CONDITIONS

- Age and size of fish
- Changes in indicator species
- Increase in non-indigenous species
- Wildlife displacement due to human activity
- Habituated wildlife problems
- No. of reported incidents of wildlife harassment by dogs (visitors)
- Documented cases of poaching
- Reproduction rates of sensitive species

Supporting Document B3c

STRATEGIES FOR MANAGING RECREATIONAL USE OF NATIONAL PARKS

(by Robert E. Manning, Recreation Management Program, School of
Natural Resources, University of Vermont, Burlington, Vermont 05405, USA.
Taken from PARKS magazine, V.4, No.1, 1979)

National parks throughout the world are beset by a variety of management problems. These range from ecological problems such as threats to preservation of sensitive wildlife and fragile vegetation, to social/ cultural problems of competing economic uses of parklands, to administrative/institutional problems of inadequate funding and manpower. Perhaps the most threatening of all problems, and at the same time the most paradoxical, is the adverse impact, both environmental and social, of recreational use of national parks.

Some thirty years ago Aldo Leopold, one of America's pioneering conservationists, predicted that the greatest threat to preservation of natural areas would come not from outside forces such as timbering, mining, grazing, or other economic exploitation, but rather from within by means of people visiting wild areas to reap their aesthetic, experiential, and recreational benefits. Leopold expressed this view in his now classic *A Sand County Almanac* in the passage:

> But all conservation of wildness is
> self-defeating, for to cherish we must see and
> fondle, and when enough have seen and fondled,
> there is no wilderness left to cherish.

To an extent, Leopold's prediction has been borne out. Recreationists and tourists visiting the national parks have in many cases caused considerable environmental damage. Soils are compacted and eroded, fragile vegetation crushed, migration and reproductive cycles of wildlife disrupted, and water bodies silted and polluted. Visitors have had equally devastating impacts on themselves by reducing the quality of the recreation experience through crowding and congestion, and conflicting recreational uses.

Fortunately, we need not be quite so pessimistic as Leopold in viewing the situation today. Most national parks have largely retained their principal values due to development of the art and science of park management. Through dedication, creativity, research, and trial and error, park managers now have a variety of options to combat the environmental and social ills brought on by the common conditions of overuse and misuse of national parks.

Strategies and Tactics

The purpose of this paper is to review and synthesize the various approaches to recreation management in national parks and similar reserves. The focus is on management strategies as opposed to tactics. Strategies are defined as basic conceptual approaches to management, and relate directly to achievement of a desirable end or objective. Management strategies define different paths to preservation of environmental and recreational quality. Tactics are defined as tools to carry out various management strategies. As such, they have a less direct relationship with park objectives.

An example may serve to clarify this distinction. One basic approach or strategy to managing overuse of national parks is to reduce or place a limit on the amount of use allowed. Within this basic strategy, there are a number

of tactics or tools which might be used, including permit or reservation systems, higher user fees, requirement of a minimum skill or knowledge level, and physical barriers to use such as fences or dense vegetation .

Strategies occupy a higher conceptual plane than tactics. As with the above example, one must first decide if limiting use is the most appropriate approach to meeting park objectives. Only after this decision is made should individual tactics be considered for implementation. Too often initial attention is centered on various management tools which may be familiar or administratively attractive without explicit regard as to how these tools relate to overall park management strategy and objectives, and how acceptable they will be to the public.

Classification of Strategies

The remainder of this paper outlines a classification system for strategies of recreation management within national parks. Three basic purposes are served through an exercise of this nature. First, park managers may become more explicitly aware of the variety of alternatives available to deal with recreation management problems. In nearly all cases, there is more than one approach or strategy to solving a given problem and all possible approaches should be given equal consideration.

Second, an organizational framework is needed to move park management along the continuum from an art to a science. Park management has made considerable progress in development of ideas, concepts and techniques. Organization and classification of this body of knowledge is essential, just as it is for the development of all sciences.

Finally, a framework of strategies is needed to more clearly examine the role of individual park management practices or tactics. The often multiple and sometimes conflicting purposes of management actions may become more obvious when viewed from within a greater strategic perspective.

Increase Supply

Four basic strategies may be recognized for managing recreational use of national parks (Figure 1). Two of the strategies deal with the supply and demand aspects of recreation and park lands. One may approach management by increasing the supply of lands available for recreation or alternately by limiting the amount of use existing lands receive. The other two basic approaches treat the supply and demand situation as constant and focus on modifying either the character of existing use to reduce its adverse impacts or the resource to increase its durability.

Within the first of these basic strategies, increasing the supply of areas, there are several distinct sub-strategies. We may consider increasing supply in terms of time or space. With respect to time, research has demonstrated that use of national parks is typically highly concentrated in a small percentage of all potentially available hours. If some peak use can be shifted to lower use periods, then some of the pressure of overuse might be relieved. This might be accomplished through extension of traditional peak use seasons or encouragement of new off-season activities. Earlier opening and later closing dates and promotion of winter activities such as ski touring and snowshoeing are examples of how this strategy might be implemented. Some weekend use might be shifted to weekdays by such means as differential pricing, while daily use schedules might be expanded by lighted facilities, which are becoming more prevalent in outdoor recreation.

The more traditional way to consider increasing supply is through expansion of the area available for recreation. Here we may consider both real and effective area. Increasing the real area available for recreation refers to acquisition of additional hectares of parkland, and this can be done through either expanding an existing park unit or creating an entirely new unit within a park system. Effective area refers to managing existing units more intensively to provide additional opportunities for recreation. This can be approached from the standpoint of a higher level of development (e.g., providing more campsites) or increasing the accessibility of existing facilities (e.g., providing more or better roads and trails).

Limit Use

Reducing recreation demand or limiting the amount of use parklands receive is a second basic strategy for managing national parks. Again, several substrategies present themselves. An overall limit may be placed on all recreational uses. This limit may be approached indirectly through regulation of lengths of stay, in this way excluding as few users as possible, or more directly through simple imposition of use ceilings.

Alternately, managers may focus on limiting selected types of uses which can be demonstrated to have high impacts. Recreation uses with high environmental impacts should be limited or excluded where damage to park resources is apparent, and uses that are high in social impacts should be limited when the quality of the recreation experience declines due to congestion or user conflicts.

Reduce Impact of Use

A third basic strategy for managing recreational use of national parks treats demand and supply as fixed, at least in the short run, and focuses instead on reducing the impact of recreational use through modifying use patterns or activities. Use patterns might be altered with the idea of encouraging either more concentrated use or more dispersed use.

The philosophy behind the concentrated use strategy is to focus a large percentage of use on a small percentage of parkland. In this way, environmental impacts may be confined to small, intensively managed areas which have been selected originally for their high resource capability. Recreational use may be concentrated on small portions of each park, or selected parks from within a system may be chosen and managed to accommodate most use.

Recreation uses may also be concentrated on the basis of compatibility with each other. Users with like values and motivations may be grouped or concentrated together. Again, this may be done on the individual park unit level or by park system.

The strategy of dispersing recreation use relies on the philosophy of distributing use so that no one area receives damaging amounts of use. Managers may focus on distributing use over either time or space. As with supply, recreation use may be dispersed over time on a seasonal, weekly, or daily basis. It is probably more conventional to think of dispersing use over space or a wider geographical area. This can, again, be done on a park unit or park system basis.

Recreation uses may also be dispersed through separation of conflicting uses. As above, this may be accomplished on a temporal basis, through seasonal, weekly, or daily units of time, or on a spatial basis, by park unit or park system levels.

Modification of recreation activities is a third sub-strategy under reducing the impact of use. Selected recreation activities of user groups may have to be reassigned elsewhere or eliminated from the park environment altogether due to excessive environmental or social impacts. An alternative is to modify the character of recreation use. In this way potentially damaging activities might not have to be eliminated, but rather altered with respect to their timing (e.g., limited to the wet season), location (e.g., restricted to areas above treeline), or practices (e.g., elimination of woodfires).

Increase Durability of Resources

The last basic strategy of managing recreational use of national parks involves changes to the resource base. Resources may be hardened to bolster their resistance to recreational impacts. This may be done in a semi-natural fashion, through such means as planting hardier species of native vegetation, or in a more artificial way, through such engineering practices as surfacing heavily used sites.

An additional sub-strategy involves development of recreation facilities such as campgrounds, trails, and sanitary installations to serve as "lightning rods". In this way recreational use, and its concomitant impacts, are directed away from the resource base and to these developed facilities.

Conclusions

This paper has presented a classification of strategies for managing recreational use of national parks. The value of this material lies not in the classification system *per se*, for there are many possible factors upon which to base such a system. The principal value lies in the logical and comprehensive array of alternatives available to national park managers to deal with the environmental and social impacts of expanding recreation use.

Several conclusions may be reached based on this exercise:

1. Many alternative strategies exist to manage recreational use of national parks. For any given problem, there are likely several approaches to its solution, and managers would do well to give explicit consideration to a variety of alternatives rather than rely on those which are familiar or administratively expedient.

2. A related conclusion is that there is probably an overemphasis on the basic strategy of limiting recreation use because of its ease of implementation. It should be remembered that most national parks and equivalent reserves have been established for the dual objectives of preserving resources and, to the extent possible, making these resources available for public appreciation and enjoyment. Excluding people from national parks does little to fulfill this second objective. Other approaches should be explored more fully.

3. Most strategies for managing recreation involve managing visitors rather than natural resources. The preservation objective of national parks precludes large scale manipulation of natural and cultural resources. This leaves visitor populations as the principal management target. The implication is that managers will often need more accurate and detailed information on recreation use and users than presently exists. An additional implication is that park management personnel with expertise in the social, behavioral, and communication sciences are needed to the same degree as natural and biological

scientists to ensure preservation of national parks.

4. Individual park management tools or tactics can often be seen to serve several strategic purposes. For example, the potentially powerful tool of visitor information and education services can effectively increase the supply of parks by contributing to awareness of off-peak use opportunities, can limit the use of congested areas by shifting visitors to lesser used sites, and can reduce the impact of use by making visitors more knowledgeable of appropriate hiking and camping practices. The various strategic uses of park management tools should be explicitly recognized before they are implemented so as to gain multiple benefits where possible and avoid unwanted side effects where potential.

5. A general hierarchy may be recognized with respect to desirability of the four basic recreation management strategies. Increasing pressure for outdoor recreation very often warrants expansion of the supply of park areas as a justifiable and preferable alternative. Unfortunately, it can also be difficult and costly to implement. Reducing the impact of recreation use is also a desirable course of action as it slows or checks deterioration of the quality and value of parklands while at the same time retains their availability to the public. Limiting recreation use can be justified only when all other reasonable alternatives have failed or been ruled out. Restrictions on entry to national parks do not serve the two-fold objectives of these areas and will in the long run weaken broad based support for national park preservation. The final strategy of increasing the durability of park resources may be necessary and desirable in limited areas and instances. When viewed in conjunction with basic national park objectives of resource preservation, however, this strategy is unacceptable on a large scale basis.

Lesson 4

USE OF MAP AND COMPASS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   Effectively use a topographic map.

2.   Use a compass as a protractor.

3.   Use a compass to follow a set direction.

4.Orient themselves in the field with a topographic map and compass.

REFERENCES:

Corfield, 1984, Ch. 7; Geary, 1980; Kjellstrom, 1975; Peters, 1982; Supporting Documents B4a and B4b.

PRESENTATION:

1.1Explain why one needs to know how to use a map and a compass:

- To allow one to work more easily and efficiently.

- To be able to locate oneself and not get lost in the field.

- To draw the route of a trail on a map.

- To know where the boundaries of the PA are located.

- To be able to get from one point to another with minimal difficulty.

1.2Explain what a topographic map is (each participant should have a topographic map, preferably a copy of the same map):

- Scale: numeric and graphic (practice with them the measurement of distances on the map);

- The orientation of the maps (true north, magnetic north, and magnetic declination);

- Conventional symbols: urban areas, rivers, lakes, roads, etc

- Contour lines. These require an involved explanation. Point out the information that can be obtained from contour lines such as altitude, topography, and geomorphology. Use graphic examples of different topographic formations such as valleys, mountains, flat areas, steep slopes, and depressions.

An aid for teaching about contour lines is to take a photograph of a

mountainous terrain and show how the contour lines on a map relate to the reality of the landscape. Projecting them together, or one right after the other, helps to demonstrate how one can visualize the landscape with a topographic map. A paper mache landscape, preferably a mountainous one, is also very helpful, as participants can look down at it, and then contour lines may be drawn on it. The result is a 3-dimensional topographic map.

1.3 Explain the parts of a compass (each participant or group of participants should have their own compass).

- What is magnetic declination? This should be indicated on the map. Explain that most topographic maps are oriented towards true north, not magnetic north. Show how the arrow in the compass can be moved, or how to mark the face of the compass using the point of a knife to adjust for magnetic declination.

To have participants visualize declination, ask one participant to stand up and represent the true north pole, and have another stand where magnetic north would be. Then have the other participants walk back and forth to show how declination would change as their position on the landscape changes.

2.1 Show the methods used to orient oneself using a topographic map and a compass.

- If the map is not an official topographic map, it may be necessary to align the map to true north.

- Practice taking a direction from the map using the compass as a protractor and using the compass to locate the same direction on the ground.

- Learn how to locate oneself on the map using the bearings taken to two or three known points on the horizon that can be identified on the map. The position where one is located on the map is where the compass bearing lines from one's own position to those points cross (triangulation). You can use triangulation if you have 1) 2 or more terrain features in sight that you can positively identify, and 2) the direction (bearing) that each of these features is from you. Then you can determine your exact location on a map:

a. Convert (add magnetic declination) each compass bearing to a map bearing; set compass for map bearing.
b. Place compass on map with direction of travel arrow pointing <u>toward</u> the feature (because you took the bearing with it pointed that way). Rotate the compass until north of compass housing lines up with north on map and draw a line back across the map. You must have been somewhere along that line to have obtained that bearing. To be precise, use a lead corner and the long edge of the compass base plate-that is parallel to the direction of travel arrow and will give you an accurate line placement.
c. Repeat for a second feature. The intersection of the second line with the first is your location.
d. If you are on a known road or stream, sighting on one feature is adequate; you are located where the line you've drawn back from that feature on the map crosses the road.
e. Sighting on more points, more distant points, and points in widely differing directions will increase the accuracy of the triangulation.

- Lay out a direct route to follow in order to arrive at a given point.

- Determine names and altitudes of unknown features in the field. In order to identify land features, you must know your exact location on a map, and the bearing from you to the feature to identify.

The process to follow in order to identify a distant feature is:

a. Convert the compass bearing to a map bearing; set compass for map bearing.
b. Place compass on map with one back corner on your location and direction of travel arrow pointing away from that spot. Rotate compass until north in the compass housing is in line with north on the map; draw a line along compass edge from your location from your location across the map. The feature you want to identify must be somewhere along that line.
c. Use your head: estimate distance and observe the shape of the feature and its surroundings, in order to identify it.

2.2 If time allows, explain other techniques for orienting oneself in the field:

- Use of a watch as a compass on sunny days.

- Use of an altimeter.

- Natural features (for example: mosses which grow predominantly on one side of the tree (north in southern hemisphere or south in the northern hemisphere); the prevailing direction of the rivers or estuaries (be careful as this depends upon the type of terrain).

    - Stars and constellations.

3.1 Measure distance by pacing (each time the right foot touches the ground when walking is considered one pace). Each person has a different length of pace. To determine this length, measure a distance of 100 meters and have each person measure the number of paces needed to cover this distance. This will allow for determining the length of each person's pace on flat ground. When pacing up a slope one's pace will be shorter due to the tendency to shorten one's steps when climbing. Similarly when pacing down a slope one's pace will be longer due to the tendency to lengthen one's steps. It is useful to measure 100 meters on slopes of 15% and 30% so as to determine the length of one's pace on such terrain.

ACTIVITIES:

1. After covering the material in the classroom, go to the field to practice with the compass. Ahead of time, lay out a circuit in the form of a polygon leaving notes on a tree, a rock, or other fixed objects at each corner which gives the compass bearings and distance to follow to the next corner. Each participant is then free to begin at any one of 6 or 7 stations or corners of the polygon, using the compass and measuring distances in paces in order to find the next station, until completing the circuit.

Supporting Document B4a

WHAT IS A MAP

(Adapted from Geary, 1980)

Road maps will get you to a wilderness area, and special maps will help you plan a trip, but the most basic and important wilderness travel map is the topographical map. "Topos" are very detailed maps including land features, water, elevation and man made structures.

Most outdoors people have at least seen a topo, as one is almost always posted at a ranger station in state and national parks. The topo is an essential tool for park rangers and managers. However, many people, including parks people, don't understand the language of these maps, and so miss a lot of important information.

A first encounter with a topo can be confusing. It symbols and three-dimensional representation are an unfamiliar way of viewing the world. Some areas are blue , some green, some simply white. Red and brown lines seem to be everywhere, some close together, some far apart. The green shaded areas represent vegetation, and blue areas and blue lines represent water, either rivers and streams or lakes or ocean.

Tiny black squares represent buildings, and other black shapes a school (with a flag) or a church (with a cross).

Latitude and longitude numbers indicate which part of the world the map represents. Latitudinal lines indicate distance from the equator; longitudinal lines indicate distance from the Prime Meridian, a line drawn from the North Pole through Greenwich, England, to the South Pole.

A topographical map is oriented along true north and south meridians. The left and right margins, therefore, point to true north and south. The latitudinal and longitudinal lines are shown by numbers in the map margins. Of course a compass will point to magnetic north rather than true north, so when using a map and compass together, this magnetic declination must be taken into account.

In the margins of a topo map is information such as magnetic declination, names of adjoining maps, scale ruler guide, and dates the map was made and last field checked.

In the top right hand corner are the name of the map and the name of the province or state which the map covers. The map is commonly named after a prominent feature such as a high peak, river, or city or town. In the bottom right corner are the name of the map, latitude and longitude designations, the last time this map was field-checked, and usually road classifications (light-duty, jeep trail, highway, pack trail etc.). To the left along the bottom margin is an outline map of the country or province with a block box indicating the location of this particular topo within the country or province.

In the bottom center is the scale, both in figures and on a ruler. Below the scale is the contour interval for the map. Next to the left is the magnetic declination symbol, showing the directions of true north, grid north and magnetic north. Grid north is of interest only to mapmakers and has no real value to the outdoorsman.

Maps are useful in planning a trip, and for indicating to others where you have been, and where you encountered relevant features or situations for your protected area.

CONTOUR LINES

(Taken from MANUAL DE GUARDARECURSOS, Guatemala)

Contour lines demonstrate the actual shape of the land, that is, its topography. Contour lines are imaginary lines which join points at the same elevation. (Fig 1). In the example of a mountain, (Fig. 2), the numbers represent elevation or altitude in meters above sea level, of the mountain. Each person, animal or tree which is on the line or contour line, is at the same elevation.

Fig. 1   Fig.2

The contour lines do not split up or branch out. Every line eventually will terminate upon itself. It may close out on itself on the same map, or on the adjoining map. (Fig.3). If the curves seem to come together, this means that one is literally on top of the other. (Fig. 4). Here the lines for 300 mts. and 400 mts. are seen together because there is a completely vertical cliff. Therefore, when seen from above, they appear to be together.

Fig. 3   Fig. 4

If the slope of the land is unchanging over a significant distance, the
distance between contour lines will be equal. (Fig. 5)

Fig. 5

If there is not much slope, then the contour lines will be fairly well
separated. If there is a steep slope, they will be close together. The steeper
the slope, the closer they will be. (Fig. 6) After every 5 contour lines they
will appear a thicker one which will indicate the altitude that it represents.
 These lines are indicated every 100 mts. (Fig 7).

Fig. 6   Fig. 7

A series of closed contour lines which rise in elevation toward the center indicate a hill or mountain. (Fig. 8) If they decrease in elevation toward their center, they indicate a depression.

Fig. 8

Supporting Document B4b

HOW TO MAKE A SKETCH MAP

(Taken from the PARK GUARD MANUAL, CONAP, Guatemala)

A simple sketch map can be made to represent a specific area. To make a simple map one needs a sheet of paper and a ruler marked in millimeters, and one needs to know some reference points such as rivers, lakes, mountains, or road crossings. It also is necessary to know the length of one's pace so as to be able to measure distances on the ground.

Let's say that you want to make a simple map of a camping area on the west side of "Nature's Garden" PA.

1. Orient yourself by observing the movement of the sun or by looking for known points of reference, in this case the known point is a trail crossing. The crossing is point 1, which is marked by an X on the map, and number 1 is written on the right side of the paper.

2. Point 2 is a tree which is located where another trail crosses from the right. Slowly walk towards the tree, counting your paces. Measure the distance between point 1 and the tree using the length of your paces. Connect the two points with a line on your map. The distance between the two points is found by multiplying the number of paces between them by the length of your pace.

3. Select another point of reference
and verify in which direction it lies.
Walk slowly, counting the number of
paces to the new point of reference,
and mark it on your map as point 3.

4. Continue going around the camping
area and marking the distances on
your map until you return to the
original crossing, always trying to
walk in a straight line.

5. The finished map should
include an arrow which shows
which direction is north,
the scale at which the map
was made, the name of the
area, the name of who made
the map, and the date on
which it was made.

Lesson 5

PATROLLING TECHNIQUES

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   Explain the objectives of patrolling.

2.   Describe routine patrols and special patrols.

3.   Plan and execute successful patrols in their PA.

REFERENCES:

Corfield, 1984, Ch. 14; Moore, 1984, Chapters 12 and 18; Supporting Documents.

PRESENTATION:

1.1 Introduce the lesson by emphasizing that the basis of management and administration in a PA is the knowledge that the personnel have of the PA resources and the amount and effectiveness of protection given to those resources. The patrol is one of the fundamental elements for reaching these objectives.

1.2 Present the reasons why patrols must be done in a PA:

    - Protection of the values of the PA.

    - Ensure visitor safety.

    - Supervision of authorized users.

    - Compile information on aspects of natural history.

    - Prevention of inappropriate uses or infractions.

    - Encourage respect for laws and rules.

    - Maintenance of facilities.

    - Attend to visitors.

    - Public relations: converse with neighbors and PA users.

- In general, get to know the PA.

2.1There are two types of patrols, routine and special. A routine patrol is
      one which is done on a daily schedule without variation as to its order,
      mission, or objectives. For example, patrolling a trail to see that
      there are no problems and that the users are respecting the rules. A
      special patrol is one which is done with a given task or mission with
      orders, instructions, and special objectives arising from circumstances
      which are out of the ordinary. An example would be a patrol done to
      search for illegal hunters based on information that they will be in a
      certain sector for a given time.

3.1With the participants go over the Supporting Documents B5a and B5b, or make
      a presentation based on these. One should focus on:

      - the importance of having goals and objectives for a patrol;
      - the need to carefully plan each patrol;
- taking advantage of the factor of surprise while dealing with illegal
      activities;
      - taking data and observations in a systematic manner.

3.2.Special techniques for detecting and stopping illegal activities ,
      especially poaching, should be explained. These are generally site or
      country specific.

4.1Another lesson related to this one is that of Survival Techniques. If the
      theme is relevant for the course, then review Lessons A14 and B7.

ACTIVITIES:

1. Ask the participants to describe a typical patrol in their PA including
time, type of area covered, number patrolling, distance, objectives, etc.

2. Have the participants divide into small groups and plan a patrol according
to assigned instructions and objectives. The patrol should be planned for
more than one day in terms of the distance to be covered and time required,
but this should not be told to the participants. Rather, they should be able
to deduce this from the instructions given. Compare and critique the results.

3. Ask the participants to plan, prepare, and carry out a patrol in a sector
of a PA or in another nearby wild area. They should prepare the necessary
reports upon finishing the patrol.

Supporting Document B5a

THE PATROL

(Adapted from the pamphlet "PATROLS", prepared by José Joaquín Gamboa,
Director of Park Wardens, National Park Service of Costa Rica)

PLANNING

A. Determine your objectives: where are you going and why? Is it a routine or a special patrol? Are there specific goals?

B. Group composition: how many and who are going? Do some people have special abilities that favor their participation? Under normal circumstances, it is best if two people go together. They make less noise, and walk faster than a larger number of people, and two are safer than one in case of some mishap.

C. Route selection: choose the route which is the most appropriate for the objectives of the patrol. Nevertheless, it is best to not always follow the same route for routine patrols, since the element of surprise is important. Also one shouldn't always have the same departure time so any potential law-breakers can not learn the routine and plan their illegal activities to avoid the patrols. When organizing a patrol, one should think of the critical areas identified in the protection program, as these are where most of the protection efforts should be focused.

D. Equipment: Take the necessary equipment depending upon the conditions.

- Clothes, boots (uniform).

- Sleeping bag.

- Tent.

- Food and water.

- Matches.

- Map and compass.

- Backpack.

- Flashlight or lantern.

- Notebook or booklet for making notes.

- Pencil.

- First-aid kit.

- Personal documents (identification card).

- Booklet of applicable laws and regulations.

- Machete.

- Firearms.

- Transportation, if not by foot.

- Binoculars, camera.

- Two-way radio.

Always leave instructions as to the route you plan to follow and when you plan to return. In this way, the patrol can be more easily located in case of an emergency.

E. Analysis of possible situations: Before beginning a patrol, analyze the possible situations that could occur. For example:

- The steps to follow in case of locating illegal activity.

- Position that patrollers should take.

- Security measures to be taken.

DURING THE PATROL

A. Speed: Normally "marathon" patrols are of limited value since few good observations are made. Also the noise of such a patrol would scare away animals or illegal activities in the vicinity. As such, depending upon the distance to be covered and the zone, it is recommended to maintain a moderate speed, optimal for carrying out a good patrol and for making good observations.

B. Observations: The state of the trails should be observed along with flora, fauna, tracks, hydrology, archaeology, and the climatology of the area, among other things. These observations are important for future investigations that might be done in the area, and also for the patrollers to begin to recognize all the details in the PA, including changes that occur over time.

C. Silence: Silence is best as it facilitates the observation of everything.

D. Activities: This depends upon the objectives of the patrol. If it is routine, one should converse with PA visitors and neighbors, and do small tasks of repairing trails or buildings. However, ONE SHOULD NOT FALL INTO THE ROUTINE, even if it is a routine patrol. Change the route and the departure time.

RECOMMENDATIONS FOR A SPECIAL PATROL

Night Patrol:

1. Take advantage of the window of darkness.

- Walk without light.

- Walk close to buildings, shadows, trees, etc.

2. Stay motionless in one place for a long time, listening and observing.

3. Patrol in pairs if the work is dangerous for the warden.

Trail Patrol:

1. Keep a look out for damages.

- to water bars

- to signs

2. Take note of the conditions of the flora and fauna, and of the general environment.

3. Insure that the area regulations are being respected and carried out.

4. Speak with the visitors.

5. Don't conduct all your patrol on the trail; get off it a ways and return to appear "by surprise" in another section.

Boundary Patrol:

1. To identify:

- damaged boundary markers.

- new access points created.

- wood cutting, grazing, or other illegal activities.

2. To clean the boundary path.

Horse Patrol:

1. Is very useful where there are many people as it is impresses them.

2. Is not good on fragile trails.

3. Requires special training in the care and use of the horse.

Airplane or Helicopter Patrol:

1. Is very useful for large areas or those difficult to access.

2. Is very expensive.

3. Can upset the fauna.

AFTER THE PATROL

Clean and maintain the equipment.

Report on that which happened.

A report of a patrol should contain the following information:

1. Name of the PA, and of the sector of the PA.

2. Date of the patrol and of the report.

3. Officials who participated in the patrol.

4. Objectives.

5. Areas and sites visited.

6. Distance covered in kilometers.

7. Means of transport utilized.

8. Development of events: explain in detail what happened.

9. Observations of fauna, flora, etc.

10. Observations of equipment used or damaged.

11. Recommendations.

Supporting Document B5b

<u>PROTECTION PATROLS</u>

(Prepared by Bill Wendt, SPN, USA)

Patrols are a method of PA protection that date back to the early years of park administration. They can be very useful for compiling management information for the PA, but they can also become sterile expeditions, if no systematic planning is done. At times patrols have been carried out by inexperienced personnel, with no adequate planning, with little supervision, and without paying attention to their findings. It is easy to imagine the results of those efforts.

On the other hand, with well organized patrols important information can be gathered and, if the system of reports is adequate, they can be very important in the development of future plans and other management activities.

Generally administrative decisions are made by a supervisor sitting behind a desk who depends upon his personnel to obtain precise information. The individual who this supervisor relies on most is the warden who is in the field, in direct contact with visitors, and who has protection tasks to carry out. The quality of information that the warden provides to his superior is directly proportional to his importance within the organization.

Those people who are assigned to patrol literally are converted into the "eyes" and the "ears" of the administrative directors. The systematic gathering of information during the patrol is the basis on which posterior decisions can be made. The use of a fieldbook for entering daily notes is very important as a memory aid. Besides this, each sector also needs a notebook with daily entries to create a history and to give continuity to the work.

For example: "Work Center. Sector of Lake Isabel, March 25, 1988. Good weather, completely clear sky with little wind; climbed Ines Volcano from Lake Isabel in six and a half hours via the main, central ridge; almost no snow along the entire route; difficult to breath near the top as there are fumaroles with sulphur odor; the volcano thunders sporadically but fairly regularly; the canyon of the volcano is about 200 meters deep and the crater is about 180 meters across (confirmed by aerial photographs). The entire mountain range from Widow's Ridge in the north to Black Volcano in the south can be seen, including the Cascade Range. Returned down in two hours and ten minutes."

Another example of this type of entry: "March 18, 1983. Time to the Canyons in jeep, 3 hours and 45 minutes. The Canyons to Sulphur Springs 3 hours on horses, via Lake Isabel. Patrol done with John Doe, Fred Casey, and Leo Smith. Put a dent in the hood of jeep ONU-620. Saw a male woodpecker. Good weather with clear skies. Noticed tree leaves three times normal size in Jones Valley. We removed a colt from the park."

As we can see, we have basic information which could be useful to someone who

hasn't been in the zone for long and will be useful for obtaining information
about individuals (wardens) under one's direction.

Each warden requires special abilities, knowledge, experiences, and most of
all, a developed sense of observation to responsibly carry out protection
patrols. It also is necessary to know the people in the zone and their
activities.

Wardens not only carry out patrols, but also are in charge of delegating
responsibilities to temporary wardens. If they know the land well, they can
give temporary wardens a list of functions to carry out which can later be
reviewed during an inspection patrol.

Patrol Guides

Service to the public
Example of good conduct
Reports of all that was observed
Vigilance and observation of the conditions
Interpret all that is seen
Control by presence
Efficient method to keep order

There are different types of patrols, and generally one should not patrol in a
fixed pattern. It is important to give the impression of the all-present
warden in such a way that no one can predict where or when he might next
appear. As such, it is necessary to make a conscious effort to avoid a
defined pattern. Once in a while one should go back and repeat the route.
One should change his pace, sometimes traveling rapidly and sometimes more
slowly. Eat and drink coffee at different times and in distinct locations.
The goal is to be systematic without having a system!

Day Shift

Be visible in patrols during the day. Walk, ride, and drive where people can
see you. Although visitors often ask dumb questions, one should remember that
a friendly answer can win a friend for the PA. Know the attitudes and
interests of the neighbors, colonists, concessionaires, and frequent visitors.
 In this way sources of valuable information can be developed.

There are no limits to the type of incident that might be considered
suspicious. One person moving between cars in a parking lot looking for
things to rob, is one example. A car with keys left in it is another. A
person handing out political leaflets might be considered another.

One should make the effort to observe, especially in an area that is well-
known or a route that is always traveled. It can be a game to find something
new in a well-known route, whether a new flower, a piece of rusted barbed
wire, a recently cut bush, or a dead animal.

All of us have an efficient secretary named the "brain". It once happened that after walking over a well-known trail, a person had to repeat the route because he remembered seeing something that was out of the ordinary without remembering what it was. He found a cut fence. Nevertheless, sometimes the brain is not so efficient, and one has to make it work by looking to the right and to the left, looking up and looking down, until finding something different.

Night Shift

Take advantage of the darkness and walk without light near buildings. Spend time in the shadows and in the darkest areas. Stop and listen at the entrance to buildings. In this way one can hear in a moment if someone is engaged in an unlawful activity and have the advantage of surprise. Anything which seems out of the ordinary should be investigated.

Building Checks

Checking the security of buildings will be one of the main functions of a warden or guard during the night shift. Opening or pushing on each door will help very little. When checking a door that has been forcibly opened, a flashlight should be used to see if there are signs left by some tool. The bolt of the lock generally is made of bronze which can be easily cut with a hacksaw. If something catches your attention around the door, it should be opened cautiously so as to not warn anyone on the inside.

Skills of a Patroller

a)Highway patrol - use of the automobile

-Drive 8 km/hour more slowly than the rest of the traffic. Watch the traffic
         in both directions.

-Clean vehicle, appropriate equipment, full tank of gasoline (to be ready in
         case of an emergency). Dressed in uniform and hat.

-Avoid a routine. No one should be able to predict where the patroller will
         be or when he will arrive.

-Patrol patterns: Make a "U" turn and return on the same route, use paths,
         park the car and walk all of the trails in the assigned area.
         Observe both roads at an intersection. In other words, the patrol
         should move around.

-During the night use the light well, search for tracks by keeping the light
         at a low angle.

-Walk in the darkness.

-Look for things that are out of the ordinary.

-Leave false tracks on dirt paths.

-Set the alarm clock for 3 a.m. and patrol for an hour.

-Keep a diary of the patrol activities.

b)During storms

-Be the first to go out. This promotes good relations with other divisions if
          the patroller can help them with information about weather
          conditions.

-Inform people about the conditions of the roads and trails and move rocks or
          tree trunks, especially in blind curves. Pick up garbage. (An
          example from the Sequoia National Park in the U.S.A., the park
          superintendent would put his initials on empty beer cans found
          along the road. There were serious consequences if the inspection
          patrol did not pick them up!) The highway conditions should be
          kept updated.

     -After a rain storm, foot trails should be inspected to see if there
          have been landslides or treefalls.

c)Patrols in campgrounds

-Use horses; talk to the people.

d)Patrols of foot trails

-See if there are damages to the trails, if waterbars have broken, if ditches
          have caved in, or if signs have fallen.
-Ride a clean horse and wear a uniform.
-Enforce rules on open grazing.
-Look for open fires.
-Keep formal notes on observations made of wildlife. Conditions of wildlife,
          of trees, and of the overall environment.

e)Boundary patrols

-Plan for the number of signs necessary and carry some signs along
-Search for violators who cross the PA boundaries to cut wood or tend to
          livestock.

f)Visitor protection

-Debris on a paved trail.
-Loosening of large rocks.
-Potential avalanches of snow, mud, or rock.
-Dangerous or high-risk trees or standing tree trunks.
-Children floating on inflatable rafts.

Lesson 6

ADVANCED FIRST AID

OBJECTIVES

By the end of this lesson, the participants should be able to:

1. Appropriately apply the advanced first aid techniques learned in this lesson.

2. Appropriately apply at least two advanced techniques which are relevant to the PA that he/she represents.

REFERENCES

PARKS Magazine, Vol. 4, No. 1; Red Cross instruction books, or equivalent; Werner, 1992; Wilkerson, 1975.

PRESENTATION:

It is <u>extremely</u> important to obtain a qualified instructor to teach first aid. Normally the Red Cross or equivalent organization will have instructors that can collaborate with protected area first aid courses. Avoid the temptation to obtain a medical doctor, unless he/she is especially qualified to teach first aid. Normally doctors do not have the equipment, knowledge or experience to teach this specialized topic.

To ensure that participants get the most out of this lesson, they should already have passed a basic first aid course (Lesson A9). Normally the advanced course taught by the Red Cross consists of 40 hours of instruction. If there is time, it would be a good idea to teach that course to participants. For purposes of this lesson, a different approach is suggested. After a brief review of the basic first aid course, the instructor should deal specifically with first aid problems that are specific to the PAs represented by the course participants. The course should last a minimum of 3 days, in order that participants have enough time to thoroughly practice what they are taught.

1.1 Review of basic first aid course:

- What is first aid
- The ten rules of the first aid treatment
- Priority treatment for wounds (breathing, bleeding, shock)
- Basic treatments: breathing (CPR), bleeding, shock, fractures, cleaning and bandaging
- Transporting the patient

1.2 Go into detail about those first aid situations which are likely to present
       themselves in the PAs represented in the course. Some of those
       situations might be:

- Snake bite
- Heat exhaustion, heat stroke
- Frost bite, hypothermia
- High altitude sickness
- Insect bites
- Food poisoning (especially from seafood)
- Drowning
- Transport of patients with complicated fractures
- Burns
- Immobilization of fractures
- Poisoning (alcohol and others)
- Heart attacks
- Gunshot wounds

If participants have not received training in cardiopulmonary resuscitation
(CPR), they should receive at least 6 hours of instruction and practice it.

1.3 If the course is composed of representatives of various PAs, then make some
       effort to ensure that participants are able to teach what they have
       learned to their PA colleagues upon their return. This might be done by
       spending some extra time having the participants do practice teaching of
       what they have learned during the course to the other participants.
       Constructive criticism should be offered, both by the instructor and the
       other participants.

ACTIVITIES

1. Practice what has been learned in class.

2. Present verbal hypothetical situations and ask participants to respond
according to what they have learned in class in order to resolve the problem.

3. Take the group in to the field and arrange first aid problems with patients
who simulate various types of first aid situations.

Lesson 7

SEARCH AND RESCUE

(Prepared by James Bellamy, United States National Park Service, 1993)

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Evaluate the problem of a missing person after receiving the first report.

2.   Establish a search area.

3.   Identify and deploy human, financial and equipment resources for a search.

4. Select the best search techniques and the appropriate order in which to utilize them.

5. Describe the importance of establishing a set organization and its function in the management of a search.

6.   Describe the importance of previous planning.

REFERENCES:

Setnicka, 1980; May, 1973; LaValla, Stoffel, and Wade, 1982; MacInnnes, 1972; Wilkerson 1975,

PRESENTATION:

The need for wardens to be trained in this area depends upon the type and size of the PA in which they work. Any large PA, or one that is surrounded by large areas of wildlands, should have one or more people trained in search and rescue techniques. Obviously, the natural environment of the PA will determine many of the details concerning the method of search and rescue to be applied. Yet, there are basic concepts applicable to any situation. In areas where these problems are uncommon, agreements should be entered with other competent groups that can respond to these needs when they arise (climbing clubs, military groups, Red Cross). This is an important component for insuring the protection of visitors.

I.O   BASIC CONCEPTS OF A SEARCH AND RESCUE

1.1   **The search is an EMERGENCY**

    Why?

    a. The most obvious reason is that the lost person may require urgent medical help.

    b. The lost person may lack protection from the environment.

c. In some cases, the lost person may need protection from himself.

    d. Possible deterioration of the weather.

    e.With the passage of time and due to the weather, the   tracks may deteriorate. The sooner that the search is begun, the more likely it is that the person will be found.

It can be difficult to justify the urgency of beginning a search as soon as possible, as often when the news is received of a missing person, the individual simply has not returned on time. Other individuals survive without problems and find their way back to civilization. In some situations it is reasonable to wait a period of time before beginning the search. In other situations it is critical to begin immediately. In all cases <u>something</u> should be done immediately, even if it is no more than to make an action plan.

1.2 **The probability of success is directly related to the size of the search area.**

The "search area" is a circle defined by the maximum distance that the subject is capable of traveling from the last point where he was seen.

The search area gets larger as time passes, and it grows quicker than the distance that the subject travels. Each time the subject travels a certain distance, the diameter of the search area increases by double this distance. That is, if the subject walks one kilometer, the search area increases by a kilometer in all directions.

A rapid initiation of the search on the ground limits the size of the search area.

1.3 **The search is a classic mystery.**

The search for a missing person is like a plot from a Sherlock Holmes novel. All the evidence can be discovered if one does the investigations and interviews correctly. One must know what evidence to look for. One should identify the last point where the subject was seen. Possible destinations should be identified. The event of getting lost should be recreated. The possibility should be investigated that the subject has returned to his house, to a friend's house, has gone to another place, or has been victim of a crime.

1.4   **Search for evidence rather than for the subject.**

There are more pieces of evidence than there are subjects. This evidence will guide one to the subject. Each lost person leaves signs such as scents and tracks. Finding these signs facilitates the search. Other types of evidence include clothes, cigarettes, and such things as light from a flashlight, fires, signals, shouts, and broken or altered vegetation.

1.5 **Inquire if the subject has left the search area.**

A search without a subject makes no sense. The search rapidly increases in

difficulty if it is not certain that the subject is within the search area. Check the obvious places such as the subject's home. Find out if he has gone to another place without anyone knowing. Also it should be confirmed that there really is a subject, because the report might have been wrong or the subject may have been found by someone else. If he has an automobile, find out if it is still parked. Get in contact with the local hospital and with the local police.

1.6 **Use the technique of combing the area as a last resort.**

Many searchers are required to comb a small area. The probability of finding a subject is much greater if these searchers are used to pursue other tactics. This will allow for covering more ground as will shown later.

2.0   EVALUATING THE PROBLEM

2.1 First Report

The initial contact with the individual who brings the first report of the missing person is very important.

1. Personally speak with the individual.

2. Be sure to write down both his name and where he can be reached after the interview.

3. Completely fill the form with all the information needed (see Supporting Document B7a). Without filling the form it is very difficult to remember all the information that should be obtained.

4. It is impossible to get too much information.

5. From this first report, one should be able to determine:
   a.   If there is a problem.
   b. The seriousness of the situation, or its potential to become serious.
   c. Where is the problem?
   d. Who is related to the problem?
   e. How did it happen?
   f. When did it happen?
   g.   What will be done now.

2.2   Determining the Urgency of the Search

A search should be immediately begun for children, elderly, mentally handicapped, and physically handicapped individuals. Other factors such as dangerous terrain and bad weather also should stimulate a rapid start of the search. The urgency increases if the person has been lost before, if much time has passed since the subject disappeared, and if there is much external pressure.

The following is a classification of the relative urgency of some factors related to the search. The lower the number, the higher is the relative urgency:

Factor	Rank
Subject	
- Age	
- Very young	1
- Elderly	1
- Others	2-3
- Medical condition	
- Hurt or sick	1-2
- In good health	3
- Dead	3
- Number of subjects	
- One alone	1
- More than one (together)	2-3
- Weather condition	
- Bad weather at present	1
- Bad weather forecast (8 hours or less)	1-2
- Bad weather forecast (more than 8 hours)	2
- Good weather forecast	3
- Equipment	
- Inadequate for the environment	1
- Doubtful for the environment	1-2
- Adequate for the environment	3
- Experience	
- No experience, doesn't know surroundings	1
- No experience, knows the surroundings	1-2
- Experienced, doesn't know surroundings	2
- Experienced, knows the surroundings	3
- Terrain and dangers	
- Difficult terrain or dangers present	1
- Few or no dangers present	2-3

Something should be done immediately, even if only a detailed plan in case the problem becomes more serious.

3.0   DEVELOPMENT OF A SEARCH PLAN

After objectively evaluating the problem, a plan of operation should be made. The plan can begin simply and develop further if needed. At first it can consist of a quick search by one or two searchers. However, for more urgent cases, it can be more complex, mobilizing many searchers. In any case it should provide for the protection of the evidence (last point where subject was seen, articles that have his scent, tracks, etc.). It is advisable that it be written. The planning should not be done alone unless the search is very simple. Basically, the plan establishes:

- Where to look? (Strategy)
- Establishment of the limits of the search area.
- Division of the search area.
- How to find the missing person? (Tactics)
- The methods to be used.
- The manner in which resources will be deployed.

3.1   Strategy (Where to look?)

A.   Methods for Establishing the Search Area.

      Theoretical Method.

According to this method, the search area is a circle with a radius equal to
      the distance that the subject could have walked in the time that has
      passed.

      Statistical Method.

Investigators have studied the reports of many incidents of lost people. They
      have made tables to help calculate the probable zones in which to locate
      the missing person.

      Subjective Method.

Subjective considerations for establishing the search area include:
      -Natural barriers and terrain features (wide river, steep cliff, etc.).
            -Physical evidence found (clothing, wrappers,
                 etc.).
            -Historical information of previous incidents in the area.
            -Intuition based on the circumstances.
            -Physical and mental limitations of the subject.

      Deductive Method.

This is a process of deductive reasoning beginning with the facts and
            evidence, and arriving at a conclusion that was not initially
            obvious.

      B.   Conduct of Lost Persons.

The general factors that influence the conduct of a lost person are state of
            health, experience, and physiological effects of the environment.
             The conduct of some categories of lost people can be
            characterized as follows:

      a.   Children 1 to 3 years
            -Walk aimlessly without specific objectives.
            -     Lay down and sleep.

      b.   Children 3 to 6 years
            -     More mobile; defined interests; try to find their way
                  home.
            -     Try to find a place to sleep; some will not speak with
                  strangers.

      c.   Children 6 to 12 years
            -Normally oriented to familiar surroundings.
            -Intentionally get lost or hide, but usually return at
                  sunset; have the same fears as adults.

            d.   Elderly (over 65 years of age)
                    -       Can be senile.
                    -       Are easily attracted.
                    -       Can be somewhat deaf.
                    -Can be without adequate clothing; tire easily.

            e.   Mentally retarded individuals
                    -Act similarly to children 6 to 12 years of age.
                    -       Frequently do not respond.
                    -       Will remain hidden for several days.
                    -       Do not help themselves.

    C.   Division of the Search Area

It is best to divide the area into sectors. For various reasons it is best to
            do so at the beginning. Natural barriers are effective
            boundaries. Different search teams can be sent to different
            sectors, or the search can be make in one sector after another,
            depending upon the situation. Different sectors can require
            different search resources to optimize efficiency (dogs,
            airplanes).

    D.   Investigation

It is likely that more information will be needed than that obtained with the
            first report. It is useful to initiate an intensive investigation
            as soon as possible. This can be done by certain individuals
            while others take charge of the initial planning and the start of
            the search.

            a.   General Principles of the Investigation:
                    -The investigation should begin immediately (with the first
                        report).
                    -The investigation should continue until the subject is
                        located or until the operation is suspended.
                    -The investigation should be a function apart, conducted by
                        professionals.
                    -One investigator alone cannot obtain all the information
                        adequately.
                    -It is better to get too much information than to not get
                        enough or obtain it too late.
                    -Construct a complete portrait of the   subject's
                        characteristics.
                    -       Allow the portrait to offer directions, but....
                    -       Don't form opinions too early.
                    -The search for evidence is a continuous process.
                    -Never underestimate the value of a piece of evidence.
                    -Treat each case of a missing person as if it had criminal
                        possibilities until proven otherwise. The
                        possibilities include:
                    -Intentional disappearance.
                    -       Homicide.
                    -       Kidnapping.
                    -If a dead person is found, protect the body and the scene

until the competent authorities arrive. In the case
of a seriously injured person, protect the scene.

      b.   Information to Compile and Possible Contacts:
-Complete portrait of the subject when last seen:
     companions, family, friends.
-Equipment he had: companions, family, friends.
-Projected route and travel plan: companions, family,
     friends.
-Actual route: witnesses (hikers, etc.)
-Subject's experience: companions, family, friends,
     companions in previous excursions, work colleagues.
-Physical condition: companions, family, friends, doctor,
     work colleagues.
-Mental condition: priest, and the same as for physical
     condition.
-Recent changes in conduct or crisis: the same as above...
-Habits, medicines, use of alcohol or drugs: the same...
-Mental attitude (how does he react when lost?): the same...
-Harmony with family, friends, work colleagues: the same...
-Criminal antecedents: family, friends, work colleagues,
     police.
-Economic condition, debts, overdrafts: family, friends,
     banks, creditors.
-Confirmation of equipment (shoes, footprint, etc.): family,
     friends, shoemaker.
-Interests, favorite pastimes, how to attract subject:
     parents, friends, companions, work colleagues.
-Examination of the subjects antecedents: family, work
     colleagues, other companions, police.

3.2   Tactics (Methods of Searching)

Tactics are the specific methods of searching for the subject. They can be
combined. According to the situation, one can begin with one or several
and later change to others. Some tactics are:

    A.   Restriction

It is indispensable to make an effort to establish an area outside of which
the subject has not traveled. Large areas of land can be eliminated
from the search if it is certain that the subject has not entered them.
Restriction is an initial tactic to limit the mobility of the subject
and thus the search area. It requires a rapid deployment of searchers
on the ground.

     Methods of restriction include:
    a.   Blocking trails.
    b.   Blocking roads.
    c.   Locating personnel at key points:
        -    trails
        -    roads
        -    overlooks
    d.   Footprint traps (smoothed areas in trails and
    roads).

      B.   Cutting the Perimeter

This is a scouting of the perimeter of the area to look for signs of the missing person.

      C.   Search Dogs

The use of trained dogs to follow the scent of lost people is very useful. They should be used quickly before other searchers are sent out so they don't confuse the scent of the searchers with that of the subject.

      D.   Tracking Specialists

If there are individuals with a lot of practical knowledge in locating signs, they can follow the exact route of the subject until finding him. Often they discover important evidence although they don't find the subject. Frequently the best specialists are local residents.

      E.   Airplanes

Airplanes and helicopters can be used in the search, if the vegetation is not too thick. They can be useful for finding evidence such as smoke.

      F.   Attraction

It is possible to attract the subject to indicate where help is located, or to walk in the direction of the searchers.
          a.   Noise (shouts, whistles, horns, loudspeaker).
          b.   Light (spotlight, headlight).
          c.   Smoke.

      G.   Deployment of Resources

          a.   Rapid Search

This consists of a rapid search by a couple of searchers who are immediately available. They look principally for the subject. Some techniques are:
-Check the last point where the subject was seen for evidence, tracks, direction of tracks, etc.
-    Follow the subject's route if it is known.
-    Follow the route of least resistance.

-Search in specific sites. For example, in many areas there are certain hills or watersheds that offer routes for lost people. A team can look in places that might attract the subject or in places of major risk such as waterfalls and cliffs.
-Cut the perimeter and search for signs.
-    Patrol roads and trails.

          b.   Efficient Search

This is a search of the sectors with the most probability of success. Often

this is done after a rapid search, especially if evidence was
found in that search. Various types of resources can be deployed.
 Studies show that this has a high probability of success for the
number of searcher hours invested.

One technique used for an efficient search is to <u>openly comb the area</u>. This
technique uses teams of between three and seven searchers. The
space between each is large, normally between 100 and 200 meters
depending upon the terrain and the density of vegetation. The
searcher in the center of the team follows a compass bearing to
maintain the direction. While he follows a straight line, the
others look all over within their corridor searching for evidence.
 The area searched by each team is large. For example, two of
these teams can walk from the top to the bottom of a watershed,
one on each side of the stream. Search dogs can also be used in
this way.

     c.   Systematic Search

This is a slow and very systematic search. It is more complete than the rapid
or efficient search, but it requires many searchers for each
hectare of ground covered. It should be used only as a last
resort.

The technique is to <u>comb the area in a closed fashion</u>. A team of searchers
advances in formation with a determined space between each one.
Each sector of the search area is thus systematically covered.
The sectors are closed, that is, defined by natural or artificial
boundaries.

The efficiency of this technique varies according to the distance between each
searcher. The following table shows various possibilities for
doing a search in a sector of 259 hectares of forest.

Space	Duration of Search (Hours)	Number of Searchers	Hours Utilized	Probability of Detection
30 m.	3.5	53	186	50%
18 m.	3.5	88	308	70%
6 m.	3.5	264	924	90%

One can see that many more searchers are required to increase the probability
of detection from 50% to 90%. Probability Theory and actual studies
show that it is more effective to return to search the same sector more
than once with wide spacing then cover it only once with narrow spacing.

To get the most benefit from this concept:
-Inform the searchers of the theory. They want to do a good job, but
    don't feel comfortable with the wide spacing because they feel
    that they are not doing a complete search.
-Change teams with each pass.
-Each time begin with a different angle.
-Mark well the boundaries of the sectors.

3.3   Probability Theory

The use of mathematics has become common and useful in the management of
      searches. Probability theory is a branch of mathematics which is used
      to calculate the probability of detection, the probability of success,
      and the change in probability of an area after searching a sector.
      Computers greatly facilitate this task, and there are good programs for
      doing these calculations. These advanced themes will not be treated
      further here.

4.0   MANAGEMENT OF THE SEARCH

The appropriate management of a search is as important as   the skills of the
      searchers on the ground. In complicated searches it is even more
      important. We will briefly touch on this theme. It deals not only with
      all the previous material, but also with the issues of organization,
      direction, and leadership. It is worth much attention and study.

4.1   Organization

In various countries, much success has been found in managing searches
      according to a uniform organization that has been adopted for all types
      of emergencies. In this way, all the management team members understand
      the organization, the titles of each position, and the responsibilities
      of each position. Even the forms are uniform. A homogeneous management
      team can be put together with personnel from different agencies,
      institutions, or volunteer groups, and it doesn't matter if they haven't
      worked together before. The organization facilitates the effective
      coordination among the different agencies and authorities. A uniform
      organization is almost indispensable for the appropriate management of
      complicated searches, but it is also useful for simple searches.

An example of such an organization is the Incident Command System (ICS) which
      was developed in the USA to coordinate efforts in fighting fires and has
      been extended to other types of emergencies. The critical components of
      this system are:
              -    Common terminology.
              -    Structure which grows according to necessity.
              -    Integrated communications.
              -    Unified command structure.

This system is very flexible. It can be used in simple searches in which one
      person alone, the Incident Director, takes on all the management
      functions such as direction of searchers, development of an operational
      plan, logistical support, and finances. If the search becomes larger
      and more complex, the Incident Director can delegate responsibilities to
      an Operations Officer, a Planning Officer, a Logistics Officer, and a
      Finance Officer if necessary. The structure can become very large, but
      everyone understands it because it is uniform and previously planned.
      Of course, this presupposes training about the system for those who will
      have search management responsibilities.

4.2   Direction

Each search requires an Incident Director. He need not be the person with the most authority, but rather the one with the most experience in managing searches and with leadership qualities. All should know who he is. Some of his responsibilities include:

1.   Establish the objectives.
2.   Set the priorities.
3.   Evaluate the available resources.
4.   Develop an Action Plan.
5.   Delegate responsibilities.
6.   Coordinate the efforts.
7.   Evaluate the results.
8.   Develop new plans.

4.3   Brief Instructions to the Searchers

A summary of the incident should be communicated to each search team as well as instructions about their task. Equally important is to receive a brief report from them when they return from the field.

4.4   External Relations

It is necessary to give plenty of attention to the family of the missing person or to the friends who are present. It is best to assign one person to assist them and to frequently communicate with them. It is preferable to install them in a place away from the operations center.

4.5   Operations Center

A good site for the Operations Center:
a. Is away from other operations and functions unrelated to the search.
b.   Is close to the search area.
c.   Has good access and good communications.
d.   Has plenty of room for all the functions.
e.   Has plenty of room in which to grow.

4.6   Ending the Search

If the missing person has not been found after a complete and effective search, ending the search must be considered. This action will depend upon many factors and influences. Sometimes it is appropriate to consider a "continuing limited search". This will help with the family and with public relations.

4.7   Demobilization

A Demobilization Plan should be made before the end of the search. This will make for a more efficient process of discharging the searchers, organization of their transportation, etc.

4.8   Tasks at the End of the Search

1. Replace worn out equipment. Clean and repair equipment.

           2.Evaluation of the search both with persons involved and others
                not involved in the effort.

           3.Documentation

One should begin with the first report of the missing person and include all
             the information related to the search. From the
             documentation one should be able to reconstruct the search.
              This is useful for:
             a.Providing correct information to the searchers.
             b.Assisting with the ongoing planning of the search.
             c.The evaluation and improvement of future searches.
             d.Protection in any legal litigation.

           The document includes:
             a.   Initial report.
             b.   Chronology of events.
             c.   Maps.
             d.   Reports of brief instructions to searchers.
             e.   Changes in weather.
             f.   Expenditures and other fiscal issues.
             g.   Damaged or lost equipment.
             h.   List of personnel and hours of work involved.
             i.   Documentation of any injured searchers.
             j.   Official communications with the press.
             k.   Action plans.
             l.   Evaluation report.

5.0   PREVIOUS PLANNING

The existence of a prepared Emergency Plan will make a search operation, or
      any other emergency, more efficient and effective. A simple list of
      available resources, equipment, names of personnel and contacts,
      addresses, and telephone numbers will be very useful and will save a
      great deal of time. However, a command structure and organization
      should also be established. It should include a list of the authorities
      who should be informed and of the procedures to be followed in case of a
      fatality. The prepared plan should be complete, but simple and not very
      long. It should not be an instruction manual; it is simply a tool to
      help confront an emergency.

<u>NEVER DO THE PLANNING ALONE!</u>

6.0   RESCUE AND FIRST AID

Frequently the subject will need first aid, a technical rescue, or transport
      once he has been found. Although these services are logical extensions
      of the search, they will not be considered here as they are different
      themes. It is sufficient to say that it is necessary to plan well in
      advance of locating the subject. (First Aid: # and #; Transport:
      Supporting document #).

ACTIVITIES

1.Present hypothetical cases or cases based on true incidents that the
    participants, divided into groups, can manage. They must be provided
    with maps, a description of the area and the weather, a report of the
    first news of the incident, a list of available resources, and pieces of
    evidence according to the progress of the teams.

2.Ask that the participants present search and rescue experiences in their PA.
    The theme can be initiated with this activity in order to motivate the
    participants to explain how the situations presented could have been
    improved.

3.Conduct a search exercise in the field. Designate one participant as the
    Incident Director, another as the lost person. Make sure that all have
    the equipment and food necessary for the time foreseen.

4.If a trained instructor and necessary equipment is available, give
    demonstrations in rescue techniques (especially the use of climbing
    ropes).

Supporting Document B7a

FORM FOR REPORTING LOST PERSONS

A form such as this one should be filled out for each lost person as soon as possible.

Last name of lost person
Date reported lost_____ Time
Place of last observation

Date (today)_____Time of this report

Complete name of lost person

Nicknames/other names_____ Home address

Sex_____ Age_____ Weight_____ Height _____ Hair color

Clothing: Hat_____ Shirt or blouse_____ Jacket

Pants/dress _____ Shoes/type _____ Size shoe_____ Condition

Type of sole (shoe)_____ Socks _____ Other clothing

Jewelry _____ Money _____ Cigarettes

Matches _____ Other belongings

Contents of pockets

Food

What was the person planning to do?

Physical condition: (strong, weak, agile etc.)n

Health situation: _____ Heart_____ Hearing _____ Diabetic

Mental condition:

General knowledge of field

Specific knowledge of this area:

Has been lost before?

When was person expected back?

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Names of friends/companions
Information reported by (complete name)

Address:

Relation to lost person: _____ Can be found where?

Where can informant be found later on?

Report received by:

Location _____ Location

Results of search

IF THERE IS MORE THAN ONE PERSON LOST, THEN A FORM SHOULD BE FILLED OUT FOR EACH PERSON!!

Supporting Document B7b

ROPES, KNOTS AND RESCUE

By Bill Wendt, United States National Park Service
(With some material added from May, 1972)

1. Rules concerning ropes:

Never walk on a rope made of synthetic material. Walking on a rope with crampons is a capital crime, which generally provokes immediate commentary of the crude sort. The rope should never be dragged over the ground. Small pieces of rock will gradually become encrusted in the rope and penetrate it; eventually they won't even be visible. When possible, try to keep the rope from running over sharp edges, especially if it is holding a heavy weight. Don't leave it near radiators or other sources of high heat. Don't hang it on a sharp nail.

If possible, keep ropes dry, and dry them thoroughly before storing them. Don't leave a rope stretched out, or under tension for prolonged periods of time. Untie all knots after using a rope, and before storing it.

A climbing rope should never be used for towing automobiles; once it has been used for this purpose, it should never be used again for climbing.

Immediately examine a rope that has been hit by a falling rock even if it was a small one. If a rope has been subject to tension while passing over a sharp edge, it should be examined. Carefully examine a rope that has been used to stop the fall of a climber. Ropes should be examined at regular intervals in order to detect defects. If fibers are observed that have become worn out, then it should never be used again for climbing. During an ascent, a butterfly knot can be used to isolate a damaged section of rope.

2. Washing and dying ropes.

Any soap or detergent that can be used on nylon clothes can also be used for washing nylon ropes. The makers of nylon ropes have reported that during their manufacturing process, nylon ropes must undergo temperatures of 149° C, without causing them any damage. Boiling water, then, should do them no harm.

However, with the complex and delicate process used to manufacture monofilament rope, much care should be taken in putting this type of rope in boiling water, either for washing or dying purposes.

Climbing ropes can be washed in automatic washing machines using a detergent recommended for nylon, and controlling the water temperature for "nylon" and using the "gentle" cycle.

Nylon ropes can be dyed using household methods.

3. Knots.

PROT. B7b-2

A knot is basically a configuration used to tie two ropes together, or to tie one rope to another object. The safety and the ease with which knots are tied and untied can be of great importance. It is said that a climbing knot should be simple enough that a climber should be able to tie it in the dark while half a asleep. A simple knot, but practiced sufficiently so that a climber may be able to tie it automatically, is necessary in order to maintain mental tranquility.

It is possible to do successful technical climbing using only two knots: the overhand and the bowline, if all of their variations are included. The majority of the knots that appear below can be derived from these two, although the Figure Eight Knot has certain advantages over the Overhand Knot, and as such will be included as well.

Some knots have had good results in testing, but have not been well-received among climbers. An example of this is the Double Carrick Bend. This knot is able to withstand the highest amount of tension of any knot before breaking. However it is hard to tie and is employed only by ships, and even then it is not considered satisfactory unless the ends are firmly secured. Nevertheless, in the table, the Double Carrick Bend would be the best knot.

In the following table, the percentages for each knot were obtained using a 9 mm nylon rope and the percentage for the carabineer was obtained from a 11 mm nylon rope.

<u>Relative Strength of Knots</u>

Double Carrick Bend	71%
Sheet Bend	65%
Fisherman's Knot	59%
Square Knot	54%
Double Bowline	69%
Bowline	65%
Butterfly	63%
Overhand Knot	49%
Carabineer and cord	79%

<u>Bowline Knot</u>

The bowline is used to secure the last person, in order to give him a loop that doesn't slip. The knot is easy to tie, and easy to untie after heavy loading.

Figure Eight Follow Through

wendt drawing

This knot is based on the Figure Eight knot; it is more symmetrical and easier to untie. Also called the Flemish Bend Knot.

Butterfly

The butterfly forms a single loop and tends to jam when strained and consequently may be very difficult to untie. It tends not to slip, and is the strongest middle man knot.

Fisherman's Knot

The fisherman's knot is used for tying slings and runners of rope into loops. Because it tends to jam, it should not be used to join lowering ropes; only the double sheet bend should be used for this purpose.

<u>Double Fisherman's Knot</u>

This is an exceptionally strong knot and one of the few that needs no safety overhands. Each half of the knot must be tied symmetrically, that is, the extra turn should be centered, and not at one end or the other. Highly recommended for tying rope slings, since it needs no safety overhands, and is exceptionally strong.

<u>Sheet Bend</u>

The Single Sheet Bend, also called the Weaver's Knot, stays tied very well under constant tension. It can be used to tie two different types of rope together, with the bigger diameter rope forming the bight (U Loop), but if used in climbing, a more complicated knot should be used: the Double Sheet Bend. The Double Sheet Bend is the usual knot for joining two belay or lowering ropes. The knot must be cinched down very well because it tends to work loose easily.

<u>Prusik Knot-Bachmann Knot</u>

Climbers call this the "Hitch". It is normally used to tie a smaller rope to a larger one. This knot stays tied securely to the main rope when under tension, but can slide along it if tension is reduced. A climber should practice this knot with one hand, and even be able to do it with either one of his hands. If it is necessary to hold on to something with one hand, or if one hand or arm is broken or wounded, this would be the only way to join two "Prusiks". The three wrap Prusik holds significantly better than a two-wrap Prusik, and should be used exclusively for load holding in rescue. It is difficult to hold on to or loosen a Prusik knot with cold or wet hands. A modified version of it, incorporated with a carabineer, has been developed in Austria, called the Bachmann Knot. It is just as secure, but easier to adjust and slide along the rope.

4. <u>Friction Brakes</u>

Although they are not real knots, friction brakes are used together with friction knots in rescue work, and on other occasions, when a heavy object must be lowered under complete control. The brakes are constructed easily using the following diagrams. The one-carabineer brake produces a limited amount of friction and a great part of the weight must be supported by standard belaying techniques. The double-carabineer brake produces a great amount of friction, enough to support the weight of three people.

6. <u>Carabineers</u>

A carabineer can frequently take the place of a knot. A combination knot-carabineer can reach 79% tension before breaking, using a 11 mm nylon rope. The strongest knot, the double carrick bend, only reaches 71%, and the average

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knot only about 50%

Many times a sling can be made using two types of material. A "Prusick" sling can consist of a small loop of 9 mm rope in order to grab the main rope and a longer loop of webbing in order to provide a place for the foot. The most logical way to join these is with a carabineer. In some cases, a carabineer can be connected to a knot, serving only to anchor the knot and impeding it from slipping.

In general, when a knot must be tied or untied several times, it is much easier to include a carabineer in a sling.

Supporting Document B7c

TEMPERATURE AND SURVIVAL

Supposition of survival days, with different quantities of water available per person.

A: Without walking

Daily Max. Temp. (°C)	Liters of water				
	0	1	2	4	10
49°	2	2	2	4	5
43°	3	3	3.5	4	5
38°	5	5.5	6	7	9.5
32°	7	8	9	10.5	15
26°	9	10	11	13	19
21°	10	11	12	14	20.5
16°	10	11	12	14	21
10°	10	11	12	14.5	21

B. Walking at night, resting during the day

49°	1	2	2	2.5	3
43°	2	2	2.5	3	3.5
38°	3	3.5	3.5	4.5	5.5
32°	5	5.5	5.5	6.5	8
26°	7	7.5	8	9.5	11.5
21°	7.5	8	9	10.5	13.5
16°	8	8.5	9	11	14
10°	8	8.5	9	11	14

WIND CHILL FACTORS

Wind speed (km/hr)	REAL TEMPERATURE ACCORDING TO THERMOMETER ($^{\circ}$C)								
	10	4	-1	-7	-12	-18	-24	-30	-36
Calm	10	4	-1	-7	-12	-18	-24	-30	-36
8	9	3	-3	-9	-15	-21	-26	-32	-38
16	4	-2	-9	-15	-23	-31	-37	-43	-50
24	2	-6	-12	-21	-28	-38	-43	-53	-61
32	0	-9	-15	-24	-33	-42	-49	-58	-68
40	-1	-9	-18	-26	-36	-45	-54	-62	-67
48	-2	-10	-19	-28	-35	-45	-54	-62	-71
56	-3	-12	-21	-29	-38	-45	-55	-63	-72
64	-3	-12	-22	-29	-38	-48	-57	-65	-73

LITTLE DANGER   DANGER INCREASING   GRAVE DANGER

Supporting Document B7d

PSYCHOLOGY OF SURVIVAL

(Translated from a pamphlet published by the National Forestry
Corporation of Chile, **Training Techniques in
High Mountain Situations**, by Edgardo Reyes Donoso)

No-one can ever be entirely prepared to confront a survival situation. One is
lucky if he has a first-aid kit, a rifle, or an ax, and even luckier if he
understands the basic techniques of survival. Yet no matter how skilled or
lucky one is, to find oneself alone and lost in a remote region can cause a
change in one's personality: an emotional, mental and physical shock. Because
of this it is important to understand the psychology of survival and to
acquire the necessary techniques for getting out of such situations
successfully.

The Desire to Survive

Among athletes, particularly among long-distance runners, there exists a well
known and common phenomenon. After running a certain distance, the athlete
loses his rhythm and begins to visibly tire and to lose speed. What has
happened? The stings, the cramps, or the exhaustion have taken away the
desire to win.

This same phenomenon exists in survival situations; although in these the
stakes are much higher than those found in a sporting event. There have been
cases where individuals, after having been rescued from potential injury, have
died in the hospital. They have lost the desire to live. The experiences of
hundreds of people isolated in remote areas, especially during the Second
World War, and in the wars in Korea and Vietnam, demonstrate that survival to
a great extent is a question of one's psychological state. Without a doubt
the most important factor is one's desire to survive. Whether of a group or
of a lone person, the emotional problems of shock, fear, desperation,
loneliness, and boredom can not be avoided. To these mental factors which can
reduce the desire to live, one adds others such as physical pain, fatigue,
hunger, or thirst. If one is not mentally prepared to overcome such obstacles
and to face the worst, the likelihood of survival is reduced.

The Power of the Mind

Interviews with thousands of survivors of the German concentration camps after
World War II confirmed that the human body, when guided by the spirit,
possesses an amazing capacity for resistance. Our bodies are very complex
machines which are capable of continuing to function even under the worst
conditions of stress and degradation, as long as the will to live is present.
 In such cases, the energetic demands of the organism, which translate into
the need to eat, fall to near zero. The survivors of the Nazi concentration
camps said that, even under the most inhuman of conditions, they kept their
will to live. In many cases, they survived only thanks to this mental
attitude.

Preparation

The timely preparation of an individual gives him a great psychological strength when having to confront a survival situation. Of course, no-one ever expects to find himself in such a situation, but everyone should be able to discern the risks that can lead to a survival situation. If one prepares to go to the field or on an excursion, if one decides to take a recreational trip in a small aircraft or by sea, the possibilities of a serious or life-threatening accident increases.

The following suggestions are not just good advice. When practiced they also serve as a psychological safety net if ever found in a serious situation.

1. Prepare a survival kit to carry on whatever trip you take in which there is any risk at all of getting lost or left isolated.

2. The owner (or frequent user) of a small aircraft, yacht, or any other recreational vehicle, should always have a copy of a survival manual in the glove compartment or tool box.

3. Whoever travels to less frequented places or goes camping, also should carry a survival manual in his backpack.

4. Memorize as much as possible about survival techniques. Knowledge of fundamental survival techniques gives one confidence which helps overcome the difficulties presented by the environment.

Panic and Fear

Almost anyone who has at one time been lost and far from civilization has experienced fear. Fear of the unknown, of pain and of discomfort, and of one's own weakness. In these conditions fear is not only normal but even healthy. Fear sharpens our senses and prepares us to successfully confront the dangers that face us.

From a psychological point of view, fear is an adrenalin release which is naturally produced in all mammals as a defense mechanism to confront any hostile element or the unknown.

Yet fear needs to be restrained and appropriately channeled so that it does not turn into panic. Panic is the most destructive reaction that one can have in a survival situation. Energy is wasted, rational thought is diminished or completely destroyed and all positive action towards surviving becomes impossible. Panic often brings on desperation, the steadfast enemy of the will to survive.

In order to make fear an ally and panic an impossibility, it is necessary to adopt certain mental rules that contribute to a positive attitude. As has already been mentioned, an adequate preparation and the knowledge of basic

survival techniques inspire a sense of security, which is the first step toward dominating oneself and one's environment. Also it is important to immediately occupy the mind with an analysis of the situation and with the most urgent tasks at hand.

One can remain alive in any part of the world if one has the will and ingenuity to survive.

"Take charge of the situation".

Am I hurt? What emergency measures should I take? What is the physical condition of my companions? What are the immediate dangers that may threaten us? Are there any details about my situation which allow me to know where I am or how I ought to proceed in order to maximize my probability of surviving? Is there water close by? Is there food? What are the weather and geographical conditions around me? Can something around me contribute to my survival?

"Do not be in undue hurry".

Avoid all unnecessary movement and hiking, which has no clear objective. It is important to conserve one's energy as long as one does not have a complete understanding of the situation. In most survival situations energy is a more important resource than time (except in cases of a medical emergency). One should avoid all actions that do not contribute to a plan or to specific tasks. Unfocused action gives rise to a sense of abandonment which easily can culminate in panic.

"Remember where you are".

It is likely that one will need to explore the area moving away from the initial location. Familiarity produces a sense of security and nothing is as depressing in a survival situation as losing one's starting point. Pay attention to the surroundings, the most relevant topographic characteristics, etc. and make a mental picture of them. Upon leaving a base point, mark the trail in order to be able to always return following one's own footsteps. No matter how lost or isolated one is, always one can begin to find his way around. By knowing where one is, at least in reference to the immediate surroundings, the chances of being rescued are increased.

"Dominate fear and panic".

Being conscious of the debilitating affect of fear and panic in itself contributes to the removal of this danger. Every once in a while objectively evaluate the affect that fear and panic is having on oneself.

"Improvise".

No matter where one is, there always will be some things that one can do to improve his survival chances. Inventiveness and creativity improve one's circumstances. It is best to abandon one's traditional approach and to adopt new ones. For example, a tree is no longer a tree, but rather is a shelter

and an eventual source of food, fuel, clothing, etc. Familiarize yourself with those things that surround you. Like an optical illusion, the mind will miraculously transform the objects and beings of nature into survival instruments.

"Value your life".

The preservation instinct is basic in man and animals. From it have been born not a few cultural and technological revolutions throughout history. In extreme circumstances the will to survive can be severely tested. Once lost, all the knowledge of survival techniques will be useless. Do not run unnecessary risks. The key to survival is yourself, and whatever recklessness which causes you to be hurt or partially incapacitated will limit your ability to survive.

"Learn the basic techniques".

Remember that to do is to learn. The more you practice these tasks and fundamental techniques, the better will be your ability to use them in time of need.

Survival is a mental attitude, which puts on a positive face to us as well as to those around us.

Loneliness and Boredom

Loneliness and boredom are inseparable companions of fear and panic. However, rather than overpowering us in a sudden and brutal fashion, these gain control in a smooth and gradual fashion while we are unaware. Generally these overcome us once we finish the basic survival tasks of covering the most urgent needs: water, food, shelter, and clothing. Loneliness and boredom leave the individual depressed, suffocating his will to survive.

The psychological antidote for both of these is the same used to combat fear and panic: keep the mind occupied. Occupy as much time as possible establishing priorities and assignments that reduce discomfort, increase the chances for rescue and guarantee survival. Think about possible emergencies that one might confront, making contingency plans for them.

Elaborate a program of activities. Apart from providing added security, this helps to occupy the mind.

One needs plenty of activities, for example the construction of a permanent shelter or defining activities to be repeated daily, such as keeping a diary.

Loneliness and boredom only can appear in the absence of a positive line of thought and conduct. In survival situations there always are many things to be done.

Survival in a Group

The dynamics of a group can sometimes be a help and at other times be a danger

for individual survival. Obviously the support of many people to deal with
necessary tasks and contact with other people contributes to a greater
psychological stability. Yet it is important to remember that a chain is only
as strong as its weakest link and that the difficulties inherent in survival
can be multiplied by the number of individuals dealing with the situation. On
occasion, survival in a group can introduce a new element of destruction:
dissention. This must be avoided at all costs.

Just as individual reactions in survival circumstances can become automatic,
the same can occur in a group. Those groups that work in unison obeying a
responsible chief have the greatest possibilities of survival. If there is
not already a designated chief, choose one. Taking care of the following
factors will help to maintain friendly relations within a group:

-Organize activities focused on the collective survival.

-Recognize one member of the group as chief. This individual will delegate to
      other members specific responsibilities and will keep everyone informed
      of what they should do.

-Create a sense of mutual dependency within the group.

-Whenever possible, the group should make decisions under the direction of the
      chief. Alternately it must be the chief who decides what should be done
      in each situation, and everyone will have to respect his orders.

Finally, no-one should forget that the greatest test will be in the moment
when one believes he is almost rescued, that is for example when an airplane
or boat passes in the distance... and it goes by without seeing us. In such a
case, depression and desperation are natural reactions. We must not be
overcome by these. If an airplane has passed, then another will pass by. If
they are systematically overflying the area, this shows that someone is
looking for us. That is when one must apply all of the available energy and
utilize all the survival techniques in order that we may be found in good
condition the next time they pass by and see us. There will be another
chance.

The motto of survival is: NEVER GIVE UP!

PROT. B7d-6

Lesson 8

USE AND MAINTENANCE OF FIREARMS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Disassemble, clean, and assemble the firearms that they possibly will use.

2.Appropriately use the firearms that they have in their PA.

3.Name, and implement 15 basic safety rules for the management of firearms.

REFERENCES:

Corfield, 1984; Supporting Document.

PRESENTATION:

1.1The use of firearms in the PA is a contentious issue. Generally firearms
     are not necessary unless the area has serious problems of law
     enforcement and there are frequent crimes or infractions. It also
     depends upon the authority the warden has in the PA. At times it is
     necessary to carry firearms to protect oneself from dangerous animals or
     people. What is important is that each warden, or other PA official who
     carries a firearm, knows how to use and maintain it. An instructor who
     is an expert in the use and maintenance of firearms should be contracted
     to spend at least one day with the participants. More time should be
     allotted depending upon the seriousness of the issue and the use to
     which the firearms are intended. If serious anti-poaching activity is to
     be carried out, more intensive training should be done in conjunction
     with actual patrolling situations.

1.2The first thing that should be taught are the safety rules for the use of
     firearms. All devices are dangerous that are capable of launching a
     projectile with extreme force and with the velocity of a firearm. Every
     year there are thousands of accidents with firearms. A careless act,
     whether in the field or in the storeroom of a PA, can kill you or your
     companion. A gunshot is **irreversible**. The bullet can not be stopped
     once the trigger is pulled. There are a list of general rules to
     observe while managing a firearm (Supporting Document B8a). Apart from
     the general rules, point out other relevant norms that exist in the PA
     system concerning the use of firearms.

2.1Basic firearms functioning: indicate for the firearms that are to be used:
     characteristics, general information (caliber, principal parts of the
     firearm, weight, velocity of the projectile, actual and maximum range,
     etc.), cocking and uncocking, and basic management:

- Use of the safety.

- How to pull back the hammer.

- How to release the hammer of a rifle or pistol.

- How to load a firearm.

- How to unload a firearm.

2.2 Cleaning and maintenance. It should be shown how and when to clean a firearm and the maintenance required. For example, in humid climates some firearms need to be cleaned with solvent every three days.

3.1 Techniques of firing: teach how to sight, how to pull the trigger, the appropriate way to breathe, the appropriate positions to be in for different types of firing, the effect of wind, and the corrections for drift and elevation when shooting.

ACTIVITIES:

1. The participants should extensively practice all that is necessary so that they can optimally maintain and use a firearm.

2. Hold a competition to see which participants have the best aim, always using the techniques taught.

Supporting Document B8a

FIREARM SAFETY RULES

(Taken from a pamphlet prepared by the National Park Service
of Costa Rica concerning the 30-M-1 rifle. 1983
And from a course prepared by Gerardo Chavez, National Park
Service of Costa Rica. 1992)

With all firearms, one should follow extreme safety measures in order to avoid accidents. Always use extreme precautions and act as if your firearm were always loaded.

1. Individual responsibility is the principal safety measure.

2. Whenever carrying, receiving, or delivering a firearm, check the chamber. Always deliver a firearm with the chamber open.

3. Never store loaded firearms.

4. Never leave firearms where they can be reached by children or by inexperienced individuals.

5. Do not give a firearm to a stranger nor to an inexperienced person.

6. Do not play, joke, nor unnecessarily point with the firearm. **This is a dangerous habit.**

7. Whenever checking or managing a loaded or unloaded firearm, be sure that the gun-barrel is always pointed upward, or in the direction where it can not cause damage.

8. Always keep your firearm locked.

9. Never carry your firearm with the chamber loaded until absolutely necessary.

10. Never plug the mouth of the gun-barrel to keep it from getting dirty.

11. Before loading your firearm, be certain that the gun-barrel is free of any dirt or obstacle that could impede the exit of the projectile.

12. When crossing fences or other barriers, pass the firearm to another individual, or carefully place the weapon on the other side before crossing.

13. Always walk with the firearm unloaded. Have the safety on until the moment of firing.

14. When traveling in a vehicle, the firearm should be unloaded.

15. After firing, remove the remains of the cartridge and **clean** the firearm as soon as possible. The firearm that accumulates gunpowder can explode. Especially clean the gun-barrel.

16. Store bullets in a cool and dry place, far from children and from strangers.

17. When a firearm must be stored for a period of time, it should be dismantled. Each of the pieces should be taken apart and oiled. Finally, the firearm should be rolled in a flannel cloth or towel to protect it from dust.

18. Only the specific ammunition designed for each firearm should be used, and precautions should be taken with old or damaged ammunition.

19. Use the firearm in agreement with the existing laws and regulations.

Lesson 9

PRINCIPLES AND TECHNIQUES OF LAW ENFORCEMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Clearly describe the components involved in carrying out the legal norms of a PA.

2. Act correctly when enforcing the law in the PA.

3. Describe the information necessary in order to correctly report an infraction.

REFERENCES:

Corfield, 1984. Moore, 1984, sections 6, 12 and 18.4; Mackinnon et al, 1986, pp. 230-234.

PRESENTATION:

1.1 There are three principal components involved in carrying out the law in a PA:

   a. Legislation (laws, regulations), which must be carried out.

   b. Wardens who are directly responsible for carrying out the legislation on the ground.

   c. The administrative system supporting the warden which determines policies and the manner in which violations will be treated.

1.2 Legislation: Explain the laws, regulations, and norms that apply in the PA, and that the wardens are responsible for their enforcement. Explain the hierarchy of laws, and those that are the most powerful from a legal standpoint. Explain to what point the warden can legally act; that is, his jurisdiction is limited in terms of the types of infractions that he can deal with as well as the territory in which he can exercise his authority. The same is true for other officials: civil and military.

1.3 **The Warden:** The conduct of the warden in his contact with the public is the most important factor in carrying out the laws and regulations of a PA: he must stop violators, as well as prevent future infractions. Generally a firm and courteous attitude is the best. It also helps if the warden knows the issues and the laws, and displays confidence without being overbearing. Other recommended norms of conduct include:

   - Do not get angry or irritated.

- Do not raise your voice.

- Maintain a physical distance from the violator.

- Always identify oneself when dealing with a violator.

- Explain to the violator the offence committed.

In order to act correctly, one needs information and support from the system. The warden follows established policies concerning enforcement of the law. Obviously all the laws can not be enforced in detail, and it is here that the policies of the system become especially important.

1.4 **The System:** The system (i.e. the supervisors, authorities, policies, and to a certain degree, the legal system) determines how far the legal dispositions will be carried out. This is part of the support that the warden needs. In some countries, there is general ignorance of conservation laws among the public as well as the authorities. Often there has been insufficient public relations and education concerning the law with the neighbors and users of the PA. Also in some cases, it would overload the capacity of the system to deal with all the violations of conservation law that are committed. Because of this, some PA systems have established priorities as to which infractions to penalize, and have defined policies that minimize the enforcement of minor infractions:

a. The right to know. This means that everyone should know the laws before the system can penalize them for violating them. This implies an enormous educational responsibility to be carried out, especially at the PA level. Here enter the programs of interpretation and orientation of visitors and other users and neighboring populations. Nevertheless, this principle is applied only in the case of minor offenses, or in those situations, particular to the PA, over which the users have little experience in their world outside of the PA.

b. Determining the lowest and most effective level for enforcing the law. In general this level implies educating the violator, which means that the warden should be more of an educator than a policeman. Generally there are four steps that the warden can take, depending upon the seriousness of the case:

- Verbal warning.

- Written warning.

- Citation requiring the violator to appear in court.

- Detention of the violator.

While it is best if the objective can be met by educating the violator, the

conduct should be more severe in some cases such as:

- Repeat offenses.

- Damage of state property, or of another user.

- Threats and actions against PA personnel, or against another user.

- Major offenses such as hunting animals in danger of extinction, or intentionally setting fire.

The last point concerning the system is that the field personnel must know that they have the support to act. This is confirmed when the system provides information on how to proceed, and through the conduct of the system itself. When infractions duly reported by wardens are not followed up by the "system", motivation for continued diligence on the warden's part is diminished.

2.1 Explain the process of confiscation, and the circumstances under which this is done.

2.2 Show the reports and forms that must be filled out for infractions.
Describe the information needed in order to correctly report infractions to other authorities in order for them to act. e.g.
- Name of authority to whom report is addressed
- Name of park ranger(s)
- Personal information: age, civil status, responsibility in PA
- Location/address of rangers' home/work
- Location of infraction
- Description of infractor's actions
- Name and address of infractor(s)
- Description of ranger's actions
- Results of ranger's actions
- Objects confiscated, their description, and their location

2.3 Indicate in what circumstances the civil authorities (or others) should be called.

2.4 If considered necessary, techniques of personal defense should be taught in a different course. Nevertheless, it is important for the participants to understand any policies that exist in the PA system or in the country concerning the use of firearms.

ACTIVITIES:

1. Have the group prepare guidelines concerning the detention of dangerous individuals by patrolling wardens, utilizing the following topics:

    a. How to approach presumed dangerous individuals or groups
    b. How to capture them
    c. Role of chief warden/chief of patrol

    d. How to relate to captured persons
    e. What to do with captured firearms: immediately, and eventually.
    f. Information to be collected
    g. How to collect information from detained individuals
    h. System for transporting/walking detained individuals
    i. What to do with evidence
    j. Treatment of detained individuals
    k. How to report the detention

2. Invite the participants to present their experiences of dealing with minor and major offenses. Discuss the techniques that they have used, both those that were effective as well as those that were not. With the participants go over the Supporting Document B9a.

3. Present hypothetical cases to the participants which require that a warden enforce the law, and request written answers as to how they would act. Discuss the answers with the group. Using the same or other hypothetical cases, have one participant who is a good actor, play the role of the violator and have others act as the warden, applying the conduct learned in this lesson. Constructively criticize the performances. If one is available, use a video so that the participants can observe their own performances.

Supporting Document B9a

POACHING IN NATIONAL PARKS

(Adapted and translated from a publication prepared by
Jorge Astorga Rodriguez, Costa Rican National Park Service, 1987)

INTRODUCTION

Poaching is one of the greatest problems which our national parks have, and it is tending to increase constantly due to a number of social situations, which obviously, has a severe impact on our faunistic resources.

It is important to realize that the illegal hunter has ample experience and a lot of knowledge, which allows him to carry out his work based on logical deductions and conclusions, not as the result of simple opportunistic, simple minded behavior. Even understanding that the modus operandi of each hunter is different and personal, we must accept that his conduct is oriented by a number of factors and situations which can be generalized to all.

Some of these orientational factors are:

A. Regional characteristics: climate, topography, accessibility, roads, trails;
B. Moon's influence
C. Species distribution in the area
D. Species habits: dispersal, feeding, reproductive, sleeping etc.

Based on the preceding considerations, I believe it is urgent that we, as authorities encharged with the protection of national parks, be aware of certain hunters'methods o habits which would allow us to be more efficient in our own work. These recommendations are designed to help us in the constant fight against poaching and its effects.

OBJECTIVES

1. Present the most common activities which poachers utilize.

2. Protect those species which are in danger of extinction, or which are considered to be of scientific or monitoring interest.

3. Be more effective at protecting the park.

4. Initiate more publications by our colleagues concerning poaching.

5. Motivate colleagues to look into the illegal hunting situation, and who are the poachers.

KNOWLEDGE OF THE AREA

An undeniable fact, which we must recognize, is that the poacher usually knows

the area where he is working to perfection. From this, we can deduce that we must acquire the same capacity, and one of the ways to do so is carrying out reconnaissance trips (patrolling) of our respective PAs.

In general, patrol routes should cover all of the sectors in which a park can be divided. No site should be ignored, in spite of reasons to the contrary. Exploring zones not normally patrolled, in search of poachers, allows us to detect other factors which might disturb or interfere with the natural harmony and tranquility which characterize all vegetable and animal communities.

It should never be forgotten that the best protection rangers know their parks perfectly. This should distinguish a good park ranger from one who is not.

IMPORTANCE OF TRAILS AS A MEANS OF SURVEILLANCE

The existence of an excellent network of trails is important for achieving an effective protection effort in the national parks. Fortunately this concept is generally accepted among our companions. It has never been correct to say that trails facilitate the movements of hunters. No hunter will ever use a trail that is <u>constantly</u> patrolled by park rangers. The reasons for this are obvious.

If trails are important to someone, it is for the park ranger, since there are occasions when he must get quickly to distant locations; this would be impossible without good trails. And what about carrying out nighttime patrols in places without trails? A last argument in favor of trails is that they give the ranger a sense of security, because while on a trail he feels protected. If we pay special attention to this aspect of protection, we will have made an important beginning in the improvement of our parks.

POACHERS MOVEMENTS IN THE FOREST

There are occasions when the poacher is forced to not cut trails while moving in the forest. The reasons for this, among others, are:

A.Utilizing a knife or machete might make enough noise to scare off nearby animals. If within a PA, the noise might alert park rangers to his presence.
B.If the poacher needed to use the knife or machete, he would only have one hand available to hold and use a rifle if an animal would appear, causing him to miss hunting that animal.

For these, and other inconveniences, the best hunters hardly ever use their knives, preferring to slip silently through the forest, guiding themselves only by their knowledge of the area, or by their finely attuned sense of orientation. Of course it is possible to get lost this way. In order to avoid this possibility, the experienced hunter, from the moment he enters the forest, begins to bend leaves and small branches of the plants along his route. After being bent, the underside of the leaves points up, showing a different color from the others which have not been bent. If the hunter continues to do this every few meters, he will have a marked trail with which to return.

Another way to do this is the following: if the ground is very humid, as a sign to avoid getting lost on the return, sink the heel of your shoe deeply into the ground. This will only work unless it is not going to rain, or if the ground is not floodable, as a rainstorm will erase this type of sign.

DIFFERENT TYPES OF HUNTERS

Perhaps we can say that poachers can be divided into two large groups:

1. <u>Urban hunters:</u> This is the hunter that travels from the city to the country usually in search of recreation or sport, or perhaps because he has a special interest in a certain kind of meat. Generally speaking, this kind of hunter is not as damaging, since his activity is infrequent.

2. <u>Rural hunters:</u> This type of hunter lives near protected areas. They are usually the cause of serious problems, since their numbers are higher and their activity more intense. They are usually a big headache, since they are also very skilled. They may also serve as guides for urban hunters. It would be ideal if the rangers had the same level of knowledge as do these hunters.

Lesson 10

THE MANAGEMENT AND CONTROL OF FIRE

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Explain the types of fire that can occur in the PA.

2. Describe the principal causes of fire in the PA.

3. Explain how fire can be a tool for the management of the PA.

4. Describe the measures used to fight fire.

5. Explain the measures of fire prevention.

REFERENCES:

Moore, 1984, Chapter 16; MacKinnon et al 1986, Ch. 8; "Parks" Magazine: 1977, Vol. 2, no.1; Lesson D9.

PRESENTATION

1.0 Firefighting is a very serious activity. If the objective of the course is to train fire fighters to effectively fight fires, then experienced instructors should be obtained, and several weeks should be devoted to both the classroom and field activity.

1.1 In general, fires need to be extinguished. Explain the negative consequences of fire.

-When hot and frequent, it exhausts the fertility of soils and reduces nutrient cycling.

-It increases soil erosion.

-It facilitates the invasion of weeds and exotic plants.

-It dries soils by increasing evaporation.

-It causes the long-term depletion of the nutrient capital of soils.

- It kills small mammals, nesting birds, reptiles, etc.

1.2 Explain the types of fires that can occur in the PA of the country, or those represented in the course - WHERE: buildings, forests, savannahs; - ORIGIN: intentional, accidental, natural.

1.3 As to structural fires, focus on the importance of identifying potential risks: i.e. stacks of papers, stored combustibles, old or poorly installed electric and gas systems, fireplaces, ranges, and wood stoves.

2.1 Go over in detail the causes of intentional, accidental, and natural fires.

2.2 After describing the causes of fire in wildlands, ask the participants to describe the main causes of fire in their PA.

3.1 Explain that fire can be a valuable management tool in the PA. It can be important to maintaining many natural communities. It can be used both to promote desired successional changes in the vegetation as well as to prevent undesired successional changes. Explain that in natural environments sometimes it is best to set intentional fires or to allow natural fires to burn (those started by lightning or spontaneous combustion). Explain the reasons for this: to maintain critical habitat for some faunal species which might be in danger of extinction, and to propagate some vegetative species which depend upon fire. Fire is necessary for the propagation of certain tree species (which may in turn have as its objective the concentration of fauna in certain sites). Explain when it is necessary to set fires to imitate natural fires, and the precautions to be taken:

-The "ecology" of fire climax habitats must be understood, i.e. its historic and prehistoric role must be known.

- The objectives of the area must be known, i.e. what kind of environment is to be achieved/maintained.

- There should not be frequent fires.

- Use low intensity fires; or "cool" burns.

-Use appropriate control techniques: firebreaks, correct weather conditions, adequately advise neighbors, have personnel to control and monitor the fire.

-Work with a plan developed by scientists who understand fire.

3.2 It is necessary to consider the management category of the PA and its management objectives to determine the role of fire within its boundaries.

3.3 As in any resource management program, a PA manager should be aware of possible conflicts between fire within the PA, and other PA objectives, such as historic sites, or wildlife management.

3.4 The effect of intentional fires carried out within a PA can also cause problems for adjacent communities. This situation should be seriously considered, and if necessary a planned public relations/educational process should be carried out prior to initiating a controlled burn program.

4.1 Mention the best methods to extinguish fire in vehicles, boats, etc. This includes equipping them with extinguishers.

4.2 Describe the techniques necessary for extinguishing the most typical fires which occur in the PAs represented in the course.

Specifically mention:

-The three components necessary for a fire to occur: fuel, oxygen, heat.

-        The effect of wind.

-        The use of back fires.

- The use of firebreaks (strips of ground cleaned of vegetation) to stop
        a fire.

-The principal tools needed.

-The need for an action plan for those areas most vulnerable to forest
        fires. (see section of Lesson B7 relating to Incident Command
        Systems)

4.3 Safety rules during firefighting:

Structural fires:

a. Remember that there are many materials in buildings which contain chemical
        substances, and the smoke of these can be extremely dangerous.

b. When entering a burning building, always take adequate clothing and
        equipment.

c. Keep spectators at a safe distance.

d. Evaluate who might still be inside the building, and their possible
        location.

Forest fires:

a. Always wear appropriate clothing.

b. Always take note of the wind and the fireline.

c. Follow the orders of the firefighting team leader
        (there should be only one).

d. Stay away from burned trees or those that are burning.

e. Always have an escape route in mind in case the wind changes direction.

5.1 Explain the measures that can be employed to reduce the risk of forest
        fires:

-Development of a forest fire control plan for the PA.
-Clearing the vegetation along the boundaries in areas where fire could
        enter the PA (creating firebreaks).
-Training personnel in the management and control of forest fires.

-Suspending campfire permits in non-inhabited areas when there is a high
        risk of fire.
- Patrolling sites where fires might be started.
-In extreme cases, closing the PA to visitors.

PROT. B10-4

-Acquisition of firefighting equipment.
-Establishing mutual help agreements between the PA administration and
     nearby fire departments to combat forest or structural fires.
-Employing controlled burns.
- Don't permit the accumulation of excessive dead vegetation as the
     result of programs to eradicate flora, logging, or around
     construction sites.
-Public programs or campaigns for fire PREVENTION.

5.2 With the group determine the methods of fire prevention for buildings and
     other structures:

- Place smoke detectors.
- Place extinguishers in critical sites.
- Eliminate risks.
- Keep matches and fuels out of the reach of children.
- Store combustibles away from buildings.
-Develop contingency plans for places where greater possibility of fire
     exists.

5.3 Highlight the role of educational and interpretative programs in fire
     prevention, especially when focused at visitors, other users, and nearby
     residents of the PA. It is the best mechanism available for dealing
     with fire control and prevention.

NOTE: The Supporting Document B10a is a brief outline of a course on
controlling fire prepared by the U.S. Forest Service. More detailed course
information can be obtained by writing to: Department of the Interior, US
Forest Service, Forestry Support Program, Washington D.C. USA.

ACTIVITIES:

1. Have the participants describe firefighting situations in their PA.

2. Go to the field with the participants to see the effects of a fire.
Explain the cause of the fire and ask how it could have been avoided.

3. Take the participants to a nearby building (or the one in which the course
is being held) and have them identify the risks that could cause a fire.

4. Organize the participants so that they can prepare a firebreak adequate for
the setting. What are the elements that determine an adequate firebreak width.
Show them the importance of always noticing the direction and intensity of the
wind and to pay attention to the influence of slope.

5. Practice using extinguishers with small fires.

6. Divide into small groups and design a fire contingency and action plan for
a building and a zone of a PA.

Supporting Document B10a

OUTLINE FOR COURSE ON FIREFIGHTING

(Adapted from US Forest Service materials)

1. Types of personnel to be used in fighting fires
a. Relationship with organization
b. Installations, facilities, for personnel
c. Transportation
d. Training

2. Tools
a. Characteristics
b. Names and description
c. Classification according to uses
d. Maintenance

3. Chain saws
a. Basic components
b. Types of chain saws, and their uses
c. How to start, and use
d. Technique for cutting trees
e. Maintenance

4. Fire Behavior
a. Definition of fire
b. Fire triangle
c. Combustion
d. Mechanisms for propagating heat

5. Extreme Fire Behavior
a. Characteristics of extreme fire behavior
b. Factors in tragic fires
c. Visual indicators of dangerous behavior
d. Probability of secondary fires and crown fires
e. Distant secondary fires
f. Whirlwind fires
g. Explosive fires

Lesson 11

PROTECTION OF WATER COURSES IN A PROTECTED AREA

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Explain why it is important to constantly and systematically monitor the quality of water courses in a PA.

2. Describe the procedure for preparing a water quality control program.

3. List at least three factors that naturally affect the composition of water in streams and rivers.

4. Enumerate at least three types of land management activities which impact flowing waters in the PA.

REFERENCES:

MacKinnon, 1986, p.187; Lesson D5; Supporting Document B11a.

PRESENTATION:

1.1 In general, bodies of water are the ideal settings in which to detect and understand the "state of health" of an area. The quality and composition of water reflects the natural and non-natural characteristics of the surrounding community or zone.

1.2 Water bodies are the ideal media in which to opportunely detect environmental degradation problems, giving the chance to prevent or correct problems which could cause irreversible damage to the PA. Often the sources of the impacts to water quality originate outside of the PA. Elaborate on this idea and discuss with the participants what might be the sources of negative impacts.

2.1 A program of water quality monitoring and control should always be part of a general management plan of a PA, and it should be described in detail in the Protection or Research programs. The type of monitoring program will depend upon the management category of the PA, and the problems which are perceived to affect the water.

2.2 Interested workers of a PA can conduct simple water quality analyses which are generally inexpensive and require only brief training to carry out. The analyses serve to establish baseline information about the water quality in the PA, and will allow the PA director to know when some activity is causing the deterioration of water quality. If such problems are detected there may be the need for more specialized

sampling. Specialists should be consulted concerning what analyses can be done and what procedures to follow.

2.3 A program of controlling water quality should consider the following points in its design:

a) **Define the objectives of the program**. Identify the possible sources of contamination both inside and outside of the PA, and determine if there are other needs to be addressed in this program. For example: Is there the need to monitor the impact that tourism or tourism facilities have on water quality? Do the agricultural practices of the PA neighbors have a water quality impact?

b) **Determine which sites will best serve for taking samples**. Carefully review all available information and try to relate these sites with other systematic monitoring activities in the PA. For example, maintenance, patrols, etc.

c) **Select the parameters that will be used to determine the type and frequency of samples**. With a specialist determine parameters and sample frequencies that will allow for detection of suspected impacts on water quality.

d) **Define the methods** needed to take samples and to measure the parameters determined above. Which analyses can be done in the PA and which require a special laboratory?

e) **Calculate the cost of the program** including the initial capital and the posterior costs of analysis.

f) **Determine the methods of data analysis** which will be used. Make a preliminary sample which will help in the selection of appropriate techniques to be applied.

g) **Define the type and frequency of reports** that will be done. These reports serve to share the information needed to have a clear idea as to the "state of health" of the PA.

3.1 The composition and quality of water is not constant. In natural systems it varies according to geological influences, the climate, the soil type, the origin of the water (spring, underground river, swamp, etc.) and often the presence of radium (a radioactive material) which is found naturally in many bodies of water. Elaborate on this point and discuss it with the participants. If possible, ask them for examples.

4.1 The composition and quality of any water body reflects the type of land management surrounding it (in the case of lakes, ponds, swamps, etc.) and along the length of its flow (in the case of streams and rivers). Generally impacts on flowing water can come from:

a) Recreation areas: swimming, fishing (boats), campgrounds, etc.

b) Urban areas.

c) Forest management lands and agricultural land.

d) Exploration and exploitation of gas and oil.

e) Coal mines.

f) Metal mines.

g) Sand and gravel pits, or stone quarries.

Discuss and give examples of each of these impacts.

4.2 Ask the participants to present ideas of measures that could be implemented to correct or to prevent water quality problems. Among these are included:

- optimal location and construction of highways, roads, and trails to avoid sedimentation of the water.
- the use of septic tanks, located far from water sources, to treat human waste.
- optimal location of campgrounds, and other public use sites, which can alter drainage systems, and cause erosion and the contamination of waterways.
- educational and interpretative programs for visitors concerning appropriate use of the area: use of bathrooms and latrines, disposal of garbage, use of boats, etc.
- extension programs for adjacent communities whose activities can contaminate and deteriorate the water quality of the PA.

ACTIVITIES:

1. Visit a PA with water quality problems, and go through the process of evaluating, analyzing, and solving the problem with the participants.

- Do an analysis of the water with the participants.
- Determine the cause(s) of the problems detected.
- Relate the type of impact with the parameters and frequency of the necessary samples.
- Define a plan of action for monitoring activities which should help to reduce or solve the problem.

Supporting Document B11a

WATER QUALITY MONITORING PLAN

(Taken from "Monitoring Stream Water Quality for Land Use Impacts",
written by Kunkle, S; Johnson, W.S; Flora, M. and published by
the USNPS, Office of International Park Affairs and
the International Forestry Office of the US Forest Service,
December 1987")

1.1 Purpose

The purpose of this handbook is to suggest strategies for designing and
implementing simple, cost-effective surveys of water quality impacts resulting
from land uses in and around National Park Service (NPS) units. Specifically,
monitoring suggestions address various kinds of mining, oil and gas
development, recreation, urbanization, and agricultural and forestry
practices. This handbook provides a strategy for 1) designing a problem
oriented water quality monitoring plan; 2) identifying sources of suspected
water pollution caused by different land uses; and 3) recognizing, by means of
a few basic analyses, when additional study of a water quality problem may be
required. Three concepts form the basis of the strategy:

1. NPS staff typically will conduct
    some of the field sampling and
    analytical work.
2. Certain analyses will necessarily be
    contracted out.
3. A "focused" approach is used in which the
    minimum number of water quality parameters
    necessary is selected as indicative of specific
    impacts.

These concepts are explained below.

1.2 NPS Staff Role

The NPS resource manager plays a key role in identifying probable
sources of water pollution that are or could be present. In preparing to
assess these pollution sources, resource managers should have definite
objectives in mind for the data to be collected. For example, they may need to
identify and describe the severity of contamination caused by mining, so that
these problems can be addressed in park planning, development, and mitigation
efforts.

We recommend using park staff for certain analyses rather than
contracting out the entire job. The degree of analytical training needed for
park staff involvement will depend upon the interest and skill levels of those
involved. Park staff involvement in the sampling and field work typically will
lower total costs, often markedly. More importantly, park staff will become
familiar with analytical methods and terminology so that the data provided by
outside laboratories can be interpreted, critiqued, and incorporated into park
planning and management.

To enhance the understanding park personnel may have of water quality
monitoring, and in view of the changes rapidly occurring in monitoring

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techniques, maintaining contact with specialists in the field is advised.

Fig 1.3

1.3 Linking Park and Contract Laboratory Data

A stronger set of water quality data for a particular stream or stream segment evolves by linking data collected by park staff with analyses from an outside, contract laboratory. For example, the outside facility can analyze for metals, acidity, sulfate, and other more analytically complicated constituents in water samples, while park staff can supplement these outside analyses with simpler field measurements such as pH, turbidity, and conductivity. For logistical and economical reasons, in-park measurements can be conducted on a more frequent basis than outside laboratory analyses, and relationships can then be drawn from analysis of both data sets. For example, pH (analyzed in park) normally relates to acidity (analyzed in contract laboratory); turbidity (in park) reflects total suspended solids (contract laboratory); conductivity (in park) correlates with the levels of total dissolved solids (TDS), metals, or other ionic substances (contract laboratory); and so on. Knowing these relationships, park personnel can use the more frequently and simply measured parameters to estimate less frequently evaluated parameters analyzed by the contract laboratory. Estimation and extrapolation of data are then possible (Fig. 1-3).

1.4 A Focused Approach

By far the most important factor in monitoring is selection of indicator parameters for testing the water quality impacts of interest. The short lists of suggested monitoring parameters recommended in this handbook are based on our own experiences with field monitoring, plus information drawn from a thorough literature review.

Most water quality questions could be answered with a "complete" water quality survey, using many physicochemical as well as biological indicators; however, the expense of such a "shotgun" water quality survey is in most cases prohibitive. Therefore, some researchers have attempted to develop shorter lists of parameters for general monitoring (Couillart and Lefebvre, 1985). Sherwani and Horeau (1975), for example, recommend measuring a relatively short set of parameters as a general water quality monitoring scheme, based largely on U.S. Environmental Protection Agency (EPA) studies. Their recommended water quality parameters are:

• biochemical oxygen demand (BOD)
• chemical oxygen tenant (COD)
• chlorite
• chlorophyll
• conductivity
• dissolved oxygen (DO)
• fecal coliform bacteria (FC)
• discharge
• nitrogen (ammonia)
• nitrogen (nitrate)
• nitrogen (organic)
• pH
• phosphorus (orthophosphate)
• phosphorus (total)
• total suspended solids (TSS)
• temperature
• total organic carbon (TOC)
• turbidity

These parameters together should effectively detect pollution, but even this limited number of tests--by no means a comprehensive analysis - will be expensive, costing about $200 per sample in many laboratories. Moreover, a general monitoring list such as this one inevitably is more suited to detecting certain kinds of pollution at the expense of others. In this case, the above water quality parameters would detect sewage impacts well (BOD, bacteria, and nutrients are especially indicative) but be of little value for detecting coal mining impacts, where observations for metals, sulfate, and acidity would be important.

Many attempts have been made to develop a "water quality index" composed of a few select water quality parameters. One of these is the "National Sanitation Foundation Water Quality Index," which uses nine parameters, weights the measurements for each parameter, and from these figures derives a stream's index of water quality on a 0 to 100 scale (Ott, 1978). An index provides a useful way to rate the quality of water in streams for stream-to-stream comparisons or for following trends in water quality in a quantifiable way. However, indices are of limited interest from a park management viewpoint in that most are oriented toward evaluation of municipal sewage impacts.

Almost any impact on water quality can be detected with a few well chosen measurements. This handbook presents short lists of parameters designed to assess the impacts of specific land uses commonly affecting NPS waters. A short, problem-focused list of water quality parameters offers the advantage of lowered analytical costs so that more samples can be gathered and more observations can be made. Generally, it is much better to spend money on biweekly observations of, say, three key water quality parameters than to buy quarterly analyses for a dozen less specific parameters. Since stream chemical concentrations can fluctuate drastically with hydrologic changes, more frequent sampling also helps define these hydrologic fluctuations and their effect on contamination levels.

One disadvantage to a focused approach to monitoring is that certain types of pollutants may be overlooked. To screen for unexpected contaminants, from time to time a few selected water samples can be analyzed more completely; this information would complement the data generated by focused monitoring.

1.5 Legal and Administrative Considerations

Since this handbook is intended as an introductory guide to the technical aspects of devising a water quality monitoring plan, the recommendations presented here are not intended to deal directly with the legal considerations of water pollution or compliance monitoring. However, compliance and enforcement often come into play if water quality is to be protected. When specific legal questions or permit requirements are or could be of concern, then information on local, state, and federal regulations and permit requirements should be acquired from the appropriate agencies before monitoring is initiated.

The Environmental Protection Agency has developed water quality criteria that are summarized in the recently issued Quality Criteria for Water ("Gold Book") (USEPA, 1986). "Criteria" are research-based scientific judgments about the potential detrimental effect of individual water quality

constituents on aquatic species and humans.

HOW TO DESIGN A WATER QUALITY MONITORING PlAN

2.1 <u>Introduction</u>

　　This chapter presents an approach to designing a water quality monitoring plan and provides the framework for recommendations on specific land-use impacts discussed in succeeding chapters. These monitoring recommendations are based on four "facts of life" typical to many NPS units:

1.　　The park has limited staff for conducting water quality surveys.

2.　　Limited funds are available for water quality monitoring work.

3.　　Travel to stream monitoring sites involves logistical problems that will affect sampling frequency.

4.　　Park management will expect practical information, supported by reliable data, documenting water quality problems that may require management action.

The constraints imposed by these common conditions dictate a bias toward the simple and inexpensive.

　　Sampling design may be approached using the following seven-step procedure, adapted in part from Sanders et al. (1983):

1.　　<u>Define the objectives</u> of the monitoring program. Identify potential sources of pollution and other needs for monitoring.

2.　　<u>Determine sampling site locations</u>. Carefully review all existing information and try to link monitoring sites to any existing sites of other monitoring operations.

3.　　<u>Select water quality parameters and sampling frequencies</u>. The sampling charts in chapters 4 through 9 recommend parameters and sampling frequencies for assessing impacts that may result from six common land uses.

4.　　<u>Decide on the methods needed to sample the selected parameters</u> to determine which parameters will be analyzed by park personnel and which will be contracted out. Then, select the equipment necessary for field and in-park analyses and-if needed - choose a suitable contract laboratory.

5.　　<u>Calculate costs</u> for the monitoring plan, including initial capital expenditures and recurring sampling costs.

6.　　<u>Determine the methods of data analysis</u> and the system of data storage and retrieval to be used. Preliminary sampling can aid in selecting appropriate analytical techniques.

7.　　<u>Decide what reports will be prepared and when they will be presented</u>. These reports should meet the objectives of the monitoring program and the information needs of park management.

These steps are discussed in detail below.

2.2 <u>Monitoring Objectives</u>

A vital first step in monitoring is to specifically define the monitoring objectives. For NPS units, such objectives almost always entail evaluation of one or more of the following:

• <u>impacts</u> caused by a particular land use or combination of land uses
• <u>compliance</u> with federal or state standards or legal requirements
• <u>baseline or background data</u> characterizing existing water quality for long-term records, general inventory, or preexisting (historical) conditions

Whatever the objectives, it is important to clarify them with all cooperators - technicians, rangers, supervisors, contract laboratory personnel, and anyone else involved - to generate further ideas, ensure a well-thought-out program at the outset, and identify potential difficulties.

2.3 <u>Sampling Site Location</u>

The selection of stress sampling sites depends on the Monitoring objectives, which usually entail the location of existing or potential impacts. Sampling stations can be established as:

• individual stations in a network

• a pair of sites above and below a suspected impact

• single site for use before and after an activity of potential impact

These options are frequently combined.

A network of individual stations is most often used in monitoring programs. The stations may be concentrated in such key locations as swimming areas or river reaches, or they may be spread throughout entire river systems (Fig. 2-2). Often it is useful to select sites, such as bridges, that are easily accessible and can be reached throughout the monitoring period. However, this should not preclude selection of sites that will contribute to a more representative or complete data base. Collection of baseline water quality data will usually entail a network of stations designed to characterize streams and identify zones of pollution. This could include monitoring some watersheds at their mouths for the purpose of assembling profiles for basin-to-basin comparisons.

Where pollution occurs or is anticipated within a discrete area, stations sited above and below the area can either reveal the source of pollution or detect natural differences in water quality between the two sites. This scheme is particularly useful when the suspected pollution is from a "point sources" such as sewage pipe outfall. Sampling below point sources must be below the mixing zone, i.e., at a point where the pollutant is mixed in, so that a representative sample can be collected.

Some water quality impacts occur as a result of an activity of limited duration, such as logging. In this situation, monitoring water quality at the same site before and after the activity can help identify an impact.

2.2. AND 2.5

In some areas, a paired watershed study may be an option for water quality monitoring, in which one watershed serves as a control and the other contains the potential or actual impact or land use. However, unless the two

watersheds are carefully matched or are well-calibrated prior to the impact, the data can be misleading. Still, a nearby watershed can serve as a useful comparison. If, for example, a stream in watershed "A" with cattle grazing has ten times the coliforms of a stream in watershed "B," which is undisturbed, a pollution problem would be suspected.

A special case in site selection exists in limestone areas characterized by karst topography. These areas contain large springs, sinkholes, caves, and influent or "losing" streams where runoff can enter underground conduits. By these means, runoff from one watershed can emerge in a spring in a completely different watershed. Water quality sampling in such areas should be accompanied by sampling of springs. Also, park staff will need to work with local hydrologists and geologists familiar with the karst hydrology of the area.

2.4 Selection of Water Quality Parameters

Each of chapters 4 through 9 presents a "sampling chart" containing recommended parameters. Each of the sampling charts divides the recommended parameters into three categories, as follows:

1. those that can be analyzed at the stream site;
2. those that can be analyzed in a park laboratory;
3. those best or necessarily analyzed by a contract laboratory.

Individual parameters appear under one of these three headings, with the exception of certain parameters that can as easily be analyzed in either of two sites; in these cases, the parameter is listed on the line dividing the two categories, and it is left to the judgment of park personnel which is the more suitable site of analysis. For example, pH is ideally measured at the stream site (especially in low ionic waters), turbidity can be measured using a turbidimeter purchased by the park or be contracted out, and metals are best contracted out.

In categorizing the recommended parameters, we considered several subjective factors, including the desirable extent of NPS staff involvement, capital and recurring costs, sample transport considerations, quality control, level of expertise or equipment required, and the nature of the analysis. However, common sense should always prevail: although we recommend, for example, that pH be measured on-site, if frigid weather conditions are likely to damage a pH meter, then rapidly returning samples to the park laboratory for analysis would be a more sensible approach.

2.4.1 Parameter sampling techniques. The purpose underlying a water quality monitoring program governs the field sampling procedures that should be followed. Commonly, the resource manager would like to know if the quality of stream water meets the quality recommended for that stream's designated use. This can be assessed by comparing parameter values from a stream sample to water quality criteria published (and periodically updated) by the EPA. Because most EPA criteria are based on the dissolved constituents in a water sample, field sampling techniques should include filtering the water that is to be analyzed for anions and cations. Field procedures should also follow proper sample preservation techniques.

Quality control during sampling should routinely be implemented to detect any data errors resulting from improper sampling or handling methods, poor sample preservation, or collection of nonrepresentative samples.

2.4.2 Discharge. In any water monitoring effort, park personnel should obtain at least an estimate of stream flow, or discharge, in order to properly interpret water quality data. Wherever possible, stream gauging instruments should be used. Without discharge data, it may be impossible to distinguish pollution effects from normal variations caused by stream flow. For larger streams or rivers, discharge data is often available from USGS or other agencies. For watercourses lacking discharge data, park staff will need to make their own measurements or establish a stage (water depth)-discharge relationship. If no one on staff is experienced with stream gauging and calibration of stream cross-sections, the resource manager is referred to the National Handbook of Recommended Methods for Water-Data Acquisition (USDI, 1977) and to the USGS manuals by Buchanan and Somers (1968; 1969). Additionally, consultation with USGS or NPS Water Resources Division personnel, university specialists, or other hydrologists may be necessary.

2.4.3 Biological measurements. Although we emphasize moderately priced physical and chemical parameters for basic water quality monitoring, biological measurements can be used to supplement the physicochemical tests. The Environmental Protection Agency (USEPA, 1984) recommends such an integrated approach. Surveying aquatic communities, including benthic macroinvertebrate and fish surveys or bioaccumulation of contaminants in fish flush, can yield the pollution "history" of a watercourse which point-in-time physicochemical sampling may not. Other advantages are that biological sampling can reveal the effects of many known and unknown constituents; bioavailability of pollutants can be measured by toxicity testing; and pollutants can be assessed for which no adequate chemical tests are available. However, the expense of biological surveys is significant: a trained biologist must conduct species collection, identification, and data interpretation (Table 2-1). Also, biological indices and other ecosystem measures have yet to be standardized (Cairns, 1982; Perry et al., 1984). In cases where a park staff biologist is able to carry out the laboratory work, sampling of aquatic life may be an economically viable option. In specific instances biological surveys are a useful supplement, costs notwithstanding, and these we have noted in the sampling charts where appropriate.

2.5 .Sampling Frequency

Deciding when and how often to sample is a blend of art and science, seasoned by practical constraints and field conditions. In this handbook we distinguish between "key parameters," " Supplementary parameters," and "special studies." The frequency recommendations for key and supplementary parameters suggest that a parameter be measured on a systematic schedule when not modified by seasonal needs and constraints. Extra sampling of certain parameters is critical during the hydrologic conditions described in the following sections. Monitoring frequencies for different stream types are described in Table 2-2.

Table 2-1. Advantages and disadvantages of using macro-invertebrates and fish in evaluation of the biotic integrity of freshwater aquatic communities. Source: USEPA, 1983a.

MACROINVERTEBRATES

Advantages	Disadvantages
• Fish that are highly valued by humans are dependent on bottom fauna as a food source. • Many species are extremely sensitive to pollution and respond quickly to it. • Bottom fauna usually have a complex life cycle of a year or more, and if at any time during their life cycle environmental conditions are outside their tolerance limits, they die. Many have an attached or sessile mode of life and are not subject to rapid migrations, therefore they serve as natural monitors of water quality.	• They require specialized taxonomic expertise for identification, which is also time-consuming. • Background life-history information is lacking for many species and groups. • Results are difficult to translate into values meaningful to the general public.

FISH

Advantages	Disadvantages
• Life history information is extensive for most species. • Fish communities generally include a range of species that represent a variety of trophic levels (omnivores, herbivores, insectivores, planktivores, piscivores) and utilize foods of both aquatic and terrestrial origin. Their position at the top of the aquatic food web also helps provide an integrated view of the watershed environment. • Fish are relatively easy to identify. Most samples can be sorted and identified in the field, and then released. • The general public can relate to statements about conditions of the fish community. • Both acute toxicity (missing taxa) and stress effects (depressed growth and reproductive success) can be evaluated. Careful examination of recruitment and growth dynamics among years can help pinpoint periods of unusual stress.	• They require specialized taxonomic expertise for identification, which is also time-consuming. • Background life-history information is lacking for many species and groups. • Results are difficult to translate into values meaningful to the general public.• Sampling fish communities is selective in nature. • Fish are highly mobile. This can cause sampling difficulties and also creates situations of preference and avoidance. Fish also undergo movements on diel and seasonal time scales. • There is a high requirement for manpower and equipment for field sampling.

2.5.1 High-flow period. Due to the diluting effects of high flow and pollutants introduced by runoff, high-flow periods are critical times to sample. Constituents best evaluated during high flow are those associated with nonpoint sources, such as the following:

*sediment and turbidity originating from erosion of roads, clearcuts, surface mines, agricultural lands, and other areas lacking ground cover
*road de-icing chemicals
*metals that adsorb onto and are transported by sediment particles.

Heavy rains or snowmelt conditions carry accumulated surface substances such as these into watercourses (Fig. 2-5). In one northern New England study, 80 percent of the annual sediment yield occurred during the peak one-week period of spring snow melt (Kunkle, 1972). Although some chemicals, such as salts used for deicing, will be diluted by large volumes of water, it is still important to monitor them during high runoff when the total volume being transported is greatest.

2.5.2 <u>Low-flow period.</u> Some stream-water constituents are best detected during the period of lowest flows when they become concentrated as a result of the low volume of water. The predominant source of stream flow during the low-flow periods is ground-water inflow from waters that have had the greatest residence time to contact mineral solids and mobilize constituents. Point-source pollutants, such as sewage outfalls, are especially easy to detect during low flow. Other contaminants or conditions best detected during low-flow periods are these:

*ground water inputs such as metals, organics, chloride, and silicon
        oxide
*dissolved oxygen (DO) minimum values, which occur when low flow and
        elevated water temperature conicide
*BOD and COD maximum values, which occur when low flow coincides with
        higher temperatures (and therefore low DO)
*leaching septic tank leach lines, leaking waste-water impoundments, and
        other sewage or waste inflow
*feedlot contamination that has leached into the ground water
        contributing to a watercourse.

FIG 2.6

Table 2-2. Sampling frequencies for key and supplementary parameters.[1]

Stream Type	Key	Supplementary
Perennials[2]	Sample every 2 weeks during principal hydrologic and impact periods; sample monthly or less during the remainder of the year.[5]	Sample quarterly in conjunction with key parameters to cover a range of hydrologic conditions.
Intermittent[3]	Sample every 2 weeks during principal hydrologic and	Sample quarterly in conjunction with key

Parameter Type

	impact periods; sample monthly or less during the remainder of the flow period.[5]	parameters to cover a range of hydrologic conditions.
Ephemeral[4]	Sample at least twice a year during precipitation events that result in stream flow.	Sample at least once a year in conjunction with key parameters.

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[1] Special studies should be conducted as needed during the appropriate time of year or on a schedule that will produce the best results.

[2] Perennial streams are those that flow throughout the year.

[3] Intermittent streams flow seasonally.

[4] Ephemeral streams flow for short periods of time only in response to significant precipitation events or snowmelt.

[5] If the impact is of short duration during the year, increase sampling frequencies as needed to weekly or daily.

2.5.3 Storm periods. Like the high-flow periods, storms create surface runoff that carries contaminants into watercourses. The difference is that they can occur any time of year; therefore, streams should be sampled during storm events. Constituents that are primarily storm-transported include these:

•	sediment from construction sites and from mining or logging operations

•	fecal bacteria from areas of livestock grazing, nitrogen and phosphorus from fertilizers, or pesticide residues

•	organic loading from bypassed sewage treatment systems and from overtopped tailing ponds or sewage lagoons

If sampling cannot personally be collected during storm runoff, automatic storm samplers can be utilized.

2.5.4 High recreational-use periods. Heavy recreational use can result in increased contamination of stream water, especially from the following sources:

•	swimming, rafting, and other non-motorized water activity that bring human waste into a watercourse

•	backcountry use by hikers, horse-back riders, pack strings, or off-road vehicles

•	resorts and vacation homes that are producing increased sewage waste

2.5.5 Periods of biological chance. Variations in nature can directly affect water quality. Algal blooms may depress DO levels in slow-moving streams. In Eastern deciduous forests, water quality changes can result from heavy leaf fall in smaller streams. Migrations of wildlife, such as

waterfowl or elk, can also have temporary but measurable effects on
water quality.

2.5.6 <u>Periods of land disturbance</u>. Monitoring should be conducted before
during, and after periods of heavy land-use impact brought about by
Logging mining, grazing, and farming so that the effects of these
activities can be documented.

2.5.7 <u>Pollution slugs</u>. Instances occur wherein slugs of pollutants will
course down a waterway as a result of clandestine dumping, spills,
breaches in waste ponds, pipeline breaks, and other point-in-time
occurrences. It is generally very difficult, if not impossible, to
sample these pollution slugs, especially if their existence is not
suspected. Usually, some type of continual-recording or sampling
equipment is needed if the slug cannot be anticipated. If ionic
substances such as brine are entering a watercourse, a recording
conductivity meter may reveal their presence. If regular night-time
dumping is suspected, an automatic (clock-driven) water sampler might be
used to detect the contamination. Biological indicators can be useful in
revealing changes in aquatic life that suggest the periodic presence of
contaminants. Analysis of sediment or other stream-bottom material can
confirm the nature of the polluting substance(s).

Sampling frequency considerations relating to the above conditions
are noted in each of the sampling charts. Monitoring recommendations for
key parameters will usually result in 15-20 samples per year for these
parameters considering the extra samples taken during the high- and
low-flow periods, during one or more storms, and during periods of more
intensive land or recreational use or other impact (Fig. 2-6). Quarterly
sampling of supplementary parameters, if implemented, can be scheduled
to coincide with periods of high or low flow or intensive land use.
Taken together, this information is usually sufficient to reveal
seasonal patterns and to identify the existence and severity of common
water quality problems. Depending on the extent to which parameter
values exceed acceptable levels, this information would also indicate
any need for further study.

Every monitoring plan must be tailor-made, and it is important to
combine systematic (e.g., monthly or quarterly) sampling with sampling
that corresponds to important hydrologic seasons or land-use activities.
The monitoring notes in the sampling charts will help the resource
manager to devise a monitoring plan that will characterize the quality
of a watercourse during important use or flow periods as well as during
year-round conditions.

For research purposes, inferential statistics are often used to
analyze water quality data. However, in these cases an unbiased method
of sample frequency calculation, involving random sampling, should be
used. In addition, sample number calculation should be based on each
parameter's variability at a particular stream site. Although random
sampling and sample number determination based on parameter variability
are considered important for inferential statistics, they are typically
not applied to stream-water monitoring. A random-sampling schedule might
not be representative of hydrological conditions over the course of a
year. Similarly, the extreme variability inherent in coliform bacteria
analyses, for example, will frequently result in sample numbers that are
economically and logistically infeasible. Instead, systematic or routine
sampling is characteristically used by USGS, EPA, and most states in
their water quality monitoring activities. Many years of systematic
monitoring have yielded a reliable history of information on water
quality conditions.

2.6 <u>Equipment and Contract Laboratory Selection</u>

As mentioned earlier, recommendations are made in the charts relating to which parameters are best measured by whom. For those parameters that can be measured either by park staff or by contract laboratory, the resource manager must decide which is more expedient. In some parks, maintenance staff may routinely analyze coliform, sediment, turbidity, or other parameters for sewage treatment plant operation. If this activity can be coordinated with your water quality monitoring program, some cost savings can be realized in equipment and service.

It is important to recognize that while field instruments such as pH and conductivity meters are relatively simple to use, obtaining valid data is not always easy. For example, a correct pH value may be difficult to obtain in the soft waters of many parks in the mountain and Great Lakes states and may require special procedures. Likewise, failure to properly standardize an instrument such as a conductivity meter - a common shortcut-can introduce major errors into the data. Selection of suitable instrumentation is also critical. When purchasing a pH probe or conductivity cell (cell constant), the resource manager must ensure that these items will measure the data range routinely encountered in the waters in which they will be used.

Several points bear consideration in searching for a contract laboratory to conduct water quality analyses. Accessibility-by mail, if necessary--is one. Others include laboratory quality control, certification, analytical costs, and flexibility and timeliness.

2.6.1 <u>Laboratory quality control</u>. Quality control in the laboratory is based on practices that ensure a specified degree of confidence in the analytical results. A good analytical quality-control program involves a series of practices that considers at least the following (APHA, 1985):

• use of standardized and approved analytical methods

• routine analysis of a standard sample along with analyses of unknown samples to check the accuracy of analytical techniques (internal quality control)

• agency (such as EPA or the National Bureau of Standards) as a means of evaluating analytical techniques (external quality control)

2.6.2 <u>Certification</u>. If a laboratory is EPA- or state-certified, quality control is typically acceptable although costs might be higher than at a non-certified facility. By the same token, non-certified laboratories that practice internal and external quality control can be equally suitable. In certain legal situations, an EPA- or state-certified laboratory may be preferable or necessary.

2.6.3 <u>Costs</u>. Meet with the laboratory supervisor to discuss your exact needs. Be sure to obtain a current price list to use for calculating your monitoring plan costs or for price comparisons with other laboratories: prices can vary enormously. (In one survey of laboratory costs conducted by the authors, some prices varied by as much as 400 percent.) Learn whether the laboratory will provide sample bottles, preservatives, and other necessities; usually it is more practical and effective for quality control if the laboratory provides these items.

It is essential to match a monitoring program's objectives with the analytical procedures to be used by a contract laboratory. Analysis

sophistication should be adequate to provide the needed data and to allow the desired interpretations. Overly sophisticated analyses (analyzing to ppb when ppm would suffice) add unnecessary cost; by the same token, analyses at very broad levels could be useless. If litigation is involved, you must ensure that the lab's planned analyses meet the court's requirements. Since most chemical analyses can be conducted in one of several ways, decisions of this sort should be made at the program's inception. For example, metal analysis results can be provided in units of dissolved, total, total recoverable, acid extractable, or acid soluble forms.

Although analytical costs are often of primary importance in NPS areas, they should not be the only criterion for selecting a contract laboratory. If quality control is poor or nonexistent, your data could be unreliable. Still, a well-equipped and well-operated local laboratory may provide low-cost analyses that can amount to considerable savings over a better-known government-operated laboratory.

2.6.4 <u>Flexibility and timeliness</u>. Monitoring schedules can require sample analysis at times outside of normal business hours. When this is the case, you will need to know how flexible the laboratory staff can be in analyzing your samples at the necessary times. By the same token, turnaround time for analysis results should be suitable to your needs.

2.7 <u>Calculation of Monitoring Plan Costs</u>

Figuring a budget for your monitoring plan will entail consideration of initial capital costs (field and laboratory equipment for the park) and recurring costs (costs per analysis). Total sampling costs will include transport, labor, shipping, containers, etc.

2.8 <u>Data Analysis</u>

You should determine how your data will be analyzed and presented early in the planning stages of your monitoring program. Two methods for assessing water quality monitoring results are 1) comparing parameter values with EPA criteria or state standards, and 2) using inferential statistics to compare parameter means between sites and over time.

As a means of evaluating whether a particular parameter exceeds acceptable levels for different stream uses, Appendix E provides a list of EPA criteria for parameters recommended in this handbook. (In some states, these criteria may be more stringent; refer to the appropriate state environmental agency for standards applicable in your state.) In using this table, be aware of natural background conditions in your area that may elevate or depress certain parameters independent of human-induced impacts.

For comparing sample means between sites or over time at the same site, the Cochran's Approximation to the Behren's-Fisher Student t-test and the Rank-Sum Test are often useful. Both statistical tests use a method that determines the differences between means based on a level of confidence. However, the t-test has been most commonly used in water quality statistical analyses.

You may wish to add water quality data to an existing database system for the park or even a nationwide source such as Geographic Information Systems (GIS), maintained by the USGS. In such cases, it will be important to consult with the agency or unit maintaining the system on the proper format for submitting your park's data. The USGS uses GIS for such tasks as mapping stream basin characteristics and

relating this information to changes in stream-water quality as a result of different land-use practices.In this way, GIS can be used as a predictive tool for water resource managers that desire a more intensive sampling effort for selected stream reaches.

2.9 Report Preparation

When you are ready to present the results of your water quality monitoring to those needing the information, you need to be able to convey a water quality picture that is clear and easily comprehended. One way is to make effective use of graphics.

2.10 Summary

In this chapter we have attempted to identify and discuss the most important aspects of monitoring plan design. Monitoring suggestions are made that will assess these impacts effectively but at relatively low cost. Even then, and keeping in mind the importance of a consistent protocol for long-term monitoring, shifts in plan design may have to be made. Averett (1978) offers perhaps the best counsel when he advises, "Define your problem well, select your water-quality parameters carefully and in a conservative manner, review your data frequently, and do not be afraid to discard or add parameters in the light of added knowledge."

Thematic Units – Unit C: Environmental Interpretation

Training Manual for Protected Area Personnel

Lesson 1

BASIC CONCEPTS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Differentiate among the concepts: environmental interpretation, environmental education, and information.

2.Explain the importance of these activities for conservation.

3.Give examples that emphasize the importance of interpretation for protected area management.

REFERENCES:

Morales, 1992; Sharpe, 1982; Tilden, 1977; U.S. Peace Corps, 1977, Grater, R. 1976; Moore, A. 1984; Ham, 1992.

PRESENTATION:

1.1   The dictionary definitions of the words treated in this lesson are:

INFORM: To give information or supply knowledge.

INTERPRET:To explain the meaning of something. To translate from one language to another.

EDUCATION:The act of imparting or acquiring general knowledge and of developing the powers of reasoning and judgement.

EDUCATE: To develop the faculties or powers of a person by teaching or instruction.

With the participants discuss these definitions and guide them towards the contexts in which they are used in conservation and in the PA.

1.2Generally, in all the PAs, to a greater or lesser degree, environmental interpretation, education, and information are conducted. The degree will depend upon: the management category, the technical capacity of PA staff, and available funding.

1.3Information of different types is constantly required by the visitors. Where are the animals? Where is the bathroom? Are there camping areas? etc. Those who work in the PA should always be prepared to provide necessary information. So that it is most effective, one should wait to offer the information until the visitor requests or requires it, or until the PA's management will be improved if the visitor has it.

1.4Interpretation: At first glance, the sense in which this word is used in the area of conservation and the PA appears to have little relation to the dictionary definition. However, one of the various definitions is "To translate the language of nature to the language of human beings." Tilden (1977) offers the following definition: "Interpretation is an

educational activity with the purpose of revealing meanings and relationships, by using original objects with first hand experiences and illustrations, rather than simply by communicating information." Point out that the definition is not the most important thing, and give ideas of basic interpretive concepts to stimulate thought among the participants (see Supporting Document C1b).

1.5 The following descriptions characterize environmental interpretation:

- it is a voluntary and educational visitor activity.

- interpretation reveals information both through objects and experiences in the field as well as through illustrative means;

- the purpose of interpretation is not to instruct but to provoke; it is not an exercise of teaching dates and deeds, but rather to stimulate ideas;

- it is an opportunity to share our knowledge of nature, to change attitudes, and to request conservation support from a receptive public;

- it is a bridge which serves to connect the visitor with the PA and with those who manage the area;

- it is both an art and a science; while there are proven techniques for conducting a good interpretive program, to accomplish the goals of the program also requires creativity.

1.6 Extension can be considered as a subcomponent of information and interpretation. By extension is meant the orientation of inhabitants around or within the PA so as to improve agricultural, forestry, artisan, or other techniques, especially those that directly influence the PA territory. Traditionally extension has not been an activity of PA personnel. However, recently the need to increase this activity has been recognized due to the growing pressures on the resources of the PA, and to the lack of other agencies to conduct extension. Interpretation techniques and methods should play an important role in extension so that the information and messages to be transmitted to the neighbors are effective and have the greatest impact possible.

1.7 Environmental Education: Within the realm of conservation and the PA this is generally defined as a **process** directed in the **long-term** at all levels. Through different means it tries to make people conscientious and to develop values, attitudes, and techniques so as to contribute to a solution for environmental problems. It always implies a **change of attitude** and, eventually, of people's habits. Interpretation is one of various activities included under the Environmental Education umbrella. Personnel of a PA often say: "I'm going to do environmental education", when in reality they are going to give a talk in a local school. Is this environmental education or not? Perhaps it is worth distinguishing between **formal environmental education**, which corresponds to the definition presented above, and **informal environmental education**, which would include interpretation, talks in schools, and other activities which have a long-term projection in their planning.

2.1 "To not have an interpretive program within a park is like inviting someone into our house, and then disappearing" (Sharpe, 1982).

It should be made clear that the role of environmental interpretation in a PA will depend upon the management category. In some areas, such as national parks, where public visits and education are important objectives, interpretation will be a high priority. In others, such as scientific reserves, it will not be given much emphasis.

One of the functions of interpretation in a PA is to transmit to the visitor the idea of why the PA exists. Ask the participants to describe an interpretive activity carried out in their PA.

2.2 Up to now we have spoken of interpretation as an activity exclusively focused at natural resources. Almost every PA has **cultural resources** which are also important for management and interpretation. Cultural resources seldom receive the emphasis that they should; nevertheless, they constitute a very useful element for environmental interpretation. With a little imagination it is simple to demonstrate the connections between the human populations which lived (or live) in a zone of the PA and the natural resources. In this way the visitor receives a more complete vision of the PA, especially of the interrelations which exist between the two types of resources.

2.3   In the broadest sense of environmental education, the PA is the setting or work area for formal lessons as well as interpretive activities for groups that periodically visit. Environmental interpretation is a narrowly defined activity oriented towards groups that are not necessarily homogeneous nor structured. Its objective is to grab the casual visitor and provoke his interest in the natural and cultural environment of a PA.

2.4 Environmental education and interpretation programs should be developed under the guidelines of the PA management plan. In those PA where such programs are of great importance, a special plan for the development of these activities is prepared.

Discuss the interpretation and environmental education programs which exist in your country, touching on the need for training.

2.5 Environmental information, interpretation, and education are inter-related disciplines which have the final objective of increasing the awareness of man and society as to their relationship with nature, thus stimulating a spontaneous impulse to protect and care for natural resources, and the environment in general.

Nevertheless, in many countries environmental interpretation is considered as a service for the visitor; in developing countries, it is considered a strategy for communicating a conservation message, so as to influence the national conscience.

3.1 The role of interpretation in achieving optimal management of a PA should be explained (see Supporting Documents C1a and C1b). The discussion can begin by a presenting a case study which shows how interpretation has favorably influenced visitor behavior and thus the management of the area. One can use a local case or the following case from the USA:

- In two PA in the United States, Grand Canyon National Park and Death Valley National Monument, there were serious problems with feral burros which ate native vegetation and competed with native fauna. In Death Valley an environmental interpretation program was begun in

which first, a slide program was presented to visitors concerning the problem with the burros and second, visitors were shown damage in the field caused by the animals. In Grand Canyon nothing was done to make visitors aware of the problem. In both areas a program was begun to eliminate the burros through different means, including having hunters shoot them.

There was no negative reaction in Death Valley, and the administration avoided the serious problems associated with carrying out a management program with potential for shocking the public. In Grand Canyon there was such a strong public reaction against the program that it was suspended.

3.2   Who is the interpreter? The interpreter can be thought of in two ways:

a.   The professional with training in areas related to interpretation: biology, geology, education, etc.
b.   The official, or local resident, with an innate capacity for explaining natural or cultural features in an interesting and relevant manner for the visitor.

It is important to recognize that while many aspects of environmental interpretation can be taught, there are individuals with extraordinary abilities for communication which have not received any formal training. A good interpreter must have the ability to make others think, and to use nature to change people's attitudes.

4.1   Briefly describe the history of Environmental Interpretation in the PA. According to Morales (1992), "The discipline is not entirely new, although the term interpretation is. In 1919, the National Park Service of the U.S. began developing certain types of guided activities for visitors, which encouraged discovering, questioning... in other words, the heuristic method applied in an informal fashion. (Ed: "heuristic"= visitor discoveries serve as a vehicle for learning.)

"Later in the 1920's, interpretive programs became established both in state and national parks in the U.S.A., with special support from conservation organizations and from the administrations. After World War II, both the idea and the philosophy of interpretation was officially incorporated into each new park that was created."Environmental Interpretation is now a profession, assumed by both park wardens and by planning specialists. A large number of theses have been written on the subject and post-graduate programs have been established in it for students of the biological sciences, forestry, education, and communications, especially in the United States, Canada, and Great Britain."

ACTIVITIES:

1. Ask the participants to give an example of some situation in which information, interpretation, and/or environmental educational activities in their PA have directly benefitted a community and/or a natural resource.

2. Discuss with the participants the concepts and interrelations of these three disciplines and their utilization in PAs, both in reality and potentially.

Supporting Document C1a

INTRODUCTION TO ENVIRONMENTAL INTERPRETATION

(By Douglas Cuillard, National Park Service
United States of America)

Goals of Environmental Interpretation

The management of Protected Areas requires the skillful utilization and
manipulation of human resources and abilities in order to meet the mandate
which led to the creation of the PA in question. Environmental Interpretation
(EI) is a tool that can produce quantifiable benefits in the short and long
run if it is intelligently introduced into the integrated management of a PA.

The EI gives the visitor and others a more profound understanding and
appreciation of the natural and cultural resources of a PA and of their own
impact upon them. Ultimately this new appreciation brings greater protection
to the resource. Other conservation goals, even those most disputed, can be
reached with the help of EI. It has been demonstrated in PA around the world
that the effective implementation of EI reduces the need for more expensive
management actions such as the enforcement of rules and laws, the search and
rescue of lost persons, the problems related to security, and large efforts to
mitigate resource damage.

Definitions

It is recognized that in different parts of the world, different terms are
used for the topics outlined in this unit. For the purposes of this unit,
Environmental Interpretation (EI) will be the standard term used. EI is
principally a program specific to a site which is directed at the users and to
those people who directly or indirectly have an influence over a specific
conservation unit. Environmental Education, for the purposes of this module,
has much broader goals and is directed principally at the formal education
system within a country. Environmental education requires additional skills
in the areas of teaching and curriculum development which go beyond the focus
of this unit. While it is recognized that there is some conceptual overlap
between these two different disciplines, EI should play an important role in
environmental education.

The Planning Framework

In order to be effective, EI can not exist as an isolated function of PA
management. It should be included within the comprehensive plan of a
conservation unit, and of the system of protected areas. Unfortunately, in the
past EI planning was done in isolation, which led to the loss of the support
and confidence of the PA administration. EI is of little use if it can not
help in meeting overall management objectives. Along the same lines, the
planning process can not be effectively begun until the management and long-
term development plan for the PA have been prepared. The management plan
provides the frame of reference for determining the goals and general themes
of interpretation. The EI plans then further refine this process by defining
the facilities, personnel, non-personnel services, and methods needed.

Environmental Interpretation: An Art and A Science

The planning process defines the themes and management situations which should be dealt with by the EI, and suggests the means and the methods for interpreting these goals. With limited resources, priorities for maximizing effectiveness must be established. The list of specific interpretation methods is long, including informal conversations, visitor's centers, self-guided nature trails, and signs. There are various requirements for insuring quality in interpretive activities. The personnel assigned with interpretive responsibilities should have a combination of intelligence and inter-personal skills to be effective in their work. They also should have resources such as: reference library, photographic archives, natural objects (skins, skulls, archaeological artifacts, etc.). They also need to have a deep understanding of their audience. In summary, EI is much more than a mechanical exercise which follows a written recipe or a "how-to-do" manual. The best interpreters have an uncommon mix of the creativity of an artist and the analytical skills of a scientist.

Measuring the Effectiveness

The real test of the effectiveness of the EI is whether favorable changes have occurred in the attitudes and behaviour of the visitors and others towards the environment and the PA. As such, the evaluation of EI programs should be included as an integral component of their planning and implementation. EI contains a large number of subjective elements, but it should and can be planned to include quantifiable elements. This process begins with the elaboration of specific objectives which the EI programs should accomplish. If a positive impact can be measured, the PA directors can, with more support, designate more human and economic resources to EI, since it will be seen as an important part of the management strategy.

The Future

The traditional methods of EI, discussed in this unit, have been shown to be effective in meeting defined goals and objectives. Nevertheless, it is possible that new techniques will be shown to be equally effective, especially in periods of diminishing economic resources. Another tendency in EI is the specialization of methods and techniques to reach specific audiences such as children or the handicapped.

In the future better communication will exist among the interpreters throughout the world. In the First World Conference on Heritage Interpretation and
Presentation held in Banff, Canada in 1986, the call was made to create an international organization of environmental interpreters. Once formed, this should promote a greater interchange of ideas and experiences around the world.

EI is a new concept for much of the developing world. It will take time until its value is proven as an effective tool in PA management. But there is little time left for many natural systems, as report after report indicates the growing number of threats against our wild lands. The dissemination and implementation of the ideas and concepts of EI will help to reduce these

threats. Its success is indispensable.

Supporting Document C1b

DEFINITIONS AND KEY CONCEPTS

<u>Environmental Education</u>: It is the activity of teaching, to a broad population, the relationship of man with his environment. It is an intensive and progressive teaching process, normally done through a formal education system. In the long term its goal is to change the attitude of large sectors of the population by having them recognize the value that ecological processes have in the definition of the quality of human life and the need to establish a level of socio-economic development compatible with the perpetual existence of these processes.

<u>Interpretation</u>: It is the activity of translating the language of nature to the common language of the visitor, using special communication techniques. It directly takes advantage of natural and cultural objects and environments. It should provoke and stimulate the visitor to think and to arrive at conclusions about his/her relationship with the environment. Normally it is done in a specific site so as to improve the visitor's understanding of what he/she is observing. In the majority of PAs, environmental interpretation is a fundamental component of the total management of the area. It also is a key tool in broader environmental education programs developed both within and outside of the PA.

<u>Orientation</u>: It is the provision of information or facts concerning any practical aspect of the PA (basic needs, facilities, rules, etc.) in order to orient the visitor or other interested person. Although the interpreter is usually responsible for this (To answer, for example: Where is the bathroom?), it is not legitimately part of the interpretive effort.

GOALS OF ENVIRONMENTAL INTERPRETATION

A summary of what is hoped to be gained through Environmental Interpretation includes:

1. A tool with which to change attitudes.
2. An instrument for resource management.
3. An educational tool.
4. A recreational and educational experience.

The purposes of EI generally can be divided into three categories:

1.   The primary purpose is to help the visitor to develop an awareness, appreciation, and understanding of the place visited. Interpretation should contribute to making the visit an enriched and pleasant experience.

2.   Fulfill management goals in two ways: First, encourage the visitor towards an appropriate recreational use of the resource, making it clear that he/she is in a special place which requires a special behaviour. Second, use the power of attraction of the interpretive services to influence the spatial distribution of the public in such a way that visitor pressure is concentrated in those areas best able to support it.

3.   Promote a public understanding of the aims and activities of the managing agency. Each entity, whether public or private, has a message to transmit; a well conceived interpretation program should promote this message in such a way that the interests and ends of the agency fit its image.

PHILOSOPHY OF INTERPRETATION

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

Over the years, it has become traditional for writers who write about the interpretive process to express their philosophy of interpretation by creating statements of what good interpretation should be. Several of these capsules of interpretive philosophy are present here.

"An educational activity which aims to reveal meaning and relationships through the use of original objects, by first-hand experience, and by illustrative media, rather than simply to communicate factual information."
Freeman Tilden

Interpretation helps the visitor...

"Learn about his natural environment and the laws of life.

It is a program:

-that helps to make education a continuous process;
-that emphasizes avocational pursuits,
-that stimulates the proper use of leisure time."
         Harold C. Bryant, 1936

Interpretation is an attempt to recreate understandings.
            William Alderson & Shirley Payne Low

"The helping of the visitor to feel something that the interpreter feels - a sensitivity to beauty, complexity, variety, inter-relatedness of the environment; a sense of wonder; a desire to know. It should help the visitor develop a feeling of being at home in the environment. It should help the visitor develop perception."
 Harold Wallin (a chief naturalist for Cleveland Metropolitan Parks)

Is the translation of the technical and often complex language of the environment into nontechnical form with no loss of accuracy, so as to create in the listener sensitivity, awareness, understanding, enthusiasm and commitment.   **Dr. Paul Risk**

Far too many Americans live in walled cities from which nature is banished. We are the victims of a blatant misuse and misunderstanding of the energy of life. The barriers are our own pre-conceptions and prejudices, our fears, and our tenacious clinging to the familiar. As a result, most of our experience with the natural world resembles either a hasty glimpse across the barricade or an armed infiltration.

Interpretation must do more than explain. Explanation does not get rid of the barriers and disguises; it is playing the game by the rules of the barriers, for words themselves are often disguises...Our words are not the sounds, but what we call those sounds...Our mental voice gets between us and the way things really are. We are not our heads...

To succeed, interpretation must immerse the whole person in the "feelings" of his surroundings. Too often, words become the refuse of those who cannot feel...   **Steve Van Matre**

"It is an information service...guiding service ...an educational service...an entertainment service...a propaganda service...an inspirational service."

"Interpretation aims at giving people new understanding, new enthusiasm, new interests..."

"A good interpreter is a sort of Pied Piper, leading people easily into new and fascinating worlds that their senses never really penetrated before. He needs three basic attributes: Knowledge, Enthusiasm and A Bit of the Common Touch."   **Yorke Edwards (Canada)**

Interpretation seeks to achieve three objectives. The first primary objective of interpretation is to assist the visitor in developing a keener awareness, appreciation and understanding of the area he is visiting. The second objective of interpretation is to accomplish management goals. The third objective of interpretation is to promote public understanding of an agency's goals and objectives. **Grant Sharp**

Interpretation is a process by which the public is brought, in an easy and enjoyable way, to a greater awareness, understanding, and appreciation of a park; its values and uses; and, through the park, of the total environment in which it lives.

PRINCIPLES OF INTERPRETATION
(FREEMAN TILDEN)

Freeman Tilden in his Interpreting Our Heritage (1957, 1967, 1977) defines interpretation as "An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information." He goes on to say:
"In the field of interpretation, whether of the National Park Service or other institutions, the activity is not instruction so much as what we may call provocation. It is true that the visitors to these preserves frequently desire straight information, which may be called instruction, and a good interpreter will always abe able to teach when called upon. But the purpose of Interpretation is to stimulate the reader or hearer toward a desire to widen his horizon of interests and knowledge, and to gain an understanding of the greater truths that lie behind any statements of facts."

"The National Park or Monument, the preserved battlefield, the historic restoration, the nature center in a public recreation spot, are exactly those places where Interpretation finds its ideal opportunity, for these are the places where firsthand experience with the objects of Nature's and Man's handiwork can be had."

"I find six principle bases that seem enough to support our structure. There is no magic in the number six. It may be that the reader will point out that some of these principles interfinger. It may be that he will feel that, after all, there is but one, and the others are corollary. On the other hand, since I am ploughing a virgin field so far as a published philosophy of the subject is concerned, some of my readers may be provoked into adding further furrows. Very well. This book pretends to no finality, no limitation."

"I believe that interpretive effort, whether written or oral or projected by means of mechanical devices, if based upon these six principles, will be correctly directed. There will inevitably be differences in excellence arising from varied techniques and from the personality of the interpreter."

"Here, then, are the six principles:

1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.

2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.

3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.

4. The chief aim of Interpretation is not instruction, but provocation.

5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.

6. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best, it will require a separate program."

Supporting Document C1c

<u>CONSERVATION FACT SHEET</u>

1. Of the estimated 10 million species of plants and animals that inhabit the earth, only 30% are known to science, and only 15% have been described by scientists. Of those 1,500,000 species, 90% are insects, 9000 are birds, 4000 are mammals, and 250,000 species are plants.

2. The rate of species extinction in the world from 1600 to 1900 was about 1 species every 4 years; from 1900 to the present it is about 1 species per year; it is predicted that from now to the year 2000 we will experience an extinction spasm, in which 1 million species may go extinct, many them still unknown to science. (Some scientists believe that 27,000 species are going extinct yearly because of human development, but that most of these species aren't known to science.)

3. Tropical rain forests contain between 2 and 5 million species.

4. Percentage of all plants species found in tropical forests.

5. There are about 80,000 edible plants in the world, of which humans have used at least 3000 for food. Only 150 have ever been cultivated on a large scale, and less than 20 of them produce 90% of the world's food.

6. About 6,500 plants species are used by Southeast Asian herbalists for medicinal purposes.

7. There are 2,450 edible fruit species found in rainforests.

8. Number of lives saved annually in the United States by plant derived medicines.

9. A population of 400 tigers would require an area of 40,000 sq. km. of natural habitat in order to survive over the long-term.

10. There are approximately 150-180 babies born every minute in the world. Each year about 90 million new people are born.

11. If the 2 million year existence of man as a species is equated to a 24 hour clock, we have only been farmers for the last 7 minutes, and market producers for the last few seconds.

12. Number of nations experiencing a decline in food production per capita during the 1980s: 75.

13. In 1975 there were 0.31 has. of cultivated land for every person in the world. it is estimated that in the year 2000 there will be only 0.15 has. for each person. Population will have increased from 4 billion (4 thousand million) to 6.25 billion, and land under cultivation will decrease from 1240 million has. to 940 million has. By 2025, world population will have reached 8.25 billion. (Population in 1994 was 5.6 billion).

14. About 16 million hectares of tropical forest are being deforested or grossly degraded yearly.

15. In 1982, FAO estimated that 44% of the world's tropical rainforest had been cut down.

16. Tropical rainforests occupy about 7% of the world's land surface, and are home to half of all species.

17. In 1993, a total of 9,300 protected areas covered 4.8% of the Earth's surface.

18. Number of people living on coastlines in 1990: 3.6 billion (thousand million).

19. Only 50% of original coastal mangroves remain worldwide.

20. All of the 17 major fishing areas have reached or exceeded their natural limits.

21. Twenty-five percent of the world's population resides in industrialized nations. Those countries utilize 70% of the world's fossil fuel production. Canada has the highest per capita consumption of fuel; each Canadian uses the equivalent of 9 metric tons of fuel oil. The average amount of fuel oil used by a person in a developing country is 0.5 metric tons.

22. Amount of greenhouse-warming gas released by driving a typical American car for one day: 3 kilograms.

23. Amount of greenhouse warming gas released by clearing enough rainforest to produce beef for one hamburger: 75 kilograms.

Lesson 2

METHODS AND TECHNIQUES OF INTERPRETATION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Make a list of the common media used in environmental interpretation.

2.Describe the general circumstances under which the various interpretation
      methods are used.

3.Enumerate the basic tools used by a good interpreter.

4.Describe how the cultural context should affect the actions of interpreters.

REFERENCES:

Berkmuller, 1982; Morales, 1992; Ham, 1992; Sharpe, 1982, Ch. 5; U.S. Peace
Corps, 1977; Machlis and Field, 1992; Moore, 1984, Ch. 8; PARKS Magazine Vol.
4 (3) "Designing Good, Basic Visitor Centers"; Supporting Documents C2; C3b.

PRESENTATION:

1.1Ask the participants to name the methods of interpretation that they know.
      Once a relatively complete list has been created, introduce the concept
      of personalized and non-personalized interpretation, and divide the
      methods on the list into these two categories:

      -personal contact which occurs through individuals who provide
            information (entry gate, visitor center), guided activities
            (guided walks, bus or other tours), and talks.

      -impersonal contact through publications, signs, exhibits, audio-visual
            programs, and self-guided trails.

      Begin with the personal methods and then pass to the impersonal, or
indirect, methods.

Do not forget to mention non-traditional methods which are used with groups
      with little formal education, children, or other special groups:

- puppets
- theater
- stories (with a message)

(See Supporting Documents C2c and C2d)
1.2Discuss the advantages and the disadvantages of each interpretive method.

Present hypothetical situations in PA in which environmental interpretation is used, and ask the participants to name which medium would be the most effective. Special cases should be considered such as with groups who have little experience with modern civilization, and who may not perceive the means of communication in the same way as the majority of people. For example, there are indigenous groups who do not perceive what is represented by a photograph. While this is an extreme case, emphasize the idea that the interpreter **must understand his audience** in order to select the best possible way to transmit his message.

2.1It is often assumed that a PA should have a Visitors Center as these exist in many national parks and other PA in the USA. Nevertheless, the participants should reflect upon various options, considering the factors mentioned in the Supporting Documents C2b and C3b. Visitors Centers can play an important function in orienting the visitor and sometimes offering interpretation. The key point is to determine if these functions can be met with other methods which are less expensive and easier to accomplish (See Supporting Document C2a).

3.1By now the participants should have a clear idea of the possible interpretation media available. They should now think of the "tools" that they will need to be able to optimally utilize or carry out these media. Using an example such as a guided hike to a place that everyone knows, ask the participants to present their ideas concerning the tools or aids that would be useful in improving their verbal presentation.

Some things considered as tools include:

- a good library, which contains all of the available literature on the PA and its resources.

-a good slide collection (see Lessons C6 and C8).

-original objects such as bones, herbarium plants, dissected animals, rocks, historical or archaeological artifacts, etc. which are very valuable for demonstrating some point of a talk, or for use in exhibits. As such it is necessary that each PA start a collection of useful objects for interpretive programs. This implies the use of a certain amount of technique, as well as some established norms: for example, how many samples of a species is sufficient?, what should be done in the case of endangered species? (use confiscated animals or those killed by natural or accidental means). In the case of rare or valuable objects, one can use replicas or imitations of the original object.

- the use of live objects, such as live plants and animals, is problematic but very useful when possible. Their use requires maintenance in captivity for a determined period, and they should not include animals which could present danger to the visitor.

-local people who often have a wealth of information to share, and a style of

presentation which adapts very well to the interpretation.

-other non-natural objects which can be used to demonstrate some point or
       concept include: compass, binoculars, telescope, equipment to
       measure the acidity of water, magnifying lens, thermometers, and
       photographs. There are an infinite number of objects, and the
       interpreter must use his imagination to decide which would be the
       most appropriate to illustrate a specific point.

3.2The Management Plan and/or the Environmental Education Plan will determine
       the interpretation methods and techniques to be used in a PA. The
       planners will use many criteria to judge which method or technique is
       the most appropriate for a specific situation. In Lesson C3 we will
       study the criteria used for the selection of these methods.

4.1The cultural context in which the interpreter works should be discussed.
       This context influences almost everything that the interpreter does,
       from the selection of methods to the selection of words to be used in a
       talk. Initially, the interpreter should look at himself in a mirror and
       recognize that he belongs to a certain culture which includes a series
       of biases, behavioral patterns, particular ways of thinking, and
       sometimes, a language, which differentiates him from other cultures.
       Once having considered and qualified one's own cultural context, the
       characteristics of the groups with which he will be in contact as an
       interpreter should be identified, and he must design his actions in
       relation to their reality. (See Machlis and Field, 1992)

ACTIVITIES:

1. Show slides of different interpretation methods, demonstrating as many
different examples of the same method as possible so that the participants
appreciate that there are a wide range of styles, designs, and models to use
for each method.

2 Ask that the participants explain which tools could be utilized in their PA
in the development of interpretive programs.

3. Ask that the participants divide into groups of 3 or 4, and that they try
to define the principal characteristics of their own culture. After this they
should determine how these characteristics influence, or should influence, the
type of interpretation that is done in the PA in their country.

Supporting Document C2a

VISITOR CENTERS: SOME CONSIDERATIONS

A visitor center (VC) in a protected area (PA) can have a wide range of development status, varying from none at all to a large building with many different functions. The degree to which a VC is developed will depend upon a series of factors:

-The PA's management category and management objectives, which will determine the importance of public use for that particular PA.

-The number of visitors which arrives, and the seasonality of the visitation.

-Distance from other visitor service facilities, either within or outside the PA.

-Available funds and personnel; it is not worth constructing complex VCs if the funding for maintenance and operation, or the personnel to keep it open are not available.

-The VC's purpose. It can have the simple role of visitor orientation, a role which can also be fulfilled by an entrance station, signs or entrance pamphlets; or it can present interpretation which might include exhibits, films, etc. It can include staff office space, a book or souvenir shop, bathroom facilities and, in extreme situations, a restaurant. All of these functions can be carried out by alternative means if conditions warrant.

In synthesis, a VC can consist of a simple kiosk; or at the other extreme, of a large structure including offices and an auditorium, depending upon the objectives which it is desired to achieve with the VC. What is most important is that the building not become an end in itself, that is, that it fulfill technically justified functions and that it serve to stimulate the visitor to go out get to know the PA. Unfortunately, in many PAs, planners automatically decide that a full-fledged VC is necessary without adequately considering cheaper, perhaps more cost-effective and functional alternatives.

While planning for a VC there are several technical factors to consider, some of which should be subject to the opinion of a professional architect and planner:

-the spatial relationships, that is, the relation of the VC with other associated elements such as parking area, sidewalks, trails, etc., as well as its relationship with other public use sites within the PA. The VC should form part of, usually the key element in, a visitor circulation system which efficiently and strategically guides visitors around those sites that the PA wishes them to see and appreciate.

-the internal spatial relationships, e.g. how does the exhibit area relate to the information desk, or how does the bathroom relate to the parking

area, or how does the auditorium relate to the information desk. It is essential to think seriously about how the visitor is likely to use the VC, and how the different elements should best relate to each other in order to facilitate visitor use.

-the VC should planned and located in terms of the support systems that will be necessary to operate it, e.g. availability of electricity, water, nearby personnel, access infrastructure, etc.

-planning for a VC should be carried out in terms of the functions it is to carry out, and not the other way around. It frequently happens that a VC is built and then managers decide how it will be used. The question should always be asked: What is the objective of this VC; what are we trying to accomplish with this building?

-Aesthetic considerations are important for any PA building, and especially so for a VC. It should not stand out, i.e. be an intrusion upon the natural surroundings, but should have a color and form which blend in to the natural environment of the PA. On the other hand, a VC should also be obvious to the visitor, and not hidden away in the forest where it cannot be seen at all. The architect must walk a fine line between making the building blend in, and making it obvious and attractive to visitors.

Supporting Document C2b

ADVANTAGES AND DISADVANTAGES OF SOME INTERPRETIVE METHODS

(Adapted and translated from original Spanish, Morales, 1992)

Generally speaking, interpretive methods are classified in terms of "personal" and "non-personal", or "attended" and "non-attended". Personal implies an interaction between the interpreter and the visitor, while non-personal means those services which do not directly use interpreters, but instead use objects, signs, publications etc.

Non-Personal Methods

1. **SIGNS**

They provide direction, information or interpretation, and are usually fixed and permanently located.

Advantages	Disadvantages
- Give clear and concise information	- Are static, not evocative
- Are easy to build	- Don't give details
- Low maintenance cost	- Don't adapt to different levels of public comprehension
	- Are subject to vandalism

2. **PUBLICATIONS**

Advantages	Disadvantages
- Reasonable cost per unit	- No direct contact with visitor
- Can be taken as a souvenir	- Don't respond to questions
- Can be read at any time	- Can become trash (thrown away)
- Can be used by other visitors	- Don't adapt quickly to changes in the resource
- Give detailed information	

3. **MASS COMMUNICATION**

Advantages	Disadvantages
- Cover a wide and varied audience	- High production costs.
- Can motivate to visit a PA	- Are associated with the sale of a product.
- Can announce special events	
- The information can be simple or complex	

4.   **SELF-GUIDED TRAILS**

Although they are considered a means in themselves, they require other means
e.g. pamphlets or signs, to be effective.

Advantages	**Disadvantages**
- Visitor can use at his own pace	- Impersonal, don't respond to doubts
- Concentrate use in space	- Susceptible to vandalism
- Can stimulate the use of the senses	- Difficult to maintain and control

5.   **AUTOMATIC AUDIOVISUALS**

Include films, automated slide programs, recorded sound programs.

Advantages	**Disadvantages**
- Can provide high quality information	- Are generally expensive
	- High maintenance cost
- Create special atmosphere, which implies higher audience receptivity	- Require energy source
	- Lack personal contact, don't respond to doubts, questions
- Can provide vicarious situation, replacing first hand experience	
	- Require permanent control.

6.**EXHIBITS**

Objects or collections of things placed on view, generally in an organized way
in order to illustrate or explain a theme or topic. Used indoors and outdoors.

Advantages	**Disadvantages**
- Can be observed at visitor's own pace	- Don't represent a first hand experience with the resource
- Can be made to be transportable	- Static; limit use of senses
- Relatively low maintenance cost	- Can't tell an entire story
	- Outdoors, can be intrusive
	- Don't respond to doubts.

7.**DISPLAYS**

Three dimensional presentation which combines exhibits with graphics and
which, as a unit, can contain an entire theme.

Advantages	**Disadvantages**
- Can be observed at visitor's own pace	- Doesn't respond to doubts
	- Needs protection from climate
- After installation, relatively low maintenance cost	- Generally needs a source of of energy or illumination

- Ideal for people with little time   - Not transportable
to visit the PA
- Can involve visitor participation
- Can have moving parts.

Personal Methods

8. **GUIDED WALKS**

Conducted by a guide or interpreter, following a pre-established route by
those who organized the activity; themes and method of presentation may vary.

Advantages	Disadvantages

- Visitor contact with interpreter
  - First hand experience with the
resource; possible use of senses
- Questions and doubts can be answered
- Presentation can be adapted to visitor
needs and levels
- Permits direct control of visitor use
of resource.
	- Expensive, unless done with
	  volunteers
	- Effectiveness depends on guide
	- Visitor cannot go at his own pace
	 - Requires personnel training to be
	effective

9. **AUDIOVISUALS GIVEN BY PERSONNEL**

Presentations in which the interpreter is present to explain or answer
questions, or in which the interpreter uses an audiovisual for his owe
presentation.

Advantages	Disadvantages

- Transportable
- Can be used for large groups
- Possible two-way communication
  - Illustrations and projections add
greater impact to the talk
	- Not appropriate for small children
	- Requires source of energy
	- Relatively high equipment
	  maintenance cost
	- Requires auditorium or
	            amphitheater
	- Effectiveness depends upon ability
	of interpreter

10.   **DEMONSTRATIONS**

Demonstrations are generally carried out by non-PA personnel who are specialists in an activity in some way related to understanding the PA, many times of an historical or cultural nature, such as crafts, musical instruments, processing of food etc.

Advantages	Disadvantages
- Direct observation of an activity	- Can be expensive
- The senses can be used	- Demonstrator may good craftsman, but not good communicator
- Promotes the protection and advancement of traditional crafts and activities	- Not appropriate for large groups

11.   **CASUAL SERVICES**

These include, generally speaking, three types of services: information, reception, and spontaneous assistance (in any place or situation). Although not directly related to environmental interpretation, these services fulfill a public relations function that goes much further than the delivery of information about bathrooms, schedules, etc. Every contact between the visitor and personnel helps to create an image of the PA in the visitor's mind. It is an opportunity for the staff to strengthen that image in a positive sense.

Advantages	Disadvantages
- Good orientation makes the visitor's experience more pleasant	- If personnel is not adequately prepared, can be counter-productive
- Interaction between staff and visitors can be relaxed and personal	- Visitor may not be receptive to spontaneous contact
- Can be useful to those who do not like organized groups	- Imprecise information can affect negatively the visitor's experience.

Supporting Document C2c

<u>SCHOOLS AND PARK EDUCATION PROGRAMS</u>

(Taken from: "Programming for School Groups: An Interpreters
Guide", US National Park Service)

*"There are textbooks...and there was the teacher...; firsthand contact with
the objects of study was not usually available and often not even encouraged."*

Teachers, students, parks, and schools have changed. Not only have the
institutions changed, the educational theory has changed as well. There has
been a gradual shift away from teaching separate disciplines, using formal
tests to categorize children, and placing value on factual learning.

Elements of An Effective Education Program

At first glance, the number and variety of programs offered by National Park
Service sites can be mind boggling. There are concession-run programs,
cooperative programs, residential, on- and off-site programs, walks, talks,
and media programs; each of these is a tribute to creative park rangers and
supportive managers. Upon closer inspection, the most successful programs for
school groups have several common elements. Consider the following elements;
think about the attributes of each. These are the basic elements, tried and
true, of an effective education program.

Teacher Involvement in Development

• Teachers can be a source of endless support to parks developing educational
programs.

• Teachers have in-depth knowledge and understanding of children and how they
learn and behave at different stages of development.

• Teachers can help pinpoint the most appropriate/significant correlation
between the school curriculum and park resources.

• Program endorsement by teachers is one of the most effective means of
advertisement.

Relevance to the School Curricula

• The greatest service we can provide to teachers and students is assistance
in teaching that which they are mandated to teach.

• Teachers today are under pressure to teach an enormous amount of material in
180 school days. Pressure to improve student performance nationwide is
at an all time high; our programs must share this goal, not simply
increase demands on classroom teachers.

- Check your local school system for a copy of the curriculum guide for teachers at different grade levels. If curriculum is state mandated, contact the State Department of Education.

- Effective interpretive programs supplement, rather than duplicate school curriculum.

Active Learning

- Interpretive programs should not simulate classroom learning.

- Interpretive programs should involve the learner both physically and mentally.

- The most effective techniques for children are those which are participatory.

Developmentally Appropriate

- Consider the characteristics of the age group's physical, mental, and emotional developmental levels.

- The level of vocabulary used should address the needs of the audience.

- Concepts and interrelations must be taught with clarity and in a manner appropriate for the age group.

Relevance to Specific Park Resources and Themes

- A preservation/conservation message in all NPS programs helps raise consciousness, and promotes awareness of the Servicewide mission.

- Programs are developed with the school audience in mind, but must benefit the park as well.

- Programs provide the link between the classroom and the resource, taking advantage of unique resources in each park, and allowing students to interact as much as possible with the resources.

Preparation and Follow-up Materials

- Background information helps prepare teachers and students.

- Themes and objectives clearly state the focus and purpose of the program and activities.

- Pre-visit activities lay the groundwork for concepts presented during the program.

- Pre-visit materials build anticipation and generate excitement for the topic and the fieldtrip experience; they do It duplicate the on-site

experience.

- Vocabulary lists and ready-to-use materials address both teacher and student needs.

- A bibliography suggests opportunities for further study.

- Follow-up activities reinforce the learning experience.

- An evaluation provides feedback on both program and written material.

Using Curriculum in Program Planning and Development

Suggested steps for planning a curriculum-based program:

1. What is your park's mandate? Its themes? Think about what makes your site unique in the local area. Why would schools want to visit?

2. Think about the best experience you have had at your site with a school group. What was it that interested them? Before you get to the curriculum, what is naturally interesting to children at your site?

3. Do an inventory and list the resources of your site in three categories: the themes and stories which the park currently interprets and possibilities suggested by the mandate, the resources and materials available to carry out the interpretation with students, and the strengths and particular interests of staff members.

4. Analyze the visitation demands for your site with particular attention to the school visitation. Look at your statistics for who visits. Who is coming, and when do they come?

Now:

5. Find a curriculum guide from a local school system. Make sure to obtain the guide for the subject area which complements the park's strengths for a specific audience; early elementary (K-3), upper elementary (3-5 or 4-6), middle (5-8 or 7-9) or high school (8-12) or (9-12).

6. Look through the guide for suggestions of where the park themes will fit in. Think about the content areas which are listed. Does the park cover any of the themes or content goals? Would a visit to the park cover any of the skill areas?

Once you've taken these steps, try the following:

- Develop some potential program outlines using the themes, goals and objectives format from interpretive programs. Focus on the needs of one particular student audience.

- Talk to teachers. Call a local school and ask to talk to the curriculum supervisor in your area or ask the principal to suggest a teacher who might be willing to meet with you. Try out your ideas. You might want to invite a group of teachers to the park to pilot your program.

- Ask the teachers what kinds of materials you could provide to them for their use in the classroom. Start the discussion with a list of those materials you used to develop the program.

- Ask teachers who come to the program, what kinds of activities they do in their classroom before coming to visit. Which books are they reading with their students? Look at textbooks and trade books. Use the information in your program planning. Share good ideas with other teachers.

Supporting Document C2d

<u>PUPPET SHOWS</u>

Puppet shows can portray human beings (as in living history demonstrations) or non-humans (such as in personification). That puppet shows are found in cultures all over the world is evidence of their communication power. People everywhere seem to enjoy watching the semi-real world that puppets live in. Because they speak and have personalities, we can easily project ourselves into their pretend world, sometimes seeing ourselves more clearly than is ordinarily possible. Presentations with strong, serious or controversial themes often lend themselves to puppetry because the interpreter can allow the puppets to do the talking — for example, to make social criticisms or to point out conflicting interests — and therefore assume responsibility for moral content. According to Werner and Bower (1982), if a real person were to say the things a puppet might say, some people could be angry or hurt: "Puppets add a sense of pretending and humor that can make the feared parts of our daily life easier to look at."

Puppets can be used in elaborate, large-scale performances or in simple one or two-character shows. They can also be used as supplements to other activities. For example, an interpreter leading a tour for children could use a hand-puppet (stored in a bag until the appropriate moment) to explain something specific to the children; and the same interpreter could use a different puppet when the children needed to be calmed down or reminded of a rule, thus allowing the interpreter to avoid the role of disciplinarian. Puppets can include gloves, socks, or other fabric containing a face or other features, masks or giant heads on sticks, kitchen sponges, painted balloons, cardboard boxes, paper bags, clothes pins, cardboard rolls from bathroom tissue or paper towels, and many other materials that are common and inexpensive. A saying among puppeteers is "don't throw it away, it can be a puppet someday."

Planning effective puppet shows will be easier if you pay attention to the following simple guidelines. English language readers can find valuable discussions in Regnier et al. (1992), Forte and Werner and Bower (1982). Two superb Spanish-language sources are Ministerio Hondureno de Salud Publica (1986) and Bustillo (1990).

1. *Give puppets a face whenever possible.* Faces give puppets an identity and increase their ability to communicate. As in human communication, the eyes are especially important.

2. *Use facial expressions to establish each puppet's personality.* Facial (especially the eyes) should depict something characteristic of each puppet's personality or predominant role in the presentation. For example, smiling puppets are predominantly (but not necessarily always)

happy; frowning puppets are usually grumpy or mean; puppets with eyes closed are usually timid, etc.

   3. *Plan the script around the amount of help you have.* Develop a story with the number of characters you actually have people for. Playing more than one part (managing more than one puppet) is usually difficult.

   4. *Keep your puppets' dialogue short.* Build in a lot of action. When puppets must move or do something, make them do it quickly and conspicuously; puppets which move slowly in order to do little, or speak slowly in order to say little are boring puppets; puppets which carry out their movements and dialogues swiftly and surely are more interesting.

   5*. Create a simple but colorful backdrop for your puppets, and change it during the show if possible.* Painted fabric (even old sheets, table cloths, window shades, shawls, etc.), make good backdrops.

   6. *Play records or tapes to add sound to your performances.* You can also record your own sounds and then play them during the show. Another possibility is to supplement your show with live sound effects. Beating on a drum, rubbing pieces of sandpaper together, dropping pebbles onto a piece of tin, or speaking through a paper tube are just a few ways you can create sound effects during a puppet show.

   7. *Keep your performances short.* Usually ten or fifteen minutes is sufficient to get a message across. If the message is more complex, consider having two episodes. Usually it's better to leave your audience thirsting for more, rather than drowning in excess.

Lesson 3

**PLANNING OF ENVIRONMENTAL INTERPRETATION
PROGRAMS**

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the hierarchy of management plans in a PA.

2. Explain the difference between the guidelines in a general management
   plan concerning the Interpretation and Environmental Education
   Programs, and a specific plan for the development of these
   programs.

3. Enumerate the principal steps to follow in developing an Environmental
   Interpretation and Environmental Education Plan.

4. Enumerate the three factors that need to be considered in the
   development of any program.

REFERENCES:

Sharpe, G. 1982 (Chap. 4); MacFarland, C. 1982; Grater, R. 1976 (Chap.
2); Miller, 1980 (Chap. III); Morales, J. 1992; Ham, 1992; Wood and
Wood, 1981; Lesson E2; PARKS Magazine, V. 10, N. 2: "New trends...".

PRESENTATION:

1.1 Within an ideal planning system for a PA there would exist a
    hierarchy of plans that should be prepared: first, the plans for
    the PA system; second the long-range management plans for the
    individual PA; and then the operational plans (normally annual);
    and finally the special and more specific plans (which often are
    by themes). Emphasize the importance of planning in everything
    that is done in a PA. (See Lesson E2 for more information).

1.2 It should be pointed out here the difference between Environmental
    Education and Environmental Interpretation (see Lesson C1 and
    Supporting Documents). It should also be stressed that the
    environmental education or interpretation in a PA is only one of
    various components or programs defined in a management plan, and
    that its development is tied to and coordinated with the
    development of others, so that each program or component supports
    and complements the others (just as the players on a sports team
    help each other in order to win a game).

1.3 There is the tendency to consider a PA as an island, or isolated situation, without ties with the rest of the country or the world. As such the importance of considering the PA as a part of a regional or national system of PA which have a conservation mission and objectives should be emphasized. This should not be forgotten in an interpretive program.

2.1 The management plan defines the themes, the principal sites for carrying out Environmental Education or Interpretation, the necessary personnel, and other general directions to guide the environmental education program. In some PA where environmental education is a priority activity, special plans are formulated for the development of a program of education or environmental interpretation. Normally these plans are prepared by personnel who know the area well together with specialists in interpretation and education. Sometimes the plan's title includes "Environmental Education", especially if the activities programmed include formal activities of environmental education outside of the PA.

3.1 Before beginning to develop an interpretation plan, ask the participants for their ideas on the methodology they would use to develop a plan. They should be guided until arriving at an outline similar to that presented in Supporting Document C3a.

3.2 There are three phases necessary to develop in any environmental interpretation plan:

1. Gather and analyze all of the available information concerning the resource to be interpreted.

2. Conduct a study of the PA users in order to determine the audience to whom the message of the Environmental Interpretation should be directed;

3. Select and develop the methods which best convey the resource message to the users (Supporting Documents C3a, C3b and C2b).

3.3 Subjects, goals, and objectives: What will be the orientation of the plan? What is it that you want to accomplish with the plan? The objectives defined in the management plan should be considered, along with other factors such as: environmental problems in the PA and in the larger region, type of visitor, and behaviors and attitudes that are being encouraged in the visitor. (Obtain an environmental education plan as an example.) It is important to think in a hierarchy of objectives beginning with the questions "why is the PA here?" and " what are the principal problems?". The answers are found in the management plan and in official statements of the competent authorities. Later the goals need to be considered: "What can interpretation do to improve the situation?". Having a goal, objectives should be set which should indicate "What should be the results of a specific interpretive experience in terms of the behavior and thoughts of the visitor?"

This hierarchy of considerations should be developed for a plan of interpretation, as well as for any other plan.

3.4 Data and information: In order to be able to develop a good plan, much information is needed, especially concerning the natural and/or cultural resource that is to be interpreted. This information should exist as a basis of the management plan.

Information is also needed about the people who visit the PA in order to create a visitor profile: what is the person who visits the PA actually like? The profile should include information about age, profession, sex, nationality, origin, means of transportation, education level, length of visit in the PA, and activities done in the PA. This information will guide the planners in determining the audience to which the interpretation will be oriented. The visit and use of the PA by people who live close by or even within the area should be considered as an important focus of education programs.

3.5 Personnel: in the planning it must be considered how many people will be needed to carry out the plan. Personnel signifies funds both to pay people employed, as well as the infrastructure necessary to support them. The non-personalized interpretation has the advantage of requiring a minimum of personnel. Another factor to consider is that the personnel generally require specialized training. A good interpreter must be intelligent and have the capacity and desire to relate to the visitor. Not just any person can successfully fill the role of interpreter.

3.6 Maintenance: the signs and the exhibits as well as other communication media require constant maintenance which implies costs and time on the part of PA personnel. Maintenance should be considered a priority in planning as it makes little sense to invest in something that will be lost.

3.7 Selection of interpretive methods: This is an area that requires a great deal of thought, as the interpretive methods are those that must transmit that which the plan stipulates. Here, the planner should consider all of the available information in order to select the best method to be employed to interpret a specific subject in a specific place (see Supporting Documents C3b and C2b).

ACTIVITIES:

1. Have the participants review one or more interpretation and environmental education plans.

2. Develop a questionnaire with the objective of determining the basic characteristics of the visitors to a nearby PA. Obtain the necessary information through interviews, reports, etc, and develop a profile of the visitors.

Supporting Document C3a

METHODOLOGY FOR PREPARING AN INTERPRETIVE PLAN

(Taken from original Spanish: MacFarland, 1982)

1.**Select or prepare the provisional objectives of the Plan.** In this
section there ought to be a discussion of the different
interpretive themes, based upon the particular situation of the PA
and the content of its management plan. Then a discussion of the
Plan's objectives.

2.**Analysis and synthesis of background information.**

2.1 Collection, review, and analysis of basic information related to
potential interpretive or environmental education programs,
by examining the present situation and projecting it into
the future.

a. Resources and characteristics of the PA and adjacent region.
--Natural resources: flora, fauna, geology, ecosystems, endangered
species, genetic resources etc.
--Cultural resources: archaeology, history, living cultures etc.
--Socio-economic characteristics: regional economy, demographics, actual
and potential land use (marine as well), environmental
health etc.
--Specific resource management situations which could benefit from an
interpretive effort.

b. Present and future use of the PA and the region by visitors:
--Visitation patterns in space and time
--Visitor profile: age, residence, income, travel means, interests etc.

c. Programs and their components (facilities, infrastructure,
activities), both existing and projected, for
interpretation of the PA and the region.

d. The sources of existing and potential collaboration and cooperation
for carrying out interpretive programs.

2.2 Identify where information is lacking and plan field work to obtain
the needed data. (visitor profile?)

2.3 Carry out field work on those aspects mentioned in 2.2 and add this
information to what has already been collected.

2.4 Synthesize, prioritize and present the information in an organized
manner.

3.0 **Prepare the definitive objectives of the Plan.**

Has the information collected and analyzed changed the preliminary
objectives determined in step 1.0?

4.0**Prepare and analyze the limitations and favorable conditions which**

influence the planning process.

4.1 Prepare a list of the factors which limit the planning process (e.g. lack of information), divided into those existing ones which cannot be modified, and those which can be changed to some degree.

4.2 Prepare a list of the factors which have favored or facilitated the planning process and the interpretation in the PA.

5.0 **Define the basic criteria which will guide the development of the interpretive program.**

e.g. interpretive themes, design and style considerations, relationship with public use areas, selected audience, etc.

6.0 **Prepare the proposed interpretive programs describing in detail each component and utilizing the following outline:**

a. Name of the component or activity (e.g. interpretive trails
b. Specific objective of activity
c. Themes to be dealt with
d. Methods and activities to be used
e. Required infrastructure (exhibits, building, trail)
f. Style and design norms
g. Materials needed

In preparing these programs all possible interpretive methods should be considered, being realistic concerning the financial and staff requirements for each.

7.0 **Prepare an integrated development plan.**

Should include: a map of integrated development showing all of the components, plus a training and staff development program, an inter-institutional cooperation and collaboration program, and a sequential development graphic.

8.0 **Present, discuss, and revise the plan with governmental, and NGOs, at the local, regional and national level.**
9.0 **Publish and distribute the plan.**
10.0 **Implement the plan.**
11.0 **Evaluate the plan during execution.**
12.0 **Revise the plan and make the necessary changes.**

Supporting Document C3b

SELECTING THE MOST APPROPRIATE INTERPRETIVE METHOD

There are many methods of interpretation that can be used, and some will
be more appropriate in certain sites or situations than others. Method
selection will depend upon many factors and considerations: funds,
personnel, type of visitor, and climate.

I.One way to determine if a method is appropriate is to ask:

-Does it require personnel for its operation? All the time, or only
            occasionally?
-Does it require electricity?
-Could it be easily damaged or stolen?
-Will maintenance be a problem?
-What effect will the climate have on its operation?
-Could it sustain continuous use?
-If necessary, could a replacement be obtained?
-What is the audience to which it is directed?
-Is this method successfully being used in a nearby site?
-What is the experience with this method in similar locations?
-How much will it cost to construct, and then to maintain?
-Will it be accepted by the public? Is it too extravagant or intrusive?
-What impact will it have on the visitor, and what impact will the
            visitor have on it?
-What impact will it have on the environment where it is being used?

II. Other considerations to keep in mind:

A.Concerning the visitor:

-What are the activities or behaviour that is desired to be changed or
            taught to the visitor?

-The method should be directed at the maximum number of types of
            visitors.

-The method should make the visitor feel comfortable.

-The method should consider the time that the visitor has available at
            the location.

-The method should insure that it does not induce the visitor to enter
            dangerous or difficult situations.

-The method should provide variety so as to maintain interest.

-The method should contain the message desired to be communicated.

INTERP. C3b-2

                    Graphic sharp

Lesson 4

PERSONALIZED INTERPRETATION: REACHING THE VISITOR

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the advantages and disadvantages of personalized
    interpretation versus other indirect interpretive methods.

2. Describe the various methods of personalized interpretation, and the
    advantages and disadvantages of each.

3. Identify, describe, and use successfully the three types of questions.

4. To recognize and evaluate different types of visitors and how best to
    approach them from an interpretive point of view.

5. To successfully carry out an organized interpretive walk.

REFERENCES

Ham, 1992; Morales, 1992; Sharpe, 1982, Ch. 7,8, and 9; Grater, 1976,
Ch. 4 and 5; Lewis, 1980; Machlis and Field, 1992; Wood and Wood, 1981;
 PARKS Magazine, V. 5, N.4 , 1981: "In Park Interpretation, Small Can be
beautiful".

PRESENTATION

(Most of the material presented in this lesson is adapted from materials
provided by the Mather Employee Development Center, US National Park
Service.)

1.1. Discuss what personalized interpretation is. Why is it an effective
    means for getting a message across?

1.2 Discuss the advantages and disadvantages of personalized
    interpretation versus impersonal or indirect methods of
    interpretation. (See Supporting Document C2b.)

2.1 Discuss the three components of any interpretive program: The
    Protected Area, the Visitor, and the Interpreter. Although each
    component of this framework can and should be examined as discrete
    entities which contain their own elements, organization, and
    regularities, the intersections of the components, if carefully
    explored, examined and understood, can help serve as a framework
    for improving interpretive programs.

Protected
Area

Visitor   Interpreter

2.2. **The Protected Area**. Every PA, whether a national park, monument, or recreational area illustrates certain concepts that interpreters and other PA managers hope visitors will come to understand and remember. The visitor's understanding of such concepts or ideas is considered to be the goal of an interpretive program or talk. Usually, these concepts are the "big ideas", rather than specific pieces of information such as the names of certain plants or animals. Ask participants to think about their own PA environments. What are the important concepts or "big" ideas that they think should be transmitted to visitors. Will the expressed ideas help visitors to derive meaning from the PA environment?

2.3 **The Visitor**. Every visitor comes to the PA filled with certain preconceptions. Some of these are accurate, some are not. Many visitors arrive with the idea of learning something new; many are just passing through. The visitor is a complex creature, and when they are in a group, the combinations within the group are even more complex. If one considers the visitor as a potential learner, then much can be done to understand and cope with the complexity of visitors in any interpretive situation.

The are some things that we know for sure about how visitors derive meaning from environments:

a. <u>Visitors learn best from firsthand experiences</u>. Let the visitor touch the snake, feel the water, etc. In this way the experience is a firsthand one, and not indirect.

b. <u>Visitors learn best when an experience is close to them in time and space.</u> It is difficult for a visitor to comprehend statements such as "The fossil in this rock is 4 million years old and was set down beneath the waters of a great sea that once covered one-fourth of the United States." What people remember from experiences like this is that there was a sea shell in some dirt, and that the shell was very old. Meaning comes from helping the visitor realize how one determines (today) that a great sea once covered such a vast area. An interpreter might allow visitors to interpret for themselves by asking: "If a geologist studying this layer of sediment followed the layer as far as he could, like following a line, and found the layer in New Mexico, Texas, Louisiana, and several other states, what might that observation suggest to him?" Such a question, building upon observed data and comparisons of data, can bring a large or remote idea closer to

the visitor's personal place in time and space, thus the concept will be remembered for a long time.

c. <u>The Interpreter.</u> Creating interpretation is closer to being an art than a science. A good interpreter must rely on some interpretive skills, but in personalized interpretation be able to quickly adapt them to different visitors and different situations. (See Machlis and Field, 1992, and Sharp, 1982, Ch. 7, Section on "Communication"; Ham, 1992.)

3.1**QUESTIONING TECHNIQUES**. Lead participants through the following session on questioning techniques.

II.Why visitors ask questions of interpreters.

A.To seek basic information, "Where are the rest rooms?"

B.To simply break the ice as an introduction, "It sure is hot today."

C.To verify information that they have, "Is it true that Washington really slept here?"

D.To clarify an issue "I didn't understand your last statement."

III. Why interpreters ask questions of visitors.

A.To solicit feedback to ensure comprehension.

B.To learn more about the group - educational level, area or site expertise, demographic.

C.To force attention, "Can you all see the snake?"

D.To control behavior and actions, "Where are you going?" "What are you doing?

E.To determine what other interpretive programs they have been to in the area so you can adjust content as necessary.

F.To cause visitors to think about and understand the "Message" the interpreter is communicating.

G.To motivate the group, "Wouldn't it be nice if we took a walking tour around the grounds?"

H.Another type of question that is often asked is called a rhetorical question. A rhetorical question contains the answer within it, "If you look at a piece of granite, you can see mica, quartz, and feldspar, can't you?". Rhetorical questions never allow visitors to explore, discover, or think for themselves.

IV.Uses of Questions

Questions are the interpreter's major instructional tool. There are two
          basic types:

     A.Open ended: These are questions calling for   opinions, views,
               feelings, or experiences.

B.Closed ended: These are questions calling for one word or one input
               answers.

Exercise: Using the Supporting Documents C4a and C4b, ask the students
               to develop some uses for questions and then come up
               with some examples.

IV.General tips for asking questions

     A.Start the question with a "What, when, why, where, or how" to
               obtain more than a yes - no answer.

     B.Pause long enough for the audience to formulate an answer.
               Longer pauses also help visitor to formulate more
               complex answers. 5 - 15 seconds is a good time to
               wait for responses.

     C.Encourage the timid to respond, don't let one person dominate.

     D.Do not use a set order for asking questions, don't pick people
               in a specific order to respond (as going around a
               circle or from front to back) or the others may not
               pay attention.

     E.Repeat the question if necessary so all can hear it.

     F.Let one person at a time respond.

V.The Three Types of Questions

NOTE: All of the sample questions that follow are intended only as
     general illustrations. Area-specific questions should be
     developed by the instructor in response to the students needs.

     A.<u>Recall</u> - The recall question is designed to draw information
               from past to present, feelings, situations or
               observations. It is a question that invites one to
               gather data or to draw upon remembered information.

The recall question involves completing, counting, describing, listing,
               matching, observing, recalling, selecting, naming,
               identifying.

What was the name of the first signer of the Declaration of
               Independence? (Naming)
"How did it feel when you touched the snake?" (Describing)

What are the three types of rock? (Listing)
Describe the designs on that chair.(Describing) How does the stone
                    appear to be unusual? (Observing)
"Can you spot the blue Heron in the flock of storks?" (Selecting)

        B.Process - The process question is designed to have the visitor
                    draw some relationships among the data or information
                    recalled by comparing, inferring or explaining.

The process question may involve analyzing, classifying, comparing,
                    contrasting, distinguishing, experimenting,
                    explaining, grouping, inferring, making analogies,
                    organizing, sequencing.

        Is this room built differently from the others we've visited?
                    (Comparing)

There are both pine trees and cacti here. How are they alike and
                    different? (Comparing and Contrasting)

How can we solve this problem about congestion in the park?" (Problem
                    solving)

Can you arrange these photographs according to when they were taken?"
                    (Sequencing)

C.Application - The application question is designed to cause the
                    visitor to go beyond the data or concept which he has
                    developed, and to use it in a new or hypothetical
                    situation.
  Application questions may involve evaluating, applying a principle,
                    building models, evaluating, extrapolating, finding
                    examples, forecasting, generalizing, hypothesizing,
                    imagining, inventing, judging, predicting,
                    speculating, and theorizing.

"If this beetle spreads what will happen to the trees?" (Predicting)

"If these exhibits continue to be exposed to sunlight, how might this
                    affect our evaluation of the technique?" (evaluating)

"Can you imagine what it would be like a union soldier during the Civil
                    War?" (Imagining)

"From what we've said about animal adaptation, can you find some other
                    examples of adaptation while we are on our walk?"
                    (Applying a principle)
ADDITIONAL CLARIFICATION:

Notice that the RECALL question is often asked in the past tense: "What
            did you leave home?" "What were their names?" "How was the
            table arranged?" Although it is not always true, the past
            tense is often a clue to identifying the recall level
            question. When the visitor speaks in the past tense, it is
            often a clue that they are operating at the recall level of

thinking.

The PROCESS question is often asked in the present tense: " How <u>can</u> we solve this problem?" "How <u>does</u> this object compare with that one?" "Why <u>do</u> you think so?" When you observe or hear visitors using the present tense, it is often a clue that he is thinking at the process level.

The subjective and future verb forms as well as conditional clauses generally set the tone for APPLICATION questions: "What <u>will</u> happen <u>if</u>...?" "What <u>might</u> <u>be</u> the outcome <u>if</u> ...?" "What <u>should</u> we do <u>if</u>...?" Another clue to the application question is the inclusion of a value-laden word. Such a work causes the visitor to make value judgments or to evaluate. For example: "Would it be <u>better</u> if we started on the trail or in the cave?" "What would be the <u>fair</u> thing to do?" " Of all the parks you've visited, which one do you <u>prefer</u>?"

VI. Sequencing Questions

The proper sequence (or order) of questions helps comprehension while a random jumping from type to type causes frustration and a lack of learning. Generally the sequence is recall, process, application. Visitors must receive or be able to recall information before they can process it. They must process it before they can apply it. There might be several recall questions, then a few processing questions and a final application question.

VII. Practical Exercises

Option #1: Each participant is asked to write out one example of each of the 3 types of questions that have been used in their own interpretive presentation. If the participant does not use one or more of the 3 types in a presentation, they should make up a question of that type for possible use.

The group is asked to share their questions with the class.

Option #2: Using any of the three types of talks (i.e. Talk, Walk, Illustrated) that you have developed in this class, list the objectives that you wanted the "visitors" to know. Develop a series of questions to reach that objective using proper sequencing and all three types of questions.
The group is asked to share their questions with the class.

VIII. Answering visitor questions

Visitors probably have asked you questions which, taken at face value, do not make sense. From the visitors' point of view, the questions usually do. But, because of the lack of knowledge about the subject being interpreted, visitors must adapt their questions about your subject to their own experiences and understand. Upon asking these seemingly ignorant

questions, visitors put the interpreter into the challenging situation of figuring out what the visitors really want to know, and then responding properly.

Most interpreters can recall a question which is asked over and over again by visitors. Some are just routine and easy to understand, but then there are those questions which seem to be totally out of context. For instance, how many times have you been asked, "Is it real?" by a visitor who is standing in front of an object. Obviously it is real! You can see it, feel it, maybe even smell it. It does exist - it is real.

The visitors' concept of "real" may not be so elementary. A museum is filled with items which the visitor is not allowed to touch. The interpreter always refers to the items as something from another time. Can the visitor accept them as "real"? Average people do not have much experience with antique or historic objects in their everyday life. To them the actual or "real" object is an unusual thing. When they see some historic object among others which are not, they can become confused or lose track of which items are "really historic." Hence, is this real?

Hearing what a visitor has asked and knowing what he asked is often two different questions.

1. Hints on answering visitors questions

a.If you do not know the answer, tell them that you haven't had that question yet and you would be happy to find out the answer. Don't bluff!

b.If you don't understand the question, ask for more information or a rephrasing.

c.If there is a better place or time in you talk to answer the question, give a short answer now and more later.

d.Repeat the question, if necessary, so all can hear it.

e.Don't always answer directly, give a "clue" or help them figure it out themselves.

Each participant is asked to share their examples with the group. The group is allowed to comment on the examples and offer possible other meanings to visitors' vague questions.

IX.Conclusion

1.Describe 3 types of questions an interpreter can use to involve the visitor in his presentation.

2.How are these questions used for obtaining feedback to find out how much visitors are understanding about your

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interpretive presentation?

3.Do interpreters know the visitors' jargon well enough to answer
        questions properly?

4.1Guide the participants through a thorough discussion and practice
    sessions concerning guided walks.

A.Instructor asks the class what are the characteristics of a walk if
        you gave it at a: Historic Site, Nature Site, Recreational
        Site.

        1.Historic Site:
            a.Static environment
            b.Controversial (ex. Edgar Allen Poe NHS: no furniture
                inside house)
            c.Repetitive
            d.Hands off (Don't touch the furniture)
            e.Tight schedule
            f.Tight quarters
            g.Manmade hazards (broken hand railing)
            h.Doors (you may need to open and close)

        2.Natural Site:
            a.Changing environment (need to inventory trail)
            b.Controversial (no hunting allowed)
            c.Hands on (feel the softness of the fern)
            d.Relaxed schedule (Ranger can determine duration of
                walk)
            e.Plenty of room
            f.Environmental Hazards (Slippery trail)
g.Spontaneous events (eg. bald eagle flies by group)

        3.Recreational Site:
            a.Changing environment
            b.Walks are activity oriented (canoe trip, fishing
                tour)
            c.Usually requires equipment
            d.Serious safety concerns (canoe can flip over)
            e.High demand
            f.Visitors are usually "locals"
            g.Controversial
            h.Needs plenty of time for walk (1/2 day)
            i.Local community participation

    B.Define the Guided Walk

From Grant W. Sharp Interpreting the Environment "The movement of a
        group of visitors led by an interpreter whose goals are to
        develop sensitivity, awareness, understanding, appreciation,
        and commitment in the members of the group."

    C.Reinforce that all elements of the interpretive talk are in the
        walk. Emphasis that the elements of the walk all should be
        built on a solid theme.

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                    1.Determine the subject matter.
                    2.Targeting the audience.
                    3.Performing the research.
                    4.Developing theme statements.
                    5.Writing objectives
                    6.Writing the outline body.
                    7.Developing the conclusion.
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     D.Explanation that this session will involve a presentation by the
        trainees.

        1.Use the same information/data base that you have developed
           during your talk.
        2.The walk will not be video taped.
        3.15-30 minute walk (instructor: this will depend on the
           size of your class) with five stops will be presented.

F.Common "pitfalls" of Walks

     At the opposite end of the spectrum are walks which appear
        successful, but in reality are not enduring, meaningful or
        inspirational to the visitor.
     a.Inventory walks: As we go through this building I will point out
        the furniture and tell you its name.
        b.Travelogue Talks: This is a....this is a....this is a...
        c.Chronological Rambling: Dates, Dates, Dates.

II DEVELOPMENT OF A PROGRAM

     A.Steps towards an interpretive walk

        1.Assessment of Audience: Know your audience. Examples:
           age, group size, disabilities, etc. The more that can
           be predetermined about this the better. Ask others
           about previous presentations, check reservations, look
           up attendance statistics.

        2.Assessment of management needs or concerns. Check where
           it is possible to walk, consider resource impact
           problems etc.

        3.Establishment safety guidelines. Plan for emergencies,
           predetermine hazards to avoid.

        4.Selection of Stops. Sites for stops must be chosen for
           their convenience **and** content. Make sure you know why
           you selected a particular stop, and that you have
           something to show and tell the visitor.

        5.Determine Presentation Techniques.

        a.What you finally choose will depend on many things; audience, management concerns etc.

      6.Draft a narrative. The narrative can be put in Block Outline form or standard outline form before it is made into a script or a detailed outline. Use of a Program Outline Sheet of Lesson Plan format will allow the interpreter to note other actions or concerns that are going on at the same time when the walk is presented (eg. use of props, safety concerns etc.).

7.Conduct a Dry Run.

        a.It is essential that the interpreter conduct a dry run before the presentation is actually given to the visitors.

        b.To be effective, the dry run must be done on site. If possible, it is worthwhile to bring along someone else to talk to.

        c.Off site practice can continue through use of a mirror, video tape, tape recorder, TV, etc.

        d.After testing ALL techniques and scoping out the site, modifications should be made as necessary.

III. PRESENTATION OF A WALK

There are endless guidelines and techniques that have been developed to aid in the presentation of an interpretive walk. They take a great deal of time and practice to learn. A few basics:

A.At the start of the walk (INTRODUCTION).

      1.Appearance: make sure your uniform looks sharp and worn according to NPS guidelines.

      2.Pre-arrange and test all props and support items (radio, 1st aid kit, litter bag, field guides, photos, binoculars, replicas, puppets, etc.)

      3.Arrive at least 15 to 30 minutes on site prior to starting time.

      4.Mix with participants before the walk starts, announce other programs, assure them that they are at the right place, etc. Flipchart and handouts (copy of steps direct from text to left)

      5.Start the walk **on time**, don't wait for stragglers. Keep within line of site of starting point for first five minutes so that visitors can catch up.

6.Introduce yourself and the <u>National</u> <u>Park</u> <u>Service</u>.

    a.Tell them a little bit about yourself.

    b.Tell them about your park.

    c.Announce trail conditions, strenuousness, steps, hazards, safety precautions, duration distance and ending location.

    d.Briefly announce your plan of presentation, method and give a positive review of restrictions (do not touch furniture, do not pick plants, no smoking etc.).

B.During the Walk (BODY)

1.Keep the group in view at all times. You may need or want to designate a responsible visitor at the end of the group to monitor stragglers.

    a.You will need to be looking for your designated "end person" before you start talking.

    c.You may want to choose a young adult to be your "assistant", "junior guide", or "junior ranger"

2.Avoid talking about something significant until the entire group is assembled. Try to get your group in a half circle around you before you start talking.

3.Don't walk and talk at the same time. Only the visitors walking right next to you will be able to hear you. Small talk is fine along the way. Save important information for stops.

4.Check behind you, every once in a while, as you are walking to make sure that your group is still with you. Young children, teenagers, senior citizens, make walk slower than you.

5.Project your voice. Direct your voice to the last person in line or to the rear of the semi-circle. Encourage questions. HINT: Ask the visitors "Can you hear me?", they will let you know!

6.Watch your vocabulary, especially scientific jargon.

7.Lecture as little as possible. Try to develop your talk in a way that invites the audience to participate. Go from what the visitor knows to what they don't know. Use analogy, ask questions!

8.Repeat questions directed at you so that everyone hears the question.

9.Be enthusiastic!Know your subject. Remember that everything you are trying to tell the visitors may be new to them.

10.Don't bluff! If you can't answer the question, say so! Tell them you will try to get the answer and send it to them later. Don't forget to get their name and address.

11.Avoid imposing your own interests on the group. Observe group reaction to determine if the subject continues to arouse interest.

12.Avoid complex and detailed explanations. Keep them simple, relevant and concrete.

13.Face your group. Keep the sun out of the visitors eyes even if it has to be in yours. NEVER wear sun glasses.

14.If you talk to visitors between stops be sure to share your gems of wisdom with the whole group by repeating the question(s) and repeating your answer(s). Nobody wants to be left out!!!

15.Know when to be silent. It isn't necessary to keep a barrage of conversation going. Stop talking to use the other senses whenever possible. You may need to stop talking temporarily or even move your group to another location if an airplane flies by, workers are using jackhammers, a street person is lying in your path.

16.If talking about intangible or abstract points, make sure the visitor can make mental pictures. Ask them to describe what they envision. Use visible or tangible examples where possible. Draw graphs in the dirt, or use props.

17.Incorporate on the spot opportunities. Seize the interpretive moment!

18.Give emergency situations priority. Make sure your radio works or where the nearest phone is. Plan rest stops. Keep a head count. Think and practice safety!

C.At the Conclusion of the Walk (CONCLUSION).

1.Make sure all participants are accounted for.

2.Summarize the program. Develop a strong, motivating ending. Don't forget to mention the N.P.S.

3.Inform your group that you will remain around for questions and follow-up on items you were unable to answer on the

walk.

4.Return all props and gear.

IV.EVALUATION

    A.Evaluation should be going on throughout the walk. Ask the class what are the ways that they could evaluate their own walk.

        1.Observe visitor reactions. Look for smiles, questions, raised hands, retention of the entire group to the conclusion of the presentation, and other feedback. Lecture Discussion 15 Minutes

    2.Direct questions to the visitor that relate to your objectives.

    B.Evaluation should also come from outside.

    1.Get a peer, friend or even a stranger to audit your walk and give you feedback.

    2.Get a supportive supervisor, or a non-supervisory superior (eg. chief ranger) to critique your walk. Don't wait for them to ask you, make an appointment with them.

V.PREPARATION AND PRESENTATION OF A SAMPLE GUIDED WALK.

    A.INSTRUCTIONS

        1.FIRST DAY OF WALKS

            a.The class will be divided into three or more groups (depending on the size of your class).

            b.Using the information/data base that you used during your talk to develop a walk. It can be indoors or outdoors, depending on what techniques you need to work on.

            NOTE: Instructor, you may want to assign the students to do an outdoor walk or indoor walk as to make it more difficult for each individual student. (i.e. so that they are not doing the same talk that they give at their own park)

            c.The walk will be 15-30 minutes (depending on the size of the class) and it **must** include five (5) stops.

            d.Allow the students to prepare their walk.

2.   SECOND DAY OF WALKS

    a.Students will break out into their groups with an instructor and will do their presentation in front of the group.

    b.One member from the class and the instructor audits the presenter.

VI.SUMMARY

A.The instructor and peer auditor should point out the overall successes and weakness of the walk in a one to one situation. All those listening can make casual supportive comments.

B.Major points that need review should be addressed here.

C.Conclusion

D.Optional: End on a high point. Save a particularly good student video, or other example to show now.

Supporting Document C4a

USES OF QUESTIONS

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

Questions are the interpreter's major instructional tool. There are two basic types:

  - Open ended, calling for opinions, views, feelings, or experiences;
  - Close ended, calling for one word or one input answers.

Questions may be directed to two different "targets" -- the group or the individual.
Group questions are for all to consider and anyone to answer, while individual
questions are directed to one person, usually called by name.

There is an art to asking thought-provoking questions, and considerable time is
required to develop constructive group thinking through questions. Below are examples
of questions and their suggested uses.

Keep discussion on target

-Interesting point. Can you relate that to the earlier point made?
-Whoa! What was the original question asked?

Assess and evaluate information

-Given this data, what conclusions can we draw?
-Do the facts justify the conclusions? Why? Why not?
-How does this information stack up against your experience?

Suggest desired response

-Wouldn't this be a better way?
-10% seems about right, doesn't it?

If you want to find out if somebody knows something, what's the first, most obvious
thing you should do?

Determine understanding/test learning

-What are the first three steps in this process?
-How would you paraphrase this policy in your own words?
-If you were faced with an overpopulation of deer, how would you manage your resources?
-Why is it necessary to follow these steps in sequence?

Get agreement, solutions, or conclusions

-What possible conclusions can we draw from this information?
-Do any of you disagree with what's been said?
-What's the end result of all this?
-When you add it all together, what does all of this mean to us as visitors?"

Supporting Document C4b

INTERPRETIVE QUESTIONING TECHNIQUES

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

DIFFERENT LEVELS OF QUESTIONS INVOLVE A VARIETY OF PEOPLE IN A VARIETY OF WAYS.

1.<u>RECALL QUESTIONS</u>   easiest

...are designed to draw information from the visitor based on his/her own experiences
   and observations. They are generally easy for people to answer and help to break
   the ice and get the visitors involved.

Examples:
How many different kinds of trees can you see from here?
How many of you are from an area that was affected by glaciation?
      Where do you get your food?
      Have you ever seen a forest fire?

2. <u>PROCESS QUESTIONS</u>   more difficult

...are designed to help the visitor draw relationships or comparisons based on
   processing the information at hand.

Examples:
What similarities do you see among the trees here?
      Can you see any signs of there having been glaciers here?
      How do you think the people of Fort Vancouver got their food in the 1830's?

3. <u>APPLICATION QUESTIONS</u>   most challenging

...help visitors use creative thinking to draw new conclusions, going beyond the
   information or observations at hand.

Examples:
What would this place look like if there was another ice age?
What sorts of thing will people be saying about our culture 100 years from now?
What do you think would happen to this forest if all fires were suppressed?

REMEMBER THAT QUESTIONS ARE INTERPRETIVE **TOOLS** - LIKE OTHER TOOLS, THEY HAVE A SPECIFIC
PURPOSE. BEFORE YOU ASK IT, KNOW THE PURPOSE OF YOUR QUESTION!

Supporting Document C4c

THE GUIDED WALK

(Adapted from training materials provided by the
Mather Employee Development Center, US National Park Service,
Harper's Ferry, West Virginia)

Techniques for a guided walk are many and varied. Often these depend upon the individual's skill. However, there are a number of things that can be done to insure a successful walk. Among these are:

1. Pre-walk Activities

   A. Select a place to meet the group that will be pleasant for those
      having to wait.

   B. A routed or lettered sign at the meeting place listing the time
      of departure and the days the walk is given is helpful.
      This is especially true where several guided walks originate at
      the same point each day.

   C.Be sure to have any special equipment along that will be needed such as
      binoculars, light meter, etc.

   D. Be sure to arrive at the meeting place well in advance of
      departure time; then stay put and don't wander, as you only
      confuse visitors who plant to take the walk.

   E. When people arrive, don't just let them stand around. Greet
      them cordially.

   F. Engage the early comers in conversation, if possible. It helps
      to make them a part of the group. and puts you on good terms
      with them before the walk begins.

   G. Start the walk on schedule--don't just wait around for possible
      late comers.

2. The Guided Walk

   A. Introduce yourself; the group will want to know who you are.
      Make this simple.

   B. Identify the activity and the National Park Service.

   C. State the distance covered by the trip and the approximate time
      required. Be sure you adhere to the limitations you have set
      up.

   D. Let them know where the walk is to end--this is especially
      important if it ends at a different spot than where it begins.

   E. Condition the group if any special conditions are to be met--

such as rough terrain or if any fees are to be charged (this is important where a boat trip becomes a part of the walk).

F. Indicate any special gear that may be needed, such as warm clothing if entering a cave, etc.

G. Briefly list some of the highlights to be expected and the objective of the walk--may be an ecological walk, one dealing primarily with history, etc.

H. Invite questions on the walk.

I. Indicate how the walk is to be led.

J. Leisurely being the walk, moving only a short distance from the starting point for the first stop. This allows late comers to arrive and join up.

K. Walk only as fast as the slowest. Most visitors are not in the "pink" of condition; you may also have older persons in the part.

L. Stop only at comfortable spots to talk. Take advantage of switchbacks when on a steep trail.

M. Collect the group before starting to talk.

N. Talk clearly, but don't shout.

O. Keep discussions simple.

P. Do not keep your group too long in one spot--several may become restless.

Q. Keep the group together between stops--don't run away from them.

R. Stop only at points of interest that can be developed.

S. Don't lecture--involve the group at least part of the time.

T. Be safe at all times.

3. Termination of the Walk

A. Gather the group and quickly review something of the scope and interests of the trip.

B. Be sure all activities you wish them to know about are mentioned--don't cover too much ground on this; some parks have extensive programs.

C. Dismiss the group--don't let them just drift away. Invite those who want to do so to stick around with any questions they may have.

4. <u>General Points to Consider</u>

    A. Keep in the lead at all times on the walk; do not let individuals go ahead.

    B. Encourage questions.

    C. Handle humor with care--planned humor is often easily recognized by the visitor.

    D. Don't be a wisecracker--if the Service needs a comedian it can hire one.

    E. Draw on listener experience when appropriate--be prepared to shorten the time if necessary.

    F. Don't choose certain people in the crowd to cater to while on the trip--some individuals are attracted to the appeal of a person in uniform!

    G. Don't pick plant specimens to show the group--you are setting an example.

    H. Don't get technical or be a know-it-all.

    I. Don't be afraid to say "I don't know." It is most deflating to one's ego to be embarrassed in front of a crowd because you gave the wrong answer and got caught!

    J. Use your own experiences to advantage on the walk, but go slow on the frequently with which the word "I" is used.

    K. Never forget that you are there to help the group, not to entertain them.

Supporting Document C4d

INTERPRETIVE THEMES

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

What Is a Theme?

A theme is the central or key idea of any presentation. When a good presentation has been completed, the audience should be able to summarize it in one sentence. This sentence would be the theme. Development of a theme provides organizational structure and clarity of understanding. Once the theme of a presentation has been decided, everything else usually falls into place. Themes should:

1. Be stated as short, simple, complete sentences.
2. Contain only one idea.
3. Reveal the overall purpose of the presentation.
44. Be specific.
45. Be interestingly worded (if possible using active verbs).

Examples of Themes

1. Our children depend on us to take care of their natural resources
2. Preserving biodiversity is like having a life insurance policy.
3. Three kinds of frogs live in this forest, and knowing which is which
could save your life.
4. Some species are capable of adjusting their behavior to conserve body
heat.
5. All life is dependent on the sun.
6. Energy is found in various *forms,* some very surprising.
7. Energy flows in only one direction, and is neither created nor
destroyed.
8. Blue grass makes our water cleaner.
9. Everything is on its way to becoming something else.
10. Careless spelunkers can upset a delicate balance of life.
11. Exploring caves is a sensuous experience.
12. Everything in life is related to everything else.
13. The mosquito plays an important role in nature.
14. Underneath the ground is a fantastic plumbing system.
15. Mosquitos are fascinating insects once you get to know them.
16. Three main factors determine how geysers work.
17. The grizzly bear is a doomed species.
18. Lincoln's life was often marred by tragedy.
19. Charles Manson is a lunatic, but a brilliant one.
20. Much of the literature about the Mayan culture is incorrect.
21. To understand the Mayans, one must understand their fascination with
the stars.
22. Robert E. Lee was a famous soldier, but his personal life is poorly
understood.
23. Knowing a foreigner's culture is the fastest road to friendship.
24. A tiny rare plant in Mexico saved the U.S. corn crop.
25.   Baseball is America's greatest gift to the world.

Supporting Document C4e

HOW TO PLAN AND PREPARE A THEMATIC TALK

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

Fortunately, although it's generally not possible to teach an
interpreter the "feeling" part of effective speaking, it is possible to
teach the preparation part. Dozens of good books exist on this subject,
and our purpose here won't be to duplicate them. Instead, our approach
will be to reconsider the purposes of different parts of a talk (the
introduction, **body**, and **conclusion)** and, by way of an example, to
suggest how you might use this knowledge in planning your own talks. In
doing this, we'll consider a simple approach, which we'll call the **2-3-1
Rule**, as a method for guiding our thinking and decision making as we
develop a talk.

Parts of a Talk and Their Purposes

Although most people know that every talk should have three parts—
an introduction, a body and a conclusion— too many of us think of them
as being simply the beginning, middle and end. The best speakers,
however, know that there's much more to the parts than that. And, to a
large degree, it's their ability to understand and accomplish the
different purposes of the three parts that makes their talks seem more
interesting and easy to listen to. Fortunately, anybody can do this.
There is wide disagreement over how long each part of the talk
should be. A lot depends on how long the talk, itself, is. For example,
in a twenty-minute talk (a common length when the audience is seated),
the introduction should probably account for about 25 percent (five
minutes), the body for about 50 to 60 percent (ten to twelve minutes),
and the conclusion for about 15 to 25 percent (three to five minutes).
In a shorter talk (five minute orientation talk), the introduction may
account for only 5 percent (roughly fifteen seconds), the body for 90
percent (four-and-a-half minutes), and the conclusion for 5 percent
(fifteen seconds). But these are just averages, and there is no evidence
to suggest that any part of any talk should be a certain length. Beware
of "experts" claiming to know the "rules" about such things.
Communication is rarely so simple.
But if there are no firm rules, then how do we know just how long
an introduction, body or conclusion should be? The answer is: each part
of the talk should be as long as it needs to be in order for it to
accomplish its purposes. Knowing what each part should do, we can then
prepare it in such a way, and at such a length, to do precisely that and
nothing else. Having done this well, you'll then know how long each part
needed to be. It needed to be the length that you've made it.
An old adage in speech communication goes: "Tell them what you're
going to say, say it, and then tell them what you said." Although you
probably know that preparing a good talk takes a little more technique
than just this, you probably also agree that it's pretty good advice.
Roughly speaking, introductions tell the audience what you're going to
say; bodies tell them what you said you would talk about; and
conclusions often summarize or reinforce what was said in the body. But
in thematic communication there's more still to these three parts of a
talk. Compare the different purposes of the introduction, body and
conclusion as they're shown in Figure 3-3. Notice that although they do
indeed correspond to the beginning, middle and end, they each have a

specific task with respect to the theme of the talk.

Figure 1:

A Good Talk Has a Good Introduction, a Good Body, and a Good Conclusion

In every good talk, there is an introduction, body, and conclusion—each of which accomplishes a different set of purposes. Preparing an effective talk is simple if you think of it as developing these three different parts, and if you concentrate on designing each part to accomplish its specific purposes.

Part of the Talk   **Purpose(s)**

1. The Introduction   • to create interest in the theme, and to make your audience want to hear more about it. (Remember, they're a non-captive audience.)

• to orient the audience to the theme, and tell them how your talk is going to be organized. (Remember the "Magical Number 7 Plus or Minus 2.")

• to establish the conceptual framework that you rely on in the body, and to introduce the vehicle (if you're using one).

• to set the stage for the conclusion.

2. The Body   • to develop the theme, organized just as you said it would be organized, and using whatever facts, concepts, analogies, examples, comparisons, etc. that are needed to make the information entertaining, meaningful, and relevant to your audience.

3. The Conclusion • to reinforce the theme—to show one last time the relationship between the theme that you revealed in the introduction and all the information you presented in the body. Many conclusions summarize the key points that were made earlier, and some offer ideas about the larger meaning of the theme (e.g., what the "bigger picture is" or "where we go from here").

The Introduction

A good introduction does at least two things very well. First, it creates interest in the talk. It doesn't just make the audience willing to listen to the talk—the best introductions make them want to listen to it. This is essential for non-captive audiences, because very early in the presentation they'll decide whether it's going to be worth their time to pay attention to it. For this reason, many speakers start off their presentations with a provocative statement or an interesting question. For example, in a talk whose theme is "If the world is actually getting warmer, the lives of future generations will change dramatically," the speaker might begin by posing the question: "What would you do if tomorrow you woke up in the middle of an ocean?" Another example is a talk about the growing number of visitors in protected areas in which the interpreter's first words were, "A lot of people don't know it, but we're about to love our wilderness to death!" Grater (1976) described a similar beginning in a talk about Giant Sequoias. His advice is to "strike a spark with the opening sentence."

The second thing a good introduction must do is orient the audience to the theme, and tell generally how the talk is going to be organized. In Chapter 1, we saw how important organization can be. When audiences know ahead of time how you're going to organize the information you'll give them, it's easier for them to keep it straight in their heads later. This makes listening to your talk easier, and increases the likelihood that the audience will pay attention to it. If you keep the number of main ideas to five or fewer, most audience members will be able to follow your train of thought quite easily — that is, as long as they can see the relationship between the theme of your talk and each of the main ideas. Different speakers accomplish this in different ways. In our talk on global warming, we might begin as follows:

> "What would you do if tomorrow you woke up in the middle of an ocean? As unbelievable as this sounds, some scientists are telling us that future generations may actually have to face a very different world than the one you and I live in. The cause, they say, is that the world is getting warmer. In the next few minutes, I'm going to tell you about global warming and why scientists think it's happening. We'll look briefly at its causes and how it can affect not only the oceans, but agriculture and forestry. Most of all, we'll look at how it might affect people all across the world—including us, our children and their children. I think you'll see that if the world is actually warming, sooner or later people everywhere will have to change the way they're living—and they'll have to change it dramatically."

Two things are clear in this introduction. First, the theme is obvious: "If the world is actually warming, sooner or later people everywhere will have to change the way they're living—and they'll have to change it dramatically." Second, it's clear that the speaker is going

to talk about four main ideas with respect to the theme: (1) the reasons scientists have come to believe that the earth is getting warmer, (2) global warming's effect on oceans, (3) its effect on agriculture and forestry, and *(4)* its effect on people. Although you might introduce this talk differently, your introduction should try to accomplish the same two things.

Not all talks will use a vehicle or overriding scenario. Those that do, however, should use the introduction to prepare the audience for it. For example, suppose we were going take the audience into the future, to a hypothetical place in the northern latitudes, where an Eskimo family was sitting under a shade tree during an exceptionally hot summer day talking about the "old days" when their ancestors had to bundle up to stay warm against the freezing wind. With this vehicle, we could present the four main ideas of our talk through the conversation of the family. If we were going to do this, we might add the following to the above introduction:

> "Nobody really knows for sure exactly what's in store for future generations. At this point, we have only some general ideas. But to give you a feeling for them, I'm going to ask you to use your imagination a little, and come forward in time with me—say about 100 years or so—to the home of the Chilkoot family, a group of Eskimos who live in the northernmost part of our planet. How might the Chilkoot family be living in comparison to their ancestors a century before?"

Of course, there are many possible vehicles for any talk, and many talks won't include one at all. The important thing to remember is that if you decide to use a vehicle, you should explain it in the introduction so that the audience will be prepared for it when you get to the body of the talk. Often, the vehicle is the final part of the introduction, as in our example above.

Finally, many speakers use the introduction to set the stage for a maximum impact conclusion. There are many ways to do this—a key phrase or sentence that's spoken in the introduction and repeated again in the conclusion, part of a story that's begun in the introduction and finished in the conclusion, a major idea that's given in the introduction and repeated in the conclusion, "flashback" slides (slides which are shown in the introduction and again in the conclusion), etc. And as we've stressed repeatedly, the theme of the talk, itself, should always be given both in the introduction and conclusion.

The Body

A good body tries to accomplish just one purpose: to develop the theme. "To develop" means to present the information that's needed to get the theme across to your audience. This information should be organized around the five or fewer main ideas that you mentioned in the introduction, and it should include no other information. Facts, concepts, examples, comparisons, analogies, anecdotes, and other illustrative material should be included as needed in order to make the body entertaining, meaningful, personal, and informative to the audience (see Chapter 1 for a review of these principles.) A very general outline of the body of our talk on global warming might look something like

this:

I. There is evidence that the earth is getting warmer

II. Global warming could affect the oceans

III. Global warming could affect agriculture and forestry

IV. Global warming could severely affect people

Under each main idea there might be subheads (A, B. C, etc.) that will include the facts, examples, anecdotes, and other illustrative information referred to above. This "color" is usually important because it helps make the information we're presenting more interesting and more relevant to the audience. The best interpreters recognize this and use it to advantage, but they also recognize that what people will remember from their talks will be the five or fewer main ideas and the theme, not the color. For this reason, they're highly selective in choosing which subordinate information to include in their talks.

Since ending one main idea and beginning the next often involves a conspicuous change of topic, you might want to include **transitions** between them.

Transitions, like the one we included at the end of the introduction of our talk, don't need to be complex. In fact, the best ones are short and simple. Their purpose is merely to indicate to the audience when you're going to quit talking about one main point, and begin talking about the next one. For example, after talking about the evidence for global warming (Part I in our outline above), we might use a transition like the following to begin talking about global warming's effect on the oceans (Part II):

"So as you can see, there's some pretty strong evidence that the world really is getting warmer. And if this is true, it's probably going to affect us in a lot of different ways. Let's talk first about how it might change the earth's oceans... "

This transition says to the audience: "Okay, we're done talking about the reasons that scientists think the world is getting warmer, and we're now going to talk about how global warming could affect us. We'll start with its effect on the oceans." Similarly, once we finish talking about Part II, we might use the following transition to introduce Part III:

"But global warming could affect more than just our oceans, it could have far-reaching effects on agriculture, and on our forests."

Transitions are easy to include in any talk. They're simple statements that serve only to remind the audience when you're going to change topic. Many speakers memorize their transitions. This helps them to remember the rest of the talk, principally because it's much easier to remember the "color" underneath each major idea than it is to

remember the entire body as one big narrative. In our global warming talk, it is as though we're telling four small stories held together with transitions, rather than one big story. Less experienced interpreters sometimes forget to plan their transitions, and their talks suffer as result. If you have trouble remembering talks, or feel you must rely on notes to do it, try using preplanned transitions between your main points. Chances are, you'll find that using them makes remembering what you want to say much easier.

The Conclusion

A good conclusion is like both the punch line of a joke and the final note of a song. It serves as a "punch line" because once people hear it, they can clearly see the relationship between the information you've presented and the theme or "so what?" of your talk. A conclusion is like the "final note" in the sense that a good one signifies a sure and unambiguous end to the presentation. As we'll see shortly, after a good conclusion, the audience is so full of thought that no additional words are needed.

The main purpose of the conclusion is to reinforce the theme of the talk. The best interpreters know this and almost always repeat the theme—sometimes verbatim—in the conclusions of their talks. Beginning interpreters sometimes have trouble knowing exactly how to do this. Many find that their conclusions improve simply by using the following transition between the last sentence of the body and the conclusion:

"So I hope you can see that ..." (followed by the theme).

or

"At this point, you probably can see that ... " (followed by the theme).

For example, we might begin the conclusion of our talk on global warming by saying:

"So I hope you can see that if the world really is getting warmer, sooner or later people everywhere are going to be living very differently than the way we live today."

Many speakers like their conclusions to include a summary of the five or fewer main ideas that they presented in the body. For example, we might say:

"At this point, you probably can see that there are good reasons for scientists to believe that our planet is getting warmer. And if they're right, future generations can expect a lot of changes. The oceans will spread due to the melting of the polar ice caps, and forests and food crops in some parts of the world may be devastated. Nobody can say for sure exactly what's going to happen, but one thing is certain: If the average

temperature of our world increases even just a little, people everywhere will be in for some dramatic changes in the way they live."

Notice how this conclusion briefly reminds the listeners of what they've heard, and then reminds them of what it means—the theme. Although there are many ways to conclude any talk, the best conclusions are usually those which try to do both of these things. Many go on to suggest an even larger significance— such as what the audience can do to act on its new knowledge (e.g., "Where do we go from here?"), or to ponder a philosophical question related to the theme of the talk. An example might be:

"Above all, I hope you leave here today thinking about whether we have a responsibility to give our children, and their children, a chance to have the kind of life they want— rather than the kind of life scientists are telling us they will have if all the evidence about global warming is correct."

Whether you include this sort of appeal in your conclusion will depend on the theme of your talk, and even more on your personal style.

Earlier we noted that many speakers like to use the introduction to prepare the audience for a more powerful conclusion. Several methods for doing this were discussed including the reiteration of key phrases in both parts of the talk, the use of "flashback" slides, leaving a half - finished story or anecdote for the conclusion, and other techniques. We emphasized also that all thematic talks should include a statement of the theme in both the introduction and conclusion.

The reason audiences seem to respond well to this kind of design — talks which have interrelated introductions and conclusions — has to do with an idea some psychologists call **pragnanz.** Pragnanz is a German word which means roughly "wholeness," "completeness" or "unity." Psychologists believe that people like completeness in their world because it gives us order and predictability. In a talk, completeness occurs when the audience senses that everything has come "full circle"— or when there's closure, as educational psychologists call it. When a key idea or scenario is introduced early in the presentation, and then occurs again at the end, it seems to bring everything you've been talking about back to the beginning; it gives the talk a quality of being complete and whole, rather than only partly finished; and it reassures the audience that it now has the whole story and that there are no "loose ends." Audiences who've just listened to a good talk, usually feel this sense of closure or pragnanz, just as they feel it at the end of a good book, movie or play.

As we suggested earlier, good conclusions are like the final note of a song because they signify a clear and certain end to the talk. Have you ever heard what you thought was the last sentence of a talk, only to have the speaker continue with some extra information? These are called "false endings" because, until the speaker began talking again, it seemed as though the talk was finished. Usually the additional information didn't help much, and if you're like most people, you probably were a little bothered by it. The reason is that you were feeling pragnanz — you felt for a moment that there was closure, and that additional words were unnecessary. Often, these additional words spoil the ending of what might have otherwise been a very good talk.

Avoid false endings.

Another common problem with conclusions is that sometimes the speaker's last sentence doesn't seem like the last sentence — often because of the speaker's inflection, or because in making the closing remarks he/she suddenly introduces a completely new idea — and so the audience is left expecting more. Usually, after a prolonged and awkward period of silence, the people in the audience begin to figure out that the speaker is finished talking, they gradually start leaving, amidst scattered applause and muffled pleas for reassurance like: "Is it over? Is that the end?"— believing the talk was somehow incomplete — thinking more needed to be said. Sometimes, the speaker senses the awkwardness and utters something like: "That's it" or "It's over." But statements like these only remind everyone that the ending was awkward. This problem usually occurs not because more information was needed — though that would certainly be the case if the body of the talk weren't well developed — but rather because of the speaker's tone or inflection as the last sentence was spoken.

A simple and effective technique to avoid awkward endings is to make the final two words of every talk "thank you" (though some speakers prefer "goodbye" or "good night"). Such words really say very little; but they're phrases that can rarely be followed by other words at the end of a presentation, regardless of how they're said. Therefore, when you say "thank you" or "goodbye," you're really saying to your audience:

> "This is the end of my talk and I will say no more now. If you've enjoyed my talk, you may now applaud or come forward to talk privately with me. Or you may get up and leave. In any event, I'm finished."

And of course, after saying "thank you" or "goodbye," you really should be finished. Following these words with any others will do exactly what you had hoped to avoid by using them—it will create a false or awkward ending.

Putting It All Together Using the 2-3-1 Rule—An Example

Planning and preparing a thematic talk is simple if you really appreciate the different purposes of the introduction, body and conclusion. In the example which follows, we're going to see just how easy it can be. We'll start at the very beginning with a general idea of the topic that we want to talk about. Then, using our knowledge of thematic communication and how the three parts of a talk work together, we'll separately develop an introduction, an outline of the body, and a conclusion. The order in which we do this will be guided by a simple procedure called the "2-3-1 Rule" (body - conclusion - introduction) which will be explained shortly.

In our example, we're going to go step-by-step, making various decisions about the talk as we plan each of its parts. Although different authors might organize these steps differently, we're going to think in terms of ten:

1. Choose a general topic.

2.   If necessary, choose a more specific topic.

3.   Choose a theme based on the topic of your talk.

4.   Summarize your entire talk in a short paragraph whose first
     sentence is the theme.

APPLY THE "2-3-1 RULE"

5.   Prepare an outline of the body.

6.   Prepare the conclusion.

7.   Prepare the introduction.

8.   Rearrange the order and tie your talk together.

9.   Practice your talk.

10. If appropriate, choose a title for your talk.

Our Scenario

Suppose you're in charge of managing a forest, and that a recent
study has shown a dramatic decline in certain species of native birds in
your forest— especially some of the nocturnal species like owls and
nighthawks. Having determined that a community education program was
needed, you decide to prepare a twenty-minute talk about nocturnal birds
that you'll give at schools, clubs, and other places over the next
several weeks in order to raise community awareness of the problem. You
proceed as follows:

Step 1: Choose a general topic.

Choose a topic you think will interest your audience, and one
which you're interested in and know something about.

Our general topic: "Birds which live in the
forest"

Having determined the general subject matter of your talk, you
should do your "homework." Research your topic, searching not only for
factual information but for ideas which can help you make the talk more
entertaining, meaningful, personal and organized. If you have trouble
understanding something you read, chances are your audience will have
even more trouble understanding that information. Most of the difficult
material probably won't be necessary in your talk, but if some of it is,
you'll certainly want to be thinking of "bridging" techniques in order
to make it meaningful to your audience. Also, your research may give you
ideas for a vehicle or other "creative packaging" for your talk.
Most of all, your research will probably help you narrow the
topic. At this point, you should already be thinking: "What story do I
want to tell about this topic?" If you aren't yet able to answer this
question, your topic is probably too general or too vague. If so, try
narrowing it further.

Step 2: If necessary, choose a more specific topic.

Select a specific aspect of the topic that interests you and which
you can treat in the amount of time available for your talk.

> *Our specific topic:* "Nocturnal birds which live in this forest"

When the topic of your talk is too general you run the danger of presenting an oral catalog of facts. You want your talk to have a message, that is, a theme. To have a thematic talk, you'll first need a well defined topic.

But it's also possible to have a topic which is too specific. Very narrow topics are fine as long as you have the depth of knowledge they require, and the communication ability to make such an extensive treatment of a limited subject interesting to a non-captive audience.

Step 3: Choose a theme based on the topic of your talk.

The theme is your message — the important idea you want your audience to understand or appreciate after listening to your talk. Selecting your theme is the most important decision you'll make in developing your talk because everything you say will somehow be related to the theme. The theme statement answers the question "so what?" with respect to your talk.

> *Our theme:* "Our misunderstanding of nocturnal birds is leading to their disappearance from this forest."

Step 4: Try to summarize your entire talk in a short paragraph in which the first sentence is your theme.

Besides helping you determine how your talk might begin and end, this short synopsis will focus your attention on the kind of information that will be needed to develop your theme. In other words, it will help you identify what to include in your talk, as well as what not to include. Putting the theme in the first sentence of the paragraph forces you to think thematically as you write the rest of it. As accomplished speakers will tell you, having this clarity of focus at the outset is an amazing advantage. If you can't find the words to write this paragraph, then you probably need to spend more time thinking about your theme because you're not yet sure what message you want to communicate to your audience. But once written, this thematic paragraph will make development of your talk a lot easier.

> *Our thematic paragraph:* "Our misunderstanding of nocturnal birds is leading to their disappearance from this forest. Nocturnal birds are one of the most interesting groups of animals because they don't become active until it's dark. Many of them, such as the owls and nighthawks that live around here, have unusual adaptations for this kind of life. Unfortunately, because of their secretive habits and period of activity, we rarely get a chance to see these birds. And because of our lack of familiarity with how they really live, people have created many superstitions and legends about them. We need to remember that even though we

can't see them, these birds are an interesting and important part of the natural community in this forest. The future of these birds may well depend on you and me."

"The 2-3-1 Rule"—Body, Conclusion and (Then) Introduction

At this point, you're ready to think about the words you'll actually say in presenting your talk. A common mistake is trying to prepare the introduction first. The reason this is a mistake has to do with the purposes of the introduction: to create interest in the talk, and to tell the audience the theme and how you're going organize your presentation of it. Obviously, you can't do this until you know what the talk will include and how it will be organized. And you really can't know these things until after you've outlined the body. So even though the body is the second part of the talk you'll present, it's the first part to be developed. Likewise, since good introductions are designed, in part, to prepare the audience for the conclusion, it makes sense to prepare the introduction last— even though you're going to present it first.

This approach is what we'll call the "2-3-1 Rule." The name comes from the order in which the different parts of a talk are developed: 2 (body), then 3 (conclusion), and then 1 (introduction). This rule stems from the fact that it's simply not possible to know what needs to be concluded in the conclusion, nor introduced in the introduction, until you know what you're going to present in the body of the talk. In other words, what approach should you use in the introduction in order to prepare people for the body and conclusion? How can you plan the introduction if you don't yet know what's going to follow it? Most likely, your experience tells you that you can't. And that's why the "2-3-1 Rule" makes sense — especially for people who don't yet have a lot of experience developing talks.

Step 5: Prepare an outline of the body of your talk.

Following the "2-3-1 Rule," prepare an outline of the body first. This could simply be a list of the five or fewer main ideas, and under each, the selected facts, concepts, and illustrative information you think will help you to communicate your theme clearly and in an interesting or entertaining way. Of course, the outline should show the sequence in which you plan to present these ideas. Some speakers like to plan their transitions at the same time they prepare the outline, but others prefer to wait until Step 9. It really doesn't matter when you develop them as long as you do it at some point. Especially important are the transitions that will take you from one main point to the next, and from the body to the conclusion of your talk. The following outline includes these transitions.

Our outline for the body of "Wings of the Night:"

I.   Many kinds of birds are active after dark.

       A.   Where they stay during the day.
B.   Many "replace" diurnal birds which have similar roles.

(Transition: "You may be wondering at this point just how these birds

get along at night. For example, how do they fly in the dark, and how do they find food? Well, the answer is that they have some special features and abilities that other birds don't have. In other words, they're adapted to a nocturnal way of life. Let's talk about some of these adaptations.")

II.   Nocturnal birds are adapted to night life.

A.   Specialized eyes for seeing in the dark.
B.   Specialized wings of owls and how they fly silently.
C.   Rudimentary feet of nighthawks.
D.   Development of song instead of brightly colored plumage.

(Transition: "Well, we've talked about how these birds are adapted to living in the dark. But just exactly what do they do that we can't see?")

III. Nocturnal birds have unusual lifestyles and habits.
A.   Habitat and places where they can be observed.
B.   How they feed and care for their young.
C.   What they eat and where they find it.

(Transition: "As fascinating as nocturnal birds are, they're a misunderstood group of animals—mainly because we can't see them very often. Over the centuries, this has led to a number of legends and superstitions about them. I'd like to tell you about a few of them.")

IV. Legends and superstitions cloud our understanding of nocturnal birds.
A.   How legends originate.
B.   Owls and nighthawks are common subjects.

(Transition: "Although these legends and superstitions are interesting and even fun to hear, they sometimes cloud our judgments about nocturnal birds. That is, we sometimes think of them as just unseen, mysterious creatures rather than as important parts of nature's design. And a good example are the owls and nighthawks that live around here.")

V.   Owls and nighthawks are useful in nature.
A.   How owls help control rodent populations.
B.   How nighthawks help control insect populations.
C.   How misconceptions of their roles are threatening these birds.
1.   Indiscriminate killing and poisoning.
2.   Habitat loss due to cutting, plowing and elimination of food.

Take a moment to compare this outline with the short paragraph we wrote in Step 4. Notice that what we wrote in the paragraph helped us determine the main ideas to include in the body of the talk. Notice also that each of the five main ideas is

essentially a little theme, each an important part of the overall theme of the talk. In interpretation little meanings "add up" to big ones.

Step 6: Prepare the conclusion of the talk.

With an outline of the body, you should now think about how you want to conclude your talk. Remember that the purpose of the conclusion is to reinforce the theme. You should develop your conclusion following the train of thought you established in the body. What can be concluded from these ideas? The answer, of course, is your theme. The theme, and therefore the conclusion, should always answer the question "so what?"

Frequently, the conclusion is the most difficult part of the talk to develop. As we discussed earlier, the ending must be final, yet smooth, and it should fit your entire presentation. Your conclusion is your last opportunity to leave a lasting impression with the audience. Make the most of these few minutes. It could be a brief summary of your five or fewer main ideas, or a recapitulation of the logic that you established in the body. Many times the conclusion suggests "where we go from here." Others assume an inspirational or philosophical tone, but these are more difficult to handle—depending on your personal style. But no matter which technique you use to conclude your talk, the objective should be to reinforce the theme, and to show one last time its relationship to the information you've chosen to present during the rest of the talk.

Our conclusion: "As you're probably already thinking, it's very easy for us to damage or even destroy those things we don't understand. And maybe first among these are the things we can't see. Because they can't be observed very often, nocturnal birds are the subject of many superstitions and misconceptions—and our difficulty in understanding and appreciating their natural roles is beginning to put them danger. The owls and nighthawks in this forest are good examples of nocturnal birds which need our help. Their habits and adaptations teach us how animals are molded to the environments they live in, and that each one of these animals has a vital function in nature's design— even though we don't always see it. Only if we understand the important roles they play— roles which almost always affect our well-being too—can we appreciate why it's important to preserve them. Their future really does depend on us—a future that all of us can share. Thank you."

Step 7: Prepare the introduction.

The introduction is the last part of the talk you'll develop, even though it's the first part of the talk you'll present. Remember that its purposes are to capture the audience's interest, reveal the theme, and tell how the body will be organized. As we discussed earlier, it's often a good idea to begin with a jolt—a "grabber" which commands attention. There are many techniques which have been used successfully: an interesting but brief story, a rhetorical question, a vivid example of something you're going to talk about, a colorful statement, etc.

Our introduction: "Did you know that nighthawks used to warn people around here when witches were in the vicinity? If the buzz of a nighthawk was heard at twilight, parents got very concerned about their children's well-being until about midnight. Many parents wouldn't let their kids leave the house at such times. And abnormal behavior was to be expected from kids until the danger subsided."

Having attracted our audience's attention, we now need to tell them about our theme and how the talk is going to be organized:

"Nighthawks and owls are two birds that live in this forest, and they're a part of a special group of creatures called nocturnal animals — animals that become active when other animals, including humans, are just settling in for the evening. But because these birds carry out their lives in the dark, few of us actually get the opportunity to see them, and no doubt that's why we've created so many legends and superstitions about them.

"In the next few minutes, we're going to talk more about these interesting birds, and
    their future. We'll explore their adaptations for a nocturnal life; we'll talk
    about their habits, and we'll see that the very things which used to cause
    parents to worry so much are really just behaviors that these birds have
    developed in order to cope with their life in the darkness. We'll see that their
    habits and special adaptations can show us a lot about how nature is able to mold
    animals into filling specific roles in the natural community — that is, in
    nature's design. But we'll also see that these fascinating birds need our help.
    Their secretive, nocturnal life hides them from us, and this makes it hard for us
    to know and understand them the way we understand other animals. Because of this,
    their future may be in jeopardy.

"Let's talk first about what it's like to live without light, and about the variety of
    nocturnal birds that live around here."

You've probably noticed several things about our introduction. First, it's designed to
create interest, to reveal the theme, and to tell how our presentation will be
organized. You may also have noticed that the theme statement is near the end of the
introduction. Although this isn't always necessary, it's often easier for the audience
to remember the theme if it's the last thought you give them before beginning the body
of your talk. Notice also that the final statement of the introduction is really just a
transition to the first main idea in the body. Finally, notice that the words "nature's
designs are emphasized, as they were in the conclusion we developed in Step 6. This is
a simple example of how to tie the introduction and conclusion together by building an
identical phrase into both. The phrase adds little in the way of substance, but it
helps the audience to feel closure, or pragnanz, when it recognizes that it has heard
it a second time.

Step 8: Rearrange the order and tie your talk together.

    At this point, we've prepared (1) an outline of the body of our talk, (2) a
conclusion, and (3) our introduction. We now must meld these pieces into a logical
order, refine the introduction and conclusion so that they connect well, plan any
transitions that we haven't yet prepared, and develop the body in more detail—deciding
more precisely what we want to say about the main points in our outline. Chances are by
now you already have a pretty good idea of the words you would use, but it's still
better to think them out more carefully before you try to present the talk to a real
audience. If you don't, you may find that your talk is too long. This often happens
when we feel confident and comfortable with a topic—so comfortable that we end up
talking about it in excess. It's usually better to think ahead of time about the words
you'll use. In this way you'll know right away whether you need to limit your
explanations, delete something, or even revise the body to include fewer main ideas.
    Many speakers like to write their words out in a complete narrative, pretty much
exactly as they plan to say them. Writing the words helps them get a feeling for their
talk, and helps them to get excited about the talk and enthusiastic about presenting
it. It also helps them to further improve the talk because, by writing out their words,
they're forced to think everything through in the same detail with which it will
someday be presented to a real audience. The only drawback of writing out your words is
that it can tempt you into trying to memorize everything. But as we'll discuss shortly,
you should resist this temptation. It almost always hinders more than it helps a talk.

Step 9: Practice your talk.

    You're now ready to present your talk — or are you? Up to this point, developing the
talk has probably been a silent exercise. You've probably been "saying" the words in
your mind, but that isn't the same as saying them aloud. Practice doing this. Some
speakers say that talking to themselves in a mirror helps. Others prefer to stand alone
in a room. Others like to take a walk while they're practicing. And others like to be
doing something altogether different— cooking, driving, etc. Whichever way you prefer,
the important thing is that you be able to imagine yourself in front of the audience

you'll be speaking to, and that you say the words at the volume you would normally use were the people actually there. Volume and inflection have a curious relationship. What sounds appropriate at a low volume may not sound quite right when the same words are spoken at a louder volume.

Many speakers like to record themselves because listening to the tape helps them identify the parts of the talk that need improvement. Video taping is also valuable if you have access to the equipment. Generally, it's a good idea to try your talk out in person with a group of friends. But you may have to ask them to be critical. Friends usually like to tell us how good we are, not how we can improve. If they can find no fault in your talk, ask them if they have any ideas about how you could make your presentation even better.

Keep looking for ways to improve your talk. Besides making your presentation better, making small changes will also prevent you from becoming bored with your talk. This is especially important after you've given it several times. Obviously, however, you shouldn't change something that doesn't need to be changed. In other words, if it's not broken, don't fix it.

Step 10: If appropriate, choose a title for your talk.
Not all talks need a title. But if your talk will be advertised ahead of time, it's a good idea to have one. Try to make your title attractive but at the same time descriptive of your topic.

Our title: "Wings of the Night"

Supporting Document C4f

<u>**MAKING TECHNICAL INFORMATION MORE ENTERTAINING**</u>

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

Smile: A smiling face indicates pleasure in most cultures. An old saying goes: "When
you're smiling, the whole world smiles with you." This means that your audience will
take its cue from you. If you look like you're relaxed and having fun, they'll begin to
feel that way too. Being too serious can create a formal atmosphere.

Use Active Verbs: Verbs are the power in any language. Don't take away their power by
making them passive (e.g., "The bat pollinated the tree," not "The tree was pollinated
by the bat.") Academic writing stresses passive verbs too much. Use powerful, active
verb forms.

Show Cause-and-Effect: People like to know what things cause other things to happen.
Try to show direct relationships between causes and their effects.

Link Science to Human History: Research shows that non-scientists are more interested
in science if it can be related to people from a different time. For example, weaving
information about plants into a story of how indigenous people utilized those plants in
their diets, art, religion, etc., may be more entertaining than the same information
would be by itself. Telling about any aspect of a natural or physical science through
the eyes of those who explored it, discovered it, described it, wondered about it,
overcame it, succumbed to it, worried about it, died from it, were saved by it,
empowered by it, hindered by it, or who otherwise affected or were affected by the
thing in question, will generally make it more interesting to non-scientists.

Use a "Visual Metaphor" to Describe Complex Ideas: A visual metaphor is an illustration
which shows visually what might be difficult to describe convincingly with words alone.
For example, one way to describe the rich diversity of tropical invertebrate species
would be to show a map in which the sizes of countries and continents were based on the
number of invertebrate species they contained. The countries in the tropics would be
much larger than those elsewhere. The small island country of Cuba, for example,
contains more invertebrate species than all of North America.

Use a "Vehicle" to Make Your Topic More Interesting: A vehicle is part of a
communicator's strategy to make a topic more entertaining by telling about it in the
context of some overriding scene, setting or situation. Examples:

• **Exaggerate Size:** "If we were small enough to actually walk inside of a wasp's nest,
you'd be amazed at what you'd see."

• **Exaggerate Time Scale:** "If time were speeded up so that a thousand years went by
every second, you'd be able to stand right here and watch continental drift for
yourself."

• **Use an Overriding Analogy:** That is, an analogy that your entire presentation revolves
around (e.g., likening the earth to an onion's layered skin in order to tell about

certain geologic processes; comparing a volcanic landscape to an ocean; relating forest succession to the construction of a house; or comparing natural resource management (use and protection) to a person with a split personality.

• Use a **Contrived Situation**: Demonstrate the need for forest conservation by making up a story about a town in which there is no such thing as wood or wood products; go forward or back in time; pose a hypothetical problem or set up an illustrative situation (e.g., "What would life on earth be like if its average temperature increased just 5° C?" or "What if there were no predators?"

• **Use Personification**: Give selected human qualities to nonhuman things (e.g., "What might trees say if they could talk?" or "How might ants view humans?") Give the narrator of a slide/ tape program an animal's identity or point of view. Walt Disney made personification famous in his many movies about animals and stories in which the audience experienced certain adventures through the eyes of the animal characters. This technique has been criticized (sometimes rightly and sometimes not) by biologists, because it involves giving human qualities to animals that are not human. Be careful when using personification. Don't imply that animals and plants really think and act like humans.

• **Focus on an Individual**: That is, make up a fictitious but scientifically accurate story about one particular person or object (e.g., an animal, plant, rock, water molecule, ice crystal, etc.). Give an account of what this person or thing experiences in terms of the technical information you are trying to get across to your audience. [Examples: Follow a single water molecule as it goes through the entire water cycle, or a mass of rock as it gets changed from sedimentary to metamorphic to igneous states; describe what happens to a particular parrot after it is taken from its tropical forest home and transported with other birds to a pet store in another country; tell about the final days of the last individual of a particular species; describe a specific smuggler's attempt to transport ocelot skins out of a country; follow the mishaps of a particular bear that had to be killed by park rangers because it had become dependent on park visitors for its food, etc.] Sometimes, giving the individual a name or other identity adds to the entertainment value of the story (e.g., Walter Water Drop, Bear Number 74, Smuggler Smith, etc.).

Lesson 5

EVALUATING INTERPRETIVE ACTIVITIES

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Develop a list of 3 suggestions for conducting peer evaluations.

2. List 3 techniques that can be used to self evaluate interpretive programs.

3. Carry out a self evaluation using one of the self-evaluation forms.

REFERENCES

Ham, 1992; Lewis, 1980; Morales, J. 1992.

NOTE: Much of this lesson has been adapted from materials provided by the Mather Employee Development Center, National Park Service, Harper's Ferry, West Virginia, USA)

PRESENTATION:

1.1 Introduction:

    A. Point out quote on flip chart:
"Practice will improve skill, and experience will help one's competence - but only if there is feedback regarding the quality of the performance. If you don't find out how well you are doing while you are practicing or experiencing, your skill is not likely to improve."

    B. State the Objectives of this session, listing them on a flip chart or on an overhead.

II. Evaluation Process

    A. "Life experiences" when we were evaluated. (eg. grades, parents, etc.)

    B. Participants' reaction to positive and negative results of "life experience" evaluations. Stress "coaching" aspect of evaluation.

C. The positive aspects of evaluation
    1. Have the class list some of the good that comes from evaluation.

    2. Stress the "Spiral Toward Excellence" approach, where preparation leads to presentation which leads to evaluation which leads to better preparation which leads to better presentation etc. in an expanding spiral, rather than in a closed loop of preparation, presentation, preparation, presentation.

3. Compare other professionals' need for critiquing and coaching with interpretive

needs.(eg. the professional baseball player and the pitching coach; the professional opera star and a voice coach, etc.)

III.Evaluation Techniques.

A.Samples of critique methods
1.Audience feedback: do they look at you, answer questions, smile, applaud, thank you etc.
2.Cassette Tape (evaluate your voice and the content of your talk, grammar, vocabulary etc.)
3.Video Tape (evaluate verbal communications skills, non-verbal communications, body language, audience reaction, content of talk, logistics etc.)
4.Watching others in order to evaluate yourself.(comparison)

IV.Developing a Self Critiquing Form

A.Review of sample forms
Instructor should mention that although some of the sample forms have points associated with them, using a point system may be painful to the person being evaluated. Emphasize that there is a lot of flexibility with the forms used, and evaluation forms can be very effective without points.

B.Participants practice making their own forms. Different formats may be desired for different types of presentations.

C.Participants will use self evaluation forms on themselves next time they give an interpretive presentation.

V.   Peer Review

Encourage participants to establish peer evaluations with other interpreters in their parks. Peer review can give the whole staff an opportunity to get used to being "evaluated" before the (probably more stressful) supervisory evaluation.

Have the class brainstorm ideas for how to conduct peer audits. Answers instructor should hope for:
-always establish a relaxed and supportive atmosphere
-sensitivity in giving constructive criticism
-point out positive aspects of program as well as suggestions for improvement
-allow plenty of room for personal style; don't suggest changing personality
-avoid auditing (both peer and supervisory) until the interpreter's given the program a couple times
-audit more than once, comment on improvements.

VI.Conclusion

Refer back to the session objectives and ask the class to tell you whether they were met. Have them list ways to self evaluate, and offer some suggestions for peer evaluations. It is important to end the session on a positive note, stressing the benefits of evaluation, and the improvements that can result from effective evaluations.

Supporting Document C5a

CRITIQUE OF SLIDE PRESENTATION/TALK

Type of Talk_____**Duration of Talk** _____

	GRADE SCALE:	0	1	2	3	4
		(WEAK)	(FAIR)	(GOOD)	(V. GOOD)	(OUTST.)

The Program   Points   Comments

1.   Location of speaker on stage?   _____   _____

2.   Introduction?   _____   _____

3.   Subject well organized?   _____   _____

4.   Have a central theme?   _____   _____

5.   Tell a story?   _____   _____

6.   Accurate?   _____   _____

7.   Proper level for listener?   _____   _____

8.   Right duration?   _____   _____

9.   Conclusion?   _____   _____

10. Did it interpret the subject?   _____   _____

The Delivery

1.   Volume?   _____   _____

2.   Rate of speaking?   _____   _____

3.   English?   _____   _____

4.   Pronunciation?   _____   _____

5.   Enunciation?   _____   _____

6.   Voice modulation   _____   _____

7.   Use of conversational tone?   _____   _____

8.   Use of the dramatic?   _____   _____

9.   Mannerisms?   _____   _____
10. Gestures?   _____   _____

INTERP. C5a-2

Speaker's Attitudes

1.   Enthusiastic?   ____   _____

2.   Confident?   ____   _____

3.   Courteous?   ____   _____

4.   Friendly?   ____   _____

5.   Relaxed?   ____   _____

Overall Impression of the Talk
  by the Evaluator   ____   _____

         TOTAL POINTS SCORED   **____**

            Point Values: 0-15   -   Weak
                            16-36   -   Fair
                            37-64   -   Good
                            65-85   -   Very Good
                           86-100   -   Outstanding

EVALUATION OF VISUAL MATERIALS

1.   Color quality?   ____   _____

2.   Composition?   ____   _____

3.   Positioning on the screen?   ____   _____

4.   Quality of slides?   ____   _____

5.   Quantity of slides?   ____   _____

6.   Slides used effectively?   ____   _____

TOTAL POINTS SCORED BY GROUP   **____**

OVERALL RATING BY GROUP   **____**

GENERAL COMMENTS:

Supporting Document C5b

INTERPRETIVE WALKS CRITIQUE

Speaker _____**Place**_____**Date**_____**Time**_____**To**_____

	Yes	No
PRE-WALK		
Did the leader arrive on time?	_____	_____
Did the leader make an effort to greet people as they arrived?	_____	_____
Did the leader build a personal relationship with the audience?	_____	_____
Appearance (uniform, personal)	_____	_____
Did the leader choose and appropriate gathering area?	_____	_____
Was the meeting area clean?	_____	_____

INTRODUCTION

	Yes	No
Did the leader introduce himself/herself?	_____	_____
Was an overview of the walk given?	_____	_____
Was a theme introduced?	_____	_____
Were trail conditions, distances, times given?	_____	_____
Were operational instructions given (i.e., stay on trail, don't pick, join in, ask questions)?	_____	_____
Were safety instructions given (i.e., poison ivy)?	_____	_____

WALK

	Yes	No
Were stops well-chosen for material; for size of group?	_____	_____
Was duration of stops appropriate?	_____	_____
Was there a transition between stops?	_____	_____
Was the speaker affable about talking to people informally?	_____	_____
Was there a good balance between walking and talking?	_____	_____
Did the speaker position himself/herself well (re: size of group, wind, sun, etc.)?	_____	_____
Was the speaker knowledgeable?	_____	_____
Was there a theme?	_____	_____
Did the walk relate to the purpose of the park?	_____	_____

	Yes	No
Was group participation encouraged?	_____	_____
Was the speaker adaptable to unforseen events?	_____	_____
Did the speaker encourage the use of senses?	_____	_____

CONCLUSION

	Yes	No
Was there a summary and definite ending to the walk?	_____	_____
Were the people left with a message?	_____	_____
Were the people invited to participate in other? park activities?	_____	_____
Was the group returned to the starting place?	_____	_____
Did the speaker remain for awhile to speak informally?	_____	_____

I have reviewed this with my supervisor. _____
                                           Employee's signature

COMMENTS

Supervisor's signature_____ **Date**_____

Supporting Document C5c

EVALUATION OF AN INTERPRETIVE TALK

Speaker: _____ Subject: _____ Date: _____

Rate each of the following elements of the interpretive talk, using a point system of 1-10 (weak to strong). Make appropriate comments to support your rating.

COMMENTS

1. Introduction
   Points _____
   \
   _____
   _____
   _____

2. Subject well organized
   (did it tell a story?)
   Points _____
   \
   _____
   _____
   _____

3. Conclusion
   Points _____
   \
   _____
   _____
   _____

4. Rate of speaking
   Points _____
   \
   _____
   _____
   _____

5. Voice modulation
   Points _____
   \
   _____
   _____
   _____

6. Use of conversational
   tone
   Points _____
   \
   _____
   _____
   _____

7. Use of the dramatic
   Points _____
   \
   _____
   _____

8. Mannerisms & Gestures
   Points _____
   \
   _____
   _____
   _____

9. Enthusiasm   _____

    Points _____   _____

                        _____

10.   Courteous & Friendly _____

    Points _____   _____

                        _____

Overall impression and general comments:

Lesson 6

PREPARATION OF AN ILLUSTRATED PROGRAM

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Describe all of the necessary steps to prepare a quality slide presentation.

2.Make a good slide presentation.

REFERENCES:

Ham, S. 1992; Sharpe, G. 1982 (Chap. 9); PARKS Magazine, Vol. 3(1), 1978; Vol. 9(3/4), 1984: "Getting the Most from Your Slide Presentation"; Lessons, C8, C9; E5a.

PRESENTATION:

1.1Slides presented in a dynamic program are an excellent way to capture the attention of an audience and to transmit a message. A good audiovisual presentation can add "energy" and clarity to a message that one wishes to transmit.

1.2There are two types of audiovisual/slide presentations: in one, the slides are the principal medium for transmitting the message, sometimes with the help of music; in the other, the slides are complementary to a verbal message.

1.3Discuss the other mechanisms for delivering a verbal/visual program, and point out the advantages and disadvantages of each (see C6f). For video use see Lesson C8.

1.4Review point by point the Supporting Documents which accompany this lesson.

ACTIVITIES:

1. Present a good slide program, pointing out the different components which help to make it a good program.

2. Divide the group into teams of 4 to 6 persons and ask them to elaborate a specific plan for a slide program over an assigned topic, then compare and analyze the results.
 If there is time, ask that the participants take or collect the necessary slides, and organize and present them as a complete slide presentation on an assigned theme. In this way a useful audiovisual program could be produced for a nearby PA, a school, or a conservation group.

Supporting Document C6a

THE ILLUSTRATED TALK

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

1. IN ORGANIZING A TALK:

   A. Choose what you want to tell about--what is the story.

   B. Choose slides as background, illustrative materials - not
      something necessary to explain.

   C. If a scene must be explained before it is understandable,
      it is poor.

   D. Choose only good color.

   E. Check bindings for film slippage.

   F. Don't put in something you will have to apologize for in
      talk--choose film that is in good condition.

   G. Don't plan to use too many slides--this is not a "slow
      motion" movie.

   H. Have at least one key thing in mind that the slide will
      illustrate.

   I. Don't plan on using examples unless they can be applied
      locally.

   J. Don't try to memorize your talk--it is deadly if you forget.

   K. Develop a talk that can be illustrated--not illustrations
      that are looking for a talk!

   L. Don't plan a talk for longer than about 35-40 minutes.

2. PRESENTING THE TALK

   A. Keep the language simple--don't get academic or involved.

   B. Use words that are well understood.

   C. Talk at a moderate rate.

   D. Keep voice level high enough to be heard--even with a
      microphone.

   E. Have a place for your hands.

   F. Don't slouch--stand reasonably upright, but not stiff.

   G. Don't walk around too much--some is all right, but pacing
      the floor is bad.

H. Don't get dramatic--some drama is all right, but this is not the stage.

I. Don't be too serious--neither try to be funny.

J. Be courteous in what is said--no slams at persons or things.

K. Be enthusiastic, but not bombastic.

L. Watch the audience--don't watch something about the 10th limb up in a tree.

M. Don't be an obvious "know it all."

N. Space pauses between statements.

O. Speak clearly.

P. If bothered by some degree of stage fright, pick persons in the audience to "talk to."

Q. Signal for your slide a second or two before it is actually needed.

R. Do not turn your back on the audience, especially if you do not have a microphone.

S. When using a pointer, don't "stab" and let it go at that.

T. If using alight as a pointer, don't "flit" around on the screen.

3. IN CLOSING:

A. Don't just come to the end of the talk and stop-neither should you draw it out and let it drag.

B. Close out with a "punch" thought, if possible.

C. Close out "on time"--people may not have all night.

D. Invite questions after the talk.

E. Brief any announcements necessary.

F. Don't obviously want to leave as soon as the lights come on.

G. Be courteous--answer questions--this may be the only time some of these people will talk to a person in uniform.

H. If you are <u>too</u> much in a hurry to leave, you are on the wrong job! never be in too much of a hurry to be friendly.

Supporting Document C6b

ORGANIZATION OF TALKS

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

Freely adapted from Glen R. Capp's How to Communicate Orally

I. Introductions have 3 purposes: (1) to create a favorable atmosphere for the talk; (2) to stimulate interest in the subject; and (3) to clarify the topic.

   A. A favorable atmosphere may be created by:
      1. Referring to momentary interests
      2. Responding to mood of audience
      3. Referring to special interest of audience
      4. Honestly complimenting the audience

   B. Interest may be stimulated by:
      1. Asking a stimulating question
      2. Asking a series of questions
      3. Beginning with an unusual statement
      4. Beginning with an illustration or narrative
      5. Beginning with humor (if related to talk)
      6. Beginning with a provocative quotation
      7. Relating a pertinent personal experience
      8. Referring to a problem
      9. Referring to the occasion

   C. The topic may be clarified by revealing the theme and its
      main headings.

II. The body of the talk may be developed by: (1) disclosing the theme; (2) dividing the theme into main and subordinate headings and arranging them into an organizational pattern; and (3) supporting your ideas with explanation, reasoning, evidence, analogy, etc.

   A. The theme should be worded as a complete sentence which
      summarizes the entire speech.

   B. The main headings must support the central idea. They may be
      arranged according to one of the following patterns:
      1. Deductive or inductive
      2. Problem solution
      3. Time-order
      4. Enumeration-order
      5. Logical (step-by-step) order
      6. Location-order
      7. Cause-to-effect and effect-to-cause
      8. Simple-to-complex
      9. Familiar-to-unfamiliar

III. The conclusion rounds out the them by: (1) summarizing the main
   points; or (2) amplifying the them; or (3) indicating desired
   action or any combination of them.

Supporting Document C6c

THE EFFECTIVE ILLUSTRATED TALK

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

I. The effective illustrated talk teaches while entertaining the
   park visitor.

   A. Visitors should not realize that they are being taught.

      1. The title should be catchy, not formal.
      2. The text should be entertaining, not academic.

   B. Visitors are taught by the subtle approach.

      1. Tell a story while covering the facts.
      2. Tell a story that involves the listener.
      3. Tell a story which has carryover value to the listener.

II.   **The effective illustrated talk takes considerable organization and
      thought about what you wish the listener to learn. A series of
      identification slides do not make an illustrated interpretive talk.**

   A. The talk should have two underlying themes.

      1. The major theme must be: The total environment of the
         subject and its value, relationship, and/or meaning
         to the listener.
         a. It must answer the question, "Why are you taking
            my time for this?"
         b. It must give him a base of understanding.
      2. The second theme is: The subject you have chosen and what
         you wish the listener to learn.
         a. It must give sufficient detail to satisfy his
            immediate curiosity.
         b. It should pose questions which may arouse his interest
            to further study.

   B. The talk should be outlined (as in this outline) to crystallize
      your thoughts and control their development.

      1. The introduction sets the scene for the subject.
         a. It must orient the listener to the subject.
         b. It should put him in the mood to want to listen to
            your subject.

2. The body should comprise at least 3/4 of the talk.
   a. Tell your story here.
   b. Decide on the story, tell it, then STOP.
   c. Follow a logical sequence for understanding.
   d. Define your technical words but hold to not more than
      five.
   e. Use sufficient detail to explain your subject but
      no more.
   f. Develop parallel thoughts for emphasis.
   g. Develop the story in a conversational manner.
   h. Key your discussion to things already part of the
      listener's background, knowledge or experience.
   i. Emphasize where the subject(s) can be observed in
      the park or other environment.
   j. Use your title in the discussion where applicable and
      especially in the summary if possible.

3. The conclusion must summarize the whole picture and bring
   the listener back to your beginning or a logical ending.
   a. Summarizing should be subtle and realized only
      subconsciously by the listener.
   b. Challenge the listener to further enjoy the subject
      by observation within the park or by reading.
   c. End with a pleasing or inspiration thought.

C. The talk is only now ready for illustrating.

1. Find the best slides you can for illustrations.
   a. Use only slides of good color.
   b. Use slides of similar contract next to each other,
      not a dark one and then a very light one.
   c. Use the slide with the best composition if you have
      a choice.
   d. Use slides which do not confuse the observer as to
      top and bottom.
   e. Use slides which illustrate the point being discussed.
   f. Use fill-in slides when inspiring or philosophizing.
   g. Use a title and end slide for finesse.

2. If there is no slide to illustrate your point, do these
   things:
   a. Modify your talk, temporarily at least, to eliminate
      the point.
   b. Or modify your talk to make a point you can illustrate.
   c. Let your supervisor know so the desired slide can be
      obtained.
   d. Do not use a fill-in slide or talk with the last slide
      still showing.

    D. The talk is now ready for study on the sorting table with slides
       in the proper sequence according to your outline.

          1. Review the selection for overall appearance and details
             of the talk.
          2. Attempt to memorize the order of the slides.
            a. Knowing which slide comes next becomes a picture
               outline.
            b. Knowing slide order lets you call for the slide as
               you begin its subject.

III.The effective talk is made by the amount of effort you put into organization.

    A. An organized story holds the listener while you instruct.

    B. A good illustration drives home the point you are making.

    C. The effective illustrated talk is the interpreter's left hand,
       and second only to a walk in the field, his right hand.

The above is an illustration of an outline which should be followed and instructions
for making a well organized, illustrated talk. Write out your talk in this form with
these basic points for submission to your supervisor. YOu will very possibly be much
more pleased with your talk and its presentation after you have tried this system.

Supporting Document C6d

FOUR MYTHS ABOUT USING SLIDES

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

Myth 1: *Never show a vertical slide.* Some authors claim that alternating horizontal and vertical slides is distracting to an audience, but there's no evidence to support this claim. A better rule would be to show the slide which best illustrates the idea you're talking about (regardless of whether it's horizontal or vertical on the screen). If you have only a vertical slide which illustrates something well, it's better to use the vertical slide than to substitute a horizontal one which doesn't really illustrate what you're talking about. If, however, you have a horizontal slide which illustrates the idea just as well as a vertical one, it's probably better to use the horizontal one. In fact, you'll find that it's possible with most screens to get a larger image size if you keep all of your slides horizontal. This is because most screens aren't square, but rectangular in shape. Therefore, if you adjust the projector for the largest possible horizontal image, you'll find that your vertical slides are chopped off at the top and bottom. To get both horizontal and vertical slides to fit on a rectangular screen, you'll have to reduce the size of the image. If you use a lot of vertical slides, it's a good idea to make or buy a square format screen so that you can project larger images.

Myth 2: *Never show any slide unless it's of the highest photographic quality.* If all speakers followed this advice, they'd present few slide talks. Most of us aren't professional photographers, and we have to rely on less-than-perfect photographs for our slide talks. A better rule might be to use the highest quality slides you have which illustrate the ideas you want to illustrate, and make plans to replace mediocre slides with better ones as soon as possible. Clearly, if a mediocre slide illustrates an idea better than some other slide, we'd be better off using the mediocre slide regardless of how pleasing the other one was. Remember, the purpose of the slide is to illustrate our words, not to demand its own attention. Usually, it's the combination of our words and the slide that communicates to the audience, not the slide alone. Of course, we don't want to use slides of such poor quality that they fail to illustrate anything, but at the same time, we don't want to delay presenting the talk simply because every slide isn't a perfect photograph.

Myth 3: *Never show a slide for more than a certain period of time.* As discussed earlier, a better rule would be to show a slide only as long as it continues to illustrate what you're saying. If you have a lot to say and you sense that the slide is being projected too long, try showing different views or different angles of the scene or object. As Risk (1982) and Kenny and Schmitt (1981) suggested, this will keep your presentation "moving."

Myth 4: *Never reference a slide.* Although it's generally good technique to avoid slide referencing, there are times when referring to something on the screen is necessary. A better rule would be to avoid referencing your slides except when it helps your audience to understand something better.

Supporting Document C6e

SLIDE PRESENTATION CHECKLIST

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

1. PREPARATION

_____ Have you clearly written the objectives of your presentation?

_____ Have you analyzed your audience? (size, ages, experience, education, special interests)

_____ Have you researched your supporting information for accuracy and anticipated questions?

_____ Have you carefully selected slides that are relevant and have good composition and quality?

_____ Have you practiced your presentation and checked for slide sequence and timing as well as for smooth delivery?

_____ Did you give the program an interesting but understandable title?

_____ Does your program need additional materials to be shown or handed out?

_____ Have you checked to see if all needed equipment is available and in good condition?

_____ Have you made all necessary travel arrangements?

2. BEFORE THE PROGRAM

_____ Have you checked out the meeting room/area? (keys, lighting, P.A. system, noise, ventilation, outlets, etc.)

_____ Did you set up all your equipment? (Pre-focus, and center image, set up extension cords, screen, music, etc.)

_____ Did you consider appointing and instructing someone to help you with the lights, projector and/or doors (for late arrivals)

3. PRESENTATION

_____ Did you make all necessary announcements?

_____ Did your introduction include a welcome, arouse interest and set the stage for the presentation?

_____ Did you work in the name of your organization?

_____ Did you have a smooth transition between sections, ideas and slides in the program?

_____ Did you face the audience, but not block the screen?

_____ Did you avoid distracting body movements?

_____ Did you avoid making direct references to the slides?

_____ Did you stick to your theme and not over do your content?

_____ Did you finish with a strong, definite conclusion?

AUDIENCE RAPPORT AND INTEREST

_____Did you talk with enthusiasm?

_____Did you maintain eye contact with the audience?

_____Did you speak in a friendly, conversational tone?

_____Did you relate to the audience's interests and experiences?

_____Did you use questions, examples, stories or comparisons?

_____Did you use quotation, testimony or narration?

LANGUAGE

_____Did you avoid using speech mannerisms like fillers (uh, and) and unrelated or repeated phrases (o-k, so, you know)

_____Did you use appropriate language for your audience and explain technical terms when used?

_____Did you adapt your volume to the audience so all could hear?

_____Did you pronounce words correctly and distinctly?

_____Did you vary your tone as well as your pace to add emphasis and interest to your talk?

QUESTIONS AND ANSWER SESSION

_____Did you repeat the questions before answering?

_____Did you limit the session so it didn't go on and on?

FEEDBACK
_____Were you aware of audience reactions and feedback?

_____Did you start and finish on time?

_____Did you have someone (co-worker, friend) give you a candid critique?

Supporting Document C6f

METHODS OF PROGRAM DELIVERY

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

ADVANTAGES	DISADVANTAGES

Slide Program
Realistic; gives clear mental picture	Takes a lot of prep time (first time)
Adaptable; easily updated or changed	Need good source of slides
Convenient; compact to handle	May be inconsistent in content or delivery
Equipment simple to operate, inexpensive, and readily available	Requires darkened room, electricity, equipment
Variety of use-manual, tape sync, special effects; rear vs. front screen	Tendency to rely on slides too much

Movie
Realistic, high impact	Cannot change rate of presentation or adapt to local or new conditions
Consistent in content and quality	
Low prep time	
Compact, easy to operate	Tendency to rely on
	Expensive
	Needs dark room, electric, equipment

Film Strip
Rate variable	Less realistic
Consistent	Not adaptable
Simple to operate; compact equipment	Not good for large audiences
Easily available	

Overhead Transparency
Versatile	Less realistic
Develop and add on to as taught; rate variable	Transparencies
	Equipment large and bulky
Lighted room okay	Requires equipment and operation skills
Simple to make	

Demonstration
Clarifies material by direct contact and use	May be hard to see or logistically impossible
Realistic, sensory, dramatic	May need special equipment, setting
Shows motion and skills	May be inconsistent in content or presentation
Can save time	

Outdoor Walk or Lesson
Direct personal contact	Requires small group
Realistic, sensory	Expensive in per person time
Highly adaptable	May be inconsistent in content and delivery
Shows Motion and skills	May require special setting or weather conditions

Lesson 7

INTERPRETIVE TRAILS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Enumerate the advantages and the disadvantages of an interpretive nature
      trail, and when and why it should be utilized.

2. List the basic steps in the planning and design of a nature trail.

REFERENCES:

Ham, S. 1992; Morales, J. 1992; Sharpe, G. 1982 (Chap. 14); Berkmuller, K.
1981; Grater, 1976; Peace Corps, 1977; PARKS Magazine, Vol.1(2), 1976
"Marking trails in Sand"; Vol. 5(2), 1980 "Bog Walkway"; Vol.5(4), 1981, "In
Park Interpretation, Small can be Beautiful" and "Guide to Walkway
Construction and Maintenance"; Vol.8(3), 1983, and Vol 1(2), 1976 "Trail
Construction". Supporting Documents C7, E13a; Lesson B3 and Supporting
Documents.

PRESENTATION:

1.1   Explain what is an interpretive trail: Normally it is self-guided trail
       with relatively easy access. It allows the visitor to traverse a
       natural or cultural site, where the special and representative
       characteristics of the site are marked and/or emphasized by interpretive
       means so that the visitor is encouraged to think of new ideas and
       concepts related to the function of the PA being visited.

1.2 Explain the advantages and the disadvantages of an interpretive trail.

Advantages:

-As it is self-guided, it eliminates the need for personnel.
-It is always open, so the visitor does not need to adjust his schedule in
            order to take advantage of it.
-A large number of people can visit it in a relatively short period of time.
-It is a rapid and inexpensive method to interest and educate the public of
            the values of the PA, or of some special characteristics of the
            PA.

Disadvantages:

-The communication is only in one direction, and there is no room for
            clarifying doubts or answering questions.

-The message of the trail must be adjusted to the "average" audience, and as
            such it will be too simple for some and too sophisticated for

others.
-It is relatively difficult to maintain the interest of the visitor.
-It is difficult to control vandalism.
-Over time, the "message" of the trail will need to be changed as the natural
　　　　environment evolves, or PA priorities change

2.1 In general an interpretive trail should be designed and planned according
　　　to the guidelines established in the Management Plan and, if it exists,
　　　the Environmental Interpretation Plan. These documents will define the
　　　subject of the trail, where it should be located, and the method to be
　　　used for the interpretation. In many cases these planning documents
　　　will not exist and the interpreter will have to make these decisions
　　　without official direction.

2.2 Explain the different methods for accomplishing the interpretation of an
　　　interpretive trail:

- signs with texts;
- numbered posts to be used in combination with pamphlets;
- a combination of the two above methods.

3.1 Explain the steps for developing a Conceptual Plan for a trail (Ham, 1992):

a. Become acquainted with the environment of the trail.
b. Draw a map or sketch of the trail showing the location of important and
　　　interesting features.
c. Decide on a theme for the trail (based on an evaluation of the management
　　　needs of the area, the objectives of the interpretive program, and the
　　　existing features along the route of the trail).
d. Select the stops, and develop a thematic map or the interpretive theme of
　　　each stop.
e. Prepare a sample diagram showing the interpretation at each stop. Seek the
　　　opinions of other people. Use the designed models to obtain financing.

ACTIVITIES:

1. Show slides of the various components of a nature trail; entry sign (with
theme), trail surface, interpretation points, bridges, visitors, interpretive
signs and pamphlets.

2. Take the participants to a nearby nature trail and have them analyze the
theme, the number and objectives of the stops, the route, the physical
conditions, and the maintenance of the trail.

3. Ask the group to plan and design a trail for a nearby site; it need not be
located in a PA.

4. Have the group construct a nature trail in a nearby site and, if time
allows, develop the needed signs and pamphlets.

Supporting Document C7a

GUIDELINES FOR DESIGNING INTERPRETIVE TRAILS

(Taken in part from Thorsell, 1984)

LOCATION

1. The trail should be located where the majority of the visitors will be able to find it easily; it may be located close to a visitor center or other site where visitors concentrate.

2. The trail should be located so that its entrance is convenient to a parking area of appropriate size.

3. The entrance should be attractive to the visitor.

4. Normally an interpretive trail contains a significant feature which is used as a theme and/or name of the trail e.g. a waterfall, large tree, etc. However, in the selection of the interpretive points, other factors should be considered: i.e. problems of PA management, and environmental problems in the region.

5. In general these trails are short, between 0.5 and 1.5 km long, which might be walked by the average visitor in 30 to 60 minutes.

6. Ideally a trail should be constructed in the form of a loop, beginning and ending in the same place.

7. Avoid steep slopes, wet areas, and other obstacles which would impede easy visitor access and use.

8. The precise route to be followed by an interpretive trail should be defined after a general survey of the site selected for a trail's location, during which all outstanding and representative features that might be used as interpretive points should be identified. Those physical conditions which might impede or facilitate visitor access and influence the location of the trail's route should be noted on a sketch map of the site. After studying the obtained information, the precise route for the trail is decided upon, joining up appropriate interpretive points in a logical sequence.

9. Trails with long stretches of straight sections should be avoided; trails with curves are more interesting and aesthetically pleasing.

10. Try to locate trails so that approach rivers, streams, lakes, and other bodies of water since they make the trail more interesting for the visitor, besides being important interpretive possibilities.

11. In the construction of the trail, ensure that the natural environment is disturbed as little as possible, avoiding the cutting of large trees and extensive excavations.

12. Avoid steep slopes in order to facilitate visitor access, since many visitors will not be in good physical condition.

13. The trail should be at least one meter wide, and if possible, one and a half meters wide.

14. When the trail's surface material is not very resistant, or it will be severely deteriorated or eroded with heavy visitor use, other material (gravel, sand) should be placed over it. If the trail will receive heavy use, consideration should be given to "hardening" the surface using material such as asphalt or concrete, using coloring or textures which are compatible with the surrounding environment.

THE THEMES

1. When possible, an interpretive trail should have a general theme which orients its interpretation, e.g. the rain forest, the x River environment, usefulness for humans of local plants, etc. However some trails may not have a thematic orientation, and instead interpret whatever points of interest are encountered.

2. The themes or topics to be interpreted should be related to what is found along the trail, and might include:

--explanations of natural processes: formation of watersheds, gullies, caves, islands, mountains due to water activity; the decomposition of a tree trunk, or of organic soil material; soil formation; seed dispersal.

--natural history explanations: bee hives; birds' nests.

--point out geomorphological features: oxbow lakes, geological faults, glacial moraines.

--associations or dependencies of fauna and flora: ants with <u>Acacia</u> trees; bears with fruits; monkeys with certain trees; typical vegetative associations or communities.

--explanations of relationships which appear insignificant, but in reality are ecologically important.

--explanations of human impact upon the ecosystem, and the environment around the trail: exotic plants, logging activity, archeological sites.

3. When appropriate, mention how what is observed on the trail is relevant to PA management: managed burning to favor an endangered species, study plots.

4. The presented messages should have a tendency to illustrate general conservation concepts.

CARRYING OUT THE INTERPRETATION

1. The trail should have a name which both stimulates the imagination and also represents some pertinent feature or characteristic of the trail.

2.At the trail entrance, a sign should indicate the time and distance needed to walk the trail. A map indicating the trail's route is also helpful.

3.There are two basic ways to interpret a nature trail: signs with text located at appropriate sites along the trail; and numbered stations, sometimes posts, along the trail which correspond to numbered sections of a text found in a pamphlet or brochure available to visitors.

4.The numbered stations/pamphlet system have the same function as the signs with texts. However, the pamphlet system can present more information give the method used. There are various systems for making the pamphlets available to the public. Normally the pamphlet is found in a climate-protected container at the entrance to the trail, or in a nearby visitor center. In some cases, the visitors are asked to voluntarily pay a small fee for the pamphlet to cover printing costs; in others the pamphlet is free; there is usually the option of returning the pamphlet after using it. As a general rule, most people place more importance to things they have paid for; a free pamphlet frequently ends up as trash.

The disadvantage of pamphlets is that they require that someone be in charge of ensuring their constant availability; they must also be re-printed periodically, an obstacle for those PAs with budgetary limitations.

5.The texts (signs or pamphlets) should be correct, interesting, brief and easy to understand. But they must be more than just informative; a simple plaque identifying a tree is not interpretation, but information. Try to provoke and stimulate the visitor's imagination. What is the origin of the tree's name? How old is it? What was happening in the world when this tree began to grow? Which plants and animals depend upon this tree for their survival? Is the tree rare or common? Why? The visitor should be stimulated to consider relationships, processes and associations.

6.The signs should be designed taking into account:

-- ease of reading and understanding
--possibility of vandalism
--climatic conditions
--ease of replacing them

7.Different options for sign materials include:

--wood signs with routed and/or painted letters
--silk screen process on wood, plastic or metal
--engraved metal plates (usually aluminum)
--plexiglass over wood

Supporting Document C7b

CHECKLIST FOR AN EFFECTIVE THEMATIC STOP

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

√ Has a theme-title (not just a topic-title)

   √ Focuses immediately on an *observable* feature(s) of
interest

√ Explains the feature quickly and interestingly

   √ Connects the stop's theme to the overall theme of
the trail

√ Contains fewer than sixty words

√ Has short sentences (less than twenty words each)

√ Uses simple, active verbs whenever possible

√ Contains *no* unfamiliar language or technical terms

   √ Encourages audience involvement if possible (by
asking questions or suggesting visitors do something or
look for something)

√ Uses visuals to explain and illustrate the message

Lesson 8

PHOTOGRAPHY, FILMING AND INTERPRETATION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the function and maintenance of a 35mm photographic camera.

2. Describe how to organize and care for a slide FILE.

3. Take adequate photographs using a 35mm camera.

4. Utilize a video camera to make simple video recordings relevant to
     their PAs.

REFERENCES:

Ham, S. 1992; Sharpe, G. 1982 (Chap. 20); "PARKS" Magazine, Vol.3(1)
"Basic Photographic Equipment"; Vol.6(4) "Conserving Photographic
Collections"; Vol.9(3/4) "Getting the Most from Your Slide Collection".

INTRODUCTION:

NOTE: The optimal development of this lesson requires several days and
the collaboration of a photography instructor.

1.1 Explain the utility of photographic equipment for the interpreter:

-captures landscapes in the PA and images of the beauty of its flora and
             fauna;
-photographic exhibits, posters, etc;
-slide shows;
-send photographs to the press for their diffusion;
-take photographss of evidence of infractions;
-photographs help to monitor changes in the ocnditions of the PA; i.e.
             the impact of tourism.

1.2 Describe the basic photographic equipment:

-Camaras. Normally a mechanical 35 mm. camera, rather than electronic
             or automatic camera, is recommended for work in isolated
             areas, because it is less sensitive to problems caused by
             abuse and adverse climatic conditions.

-Lens. As a minimum a wide angle (28 or 35 mm) and a telephoto lens
             (135 mm or greater) are recommended. A 200 mm or greater
             lens is required if one hopes to photograph fauna at a
             distance. A tripod is very useful with a telephoto lens.
             With a "zoom" lens one can consider the use of a lens which
             covers a wide range (i.e. 80-200 mm).

-Carrying case. The photographer who works with more than one lens

needs a large carrying case, or a small backpack made
specifically for transporting a camera with several lens,
rolls of film, etc. The case that comes with the camera is
useless if one works with more than one lens. The camera
and lens should never be transported without sufficient
protection.

-Rolls of film. The film to be used depends upon the available options
and the work needs. There are many possible options. For
professional work, Kodachrome 64 is the best, but it is more
expensive than others and difficult to have developed in
many countries. Other types are less expensive, and
sufficient for the majority of needs.

-Slide projectors. There are many brands and types, but the standard
projector is the Kodak Carrousel which exists in various
models. The "Ektagraphic" models are the best. While they
are the most expensive they are the most durable.

-Other photographic accessories are advisable for some specific
situations: filters, flash, macro lens, etc.

1.3 Discuss the limitations of photographic equipment:

-Cost. A camera with two or three lens can easily cost over $700 U.S.
The film and its processing are also expensive.

-Maintenance. Photographic equipment (especially the lens surface and
the mechanical mechanisms) should be cleaned of moisture and
dust each time they are used. When not in use, it should be
stored in a dry, cool place. If one is on the coast or
traveling on rivers, lakes, etc. it should be kept in strong
plastic bags.

1.4 Show a typical mechanical camera and explain all of the mechanisms:
how they function, the role of each, etc.

1.5 Describe the principles behind the aperture control (F-stop) and the
velocity of the shutter. Explain how the interaction of these
determines the amount of light which gets to the film, and the
distance at which one can focus in the photograph. Also explain
the significance of the ASA or ISO number.

2.1 Demonstrate how a slide projector functions.

2.2 Explain the options for acquiring the equipment in the country.

2.3 There are various points to be explained about the use and
organization of slides which are the principal tool for the
interpreter in many interpretation media.

-Storage: Slides should be stored in a cool, dry, dark place. If not
they will get moldy over time and lose their color. Some
methods for storing slides (silica gel, dehumidified room,

etc.) should be presented.

-Archive: Each PA should have a slide archive for use in interpretive
           programs and in public relations. There are special
           archives for the storage of slides, and also plastic sheets
           which permit one to review the slides without touching them
           individually.

2.4There should be two archives, one for originals and the other for
     duplicates. Normally original slides should NEVER be used, as
     each time that they are projected they lose some of their color.
     For those presentations which are commonly used, the slides can be
     kept in a carrousel ready for projection. Carrousels of 80 slides
     are preferable as those of 140 tend to jam or catch.

Slides should be organized in some fashion to facilitate their location.
      Normally they are filed by subject matter. When a slide
     represents more than one theme, than this is indicated in the
     index. In the Supporting Document C8a a list of possible subjects
     is suggested, however each PA will have specific themes for its
     particular situation.

3.1Video is increasingly becoming the medium of choice for many
     interpreters to aid in getting their message across. Discuss with
     the participants how video can be used in the PAs, using the
     following lesson outline provided by the US National Park Service,
     Mather Employee Development Center.

A.Ask the class to name a movie they recently saw. Ask them to elaborate
           upon why the movie was effective: effective use of light,
           shots were made using natural light rather than illumination
           exclusively; effective use of environment and natural
           sounds; continuity and direction, etc.

B.Ask the class to cite some problems they have seen in movies or
           videos: ineffective shots, use of environment and other
           elements. Present specific examples. Have the class
           elaborate upon their reactions and discuss ways these
           problems could have been corrected

C.Suggest that the class look critically at a television show after the
           day's session, and note how the film-maker used scenery and
           other methods to create a mood, evoke an emotional or
           intellectual reaction.

D.Discuss video and film use in outreach, off site, on site, school
           groups, special populations, and other interpretive
           programs.

E.Ask the group to think of ways a video could be used in their Park,
           stressing the fact that videos can be excellent in-house
           tools for training.Encourage the participants to seek
           outside professional sources to produce a high quality video
           for visitor viewing.

IV. VIDEO

A.List video formats:
-1/2" VHS
-Reel-to-Reel
-3/4" U-Matic, and 1" video cassette
-1/2" Beta Max professional quality

Describe the differences between the formats. Discuss the advantages and
        disadvantages of each.

B.Discuss the advantages of videos in general:
- instant replay
- less expensive than film
- reusable
- sound and image can be recorded at the same time.
- convenient
- most can be edited and bumped to another
format to add dimensions of sound, visuals, and voice over
- can be mass produced
- can be used for in-house communication,
instruction,and messages.

C.Discuss the disadvantages of videos in general:
- home videos are not generally of professional
quality
- can be erased
- generations of videos lose any quality the
original might have displayed.

V.VIDEO AND FILM SCRIPT WRITING

A.Present the class with handout on sample film script. Discuss script
            production, and the use of storyboard and other methods.

B.Talk about approach: documentary, dramatic, or structured. Discuss
            planning: topic, purpose, sequencing, audience, setting,
            length. Talk about the use of organization and management:
            director, lighting and sound technicians, if appropriate.

C.Demonstrate basic, effective script writing techniques, emphasizing
            that the narrative should be in synchronization with the
            visuals. Review basic guidelines.

D.Discuss videography as a management tool, as a means to record re-
            enactments, special events, or unusual phenomenon such as
            floods and windstorms. Videos can be viable interpretive
            tools to record and audit tours, walks, and talks, or to
            demonstrate effective interpretive programs.

E.Assign a script writing task. Tell the group they will turn the script
            into a video. Ask the group to write about something they
            know, and collaborate with each other, working as a team.
            Ask the group to edit their script, and check for accuracy

and the elements of an effective script. Dismiss the group
into the smaller units. Be available for assistance.

VI.HANDS ON

A.Demonstrate how to use a video cassette recorder. Talk about the uses
of buttons,and technique.

B.Break the group into the smaller units as before, allowing each person
an opportunity for first hand experience with the video
cassette recorder.

C.Assign the groups the task of producing a short video from their
scripts. Ask them to include zoom in, zoom out, pan, fade,
and some other basic film techniques. Tell them to edit in
the camera. Show participants how to use rewind to record
over material they wish to delete. Emphasize the concept
that edited material is more presentable than yards of raw
footage.

VII.CONCLUSION.

A.Have the group re-convene. Show each of the videos to the group,
commenting on the use of camera techniques, scenery,
movement, narration, sound, people, other elements, and
editing. Have the group critique each other's work, with
summary and comments by the instructor.

B.Wrap the session up through a discussion of need for video use at each
work site. Again stress the point of professional video
production by outside sources. Check to see if the
objectives were met.

ACTIVITIES (related to photographic cameras):

1. Allow each participant to practice with a camera, first without film
and then with black and white film. Develop the film to see the
results.

2. Show slides of the same scene taken with different lens to show the
difference among them.

3. By showing slides, demonstrate the difference between good and poor
photographs.

4. If there are sufficient cameras, divide the group into teams, assign
a theme, and sent them to photograph the theme. After developing the
film ask them to judge which group took the better photographs.

Supporting Document C8a

**STORING AND CARING FOR SLIDES
IN HUMID CLIMATES**

A. Possible Topics for a Photographic Slide File Organization System

1. Physical features
   - rivers
   - lakes
   - waterfalls
2. Geology
   - volcanoes
   - layering
3. Birds
   - marine
   - terrestrial
4. Mammals
   - native
   - non-native

5. Fish, amphibians, reptiles
6. Invertebrates
7. Flowers
8. Other plants
9. History
10. Archaeology
11. Activities and facilities of the PA
12. Visitor activities and facilities
13. Atmosphere and the sky
14. Seasonal changes
15. Environmental impacts
16. Miscellaneous
17. Other areas of the PA system

Every slide should contain information concerning: the photographer, date of the photograph, precise name of location of place, common name and scientific name of species when applicable, and other pertinent data.

TENDER LOVING CARE FOR SLIDES

(Adapted from Roth, R. 1986)

A. Cleaning

Fungus and dirt may be removed from transparencies (slides) by gently swabbing with clear Ethyl alcohol. Use a clean ball of cotton or a very soft brush. The alcohol may be used on either side of the transparency without danger of damage. Use a light, circular motion when stroking the surface of the transparency; then before the alcohol evaporates, wipe it dry with another ball of cotton. (If the alcohol is allowed to dry by evaporation alone, it may leave a residue on the slide.

In some cases you may need to repeat the process. If dirt or fungus is allowed to remain for an extended period of time, the slide may become permanently damaged and impossible to clean.

B. Storage

Storing slides in moist hot climates requires special care to protect them from fungus and mold. Some people have used silica gel quite successfully by placing small amounts with slides or camera equipment in a tight container. The silica gel must be dried periodically in an oven for a few hours set at low temperature, in order to maintain its dehumidifying qualities.

Hard vanilla cookies or crackers can also be used in the same way as silica gel, as long as they are dried in an oven periodically, and if insects can be kept away.

Another method involves cutting 6 inch circular holes in the tops and bottoms of 3 or 4 wooden boxes. These boxes were stacked with the holes matching to act as a chimney. In the bottom box a 25 watt bulb is wired and placed, and which gives off heat which rises and circulates through the upper boxes. Each box has small strips of wood nailed in rows on the inside of the vertical walls of the boxes. These acted as rails for shelves which were made of 1/4 inch wire mesh. On these shelves are placed the trays or other containers containing the slides, leaving some space between the trays to permit warm air to pass. As long as the slides are clean, they can be stored safely and indefinitely in this manner.

Lesson 9

SIGNS AND EXHIBITS: PLANNING AND DESIGN

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the principal steps in preparing exhibits and signs.

2. Create a list of advantages and disadvantages of exhibits and signs as interpretive media.

3. Design effective exhibits and signs.

4. Differentiate between good and poor designs and texts.

REFERENCES:

Ham, S. 1992; Sharpe, G. 1982. (Chap. 16); Berkmuller, K. 1981 (Chap. 4); "Parks", Vol. 8(1), 1983, "Wayside Exhibits"; Vol. 6(2), 1982 "Display Center in Scotland"; Vol. 4(1), 1979, "Free-Standing Portable Display"; Vol. 1(4), 1977, "Two-Headed Sign"; Lessons C7 and C6.

PRESENTATION:

1.1 Two types of **signs** are found in the PA: administrative (traffic signs and those to orient visitors) and interpretive. The interpretive signs are generally more complicated as they explain in one way or another the natural or cultural features of a PA to the visitor. This lesson will deal with interpretive signs although many of the same principles apply to other signs.

1.2 As an interpretation media, signs have various advantages and disadvantages.

   Advantages:

- they are relatively inexpensive, and frequently can be made by the PA personnel.
   - their operation and maintenance are relatively inexpensive as long as they are well designed and constructed.
- signs permit visitors to read at their own rhythm or interest. That is they can read what interests them, read it twice, not read it, etc.
- signs are always there, day or night, offering interpretation before and after the work day.
- signs are an aid to the photographer, giving information about his own photographs.

INTERP. C9-2

Disadvantages:

-a sign is passive and it demands a mental effort on the part of the
            visitor. In contrast, an interpreter and audio messages do
            not require much effort.
-communication through signs is in only one direction. It doesn't allow
            for feedback as the visitor can not ask questions or make
            comments.
-signs are subject to damage and deterioration due to climatic
            conditions (sun, moisture, sand and snow blown by wind) and
            to vandalism. Sometimes animals destroy them, and birds
            perch on them and defecate on the texts.

2.1 The following questions should be answered to determine if a sign is
        the most appropriate interpretive media:

-is personal contact with the visitor desirable or economically
            possible?
-is it necessary to exhibit some object in order to present the message?
-can the message be improved through recordings or sound effects?
        -is it desired to give the visitor something to take home (such as
            a publication)?
        -is the message complicated, requiring a lot of explanation?

If the answer to any of these questions is YES, then a sign is not the
        medium needed.

Remember that a sign represents an intrusion on the natural environment
        and it should only be used if there exists no other alternative
        for transmitting the message.

2.2 The greater the **selection quotient** for a sign (expectation of
        benefit/required effort) the more people will read it. In
        preparing interpretive signs everything possible should be done to
        increase the expectation of benefit from reading it and to
        minimize the effort required to read it. As such it is important
        to review with the participants the Supporting Documents which
        accompany this lesson, and indicate how to maximize the quotient.

3.1 **Exhibits** are perhaps the media which give the interpreter the
        greatest opportunity to use his imagination and creativity.
        Besides utilizing more than one dimension, one can use different
        materials and forms.

3.2 Types of exhibits:

        - two dimensional posters
        - three dimensional objects
- dioramas
- models

3.3 Generally exhibits are found in the Visitors Center. Their planning
        and sequence are very important.

4.1 As interpretive media, exhibits have their advantages and disadvantages:

Advantages

-original objects can be exhibited, rather than just images.
-they are always available (depending upon visiting hours).
-they can be located outdoors or indoors or they can be portable.
-the flexibility they give the visitor who can take the time needed to observe them.
-the possibility they offer to the interpreter to bring the natural outside environment, indoors, at a reduced scale (battlefields, swamps, etc).
-possibility to fix the conditions under which the visitor will observe them (lights, hours of visit, sequence, etc).

Disadvantages

-an exhibit cannot explain a policy.
-it cannot compete with moving objects, or living things.
-an exhibit can easily not communicate the desired message if it is poorly designed or used.

4.2 **Rules for Planning Exhibits**

-select a theme (i.e. rain forest, the life of the Congo River);
-identify the audience and try to meet their needs;
-define the objectives of the exhibit: i.e. orientation of the visitor, help in bird identification, description of the hydrological process.
-decide on what type to construct: poster, objects, specimen, diorama, models, etc.

4.3 **Factors to Consider in the Design of Exhibits**

a. Location: inside, outside, in visitors center, etc.
b. Portability for use in schools and other events.
c. Durability (resistance to the climate and vandalism).
d. Need for electricity.
e. Effect of sunlight and climatic conditions on the colors and material used.
f. Availability of materials.
g. Titles that attract attention.
h. Brief texts, easy to read, and stimulating to the visitor.
i. Sequence of models, and need for dividing panels.
j. Maintenance and deterioration; if it cannot be maintained, do not build it.
k. Use of pesticides or fungicides to maintain specimens and wood.

l. Possibility of exhibits which involve the active participation of the visitor.
m. Mounted animals, terrariums, aquariums.
n. Plant, rock, or insect collections.

o.Exhibits of animal specimens.
p.The simpler, the better.

ACTIVITIES:

1. Show slides of good and poor exhibits and signs.

2. Visit a site where there are various exhibits and signs and assign teams of the participants to analyze them. They should identify the themes, the audience, and any defects. Ask that they analyze the texts of signs as well as the selection quotient. They should present their recommendations for improving that which they analyze.

3. Expanding upon that mentioned above, ask the participants to plan and construct one or more exhibits and/or signs in some nearby site (PA, school, government building, community center).

Supporting Document C9a

SIGNS FOR PARKLANDS

(Taken from PARKS Magazine, V.1, No.1, 1976)

Signs are basic. They convey, or should convey, traffic directions and other essential information wherever park and recreation managers have to deal with large numbers of visitors.

There can be little doubt about the scarcity of good signs, or about the oversupply of bad ones. Even in parklands, the landscape suffers from the chronic neglect of the signmaker's art though seldom from any lack of his industry.

Parks are certainly not the place for the sign clutter and intrusion common in urban areas. For parks, a good first rule ought to be the fewer signs, the better. A second rule might be that if signs are used, they should be well made, clearly marked with lettering and other devices, and carefully positioned, with full regard for the park environment.

Equally important is the sign's utility. Can visitors grasp the message and respond to it? Can they do this quickly and without confusion or misunderstanding?

The park or recreation manager looking for easy solutions and low cost sign components may not find them. In many countries, it is a fact that signing has been neglected by both designers and manufacturers, and, as a result, modern signing techniques and quality commercial components are not available widely.

Several European countries, particularly Switzerland, have advanced roadway signalization to a highly refined system including the development of stock components that can be ordered from catalogs. These same components are readily adaptable for park and recreation purposes.

For those managers who have a desire to develop a systematized sign program but without large outlays of capital the outlook is not always bright.

It is unlikely that park managers can call upon their own organization for new design approaches.

The conceptual requirements of a far-reaching sign program almost always extend beyond the capabilities of those who put up and maintain signs.

This is not a job for a sign painter, even a competent one. It is a job for a specialist, and few organizations have sign designers either trained or experienced in this line of work.

One way to revamp an on-going program is to employ a design firm with a reputation for accomplishment in sign work. Qualified consultants can look at the client's situation through fresh eyes, study the problems in their broadest terms, utilize outside specialists such as architects, letterers, or engineers as they may be needed, and make proposals for actions to be taken.

From such an evaluation of the total sign enterprise should come a coordinated group of elements, including panels, supports, typefaces, colors, symbols, and surface materials. Attention should be given to the design of all components as parts of a system: how the pieces are shaped; how they are manufactured; how they are assembled into a unit; and how they are installed at the point of use.

When the new program is ready for introduction, the principles should be documented clearly and simply for those who will do the work. This bringing together of all the parts of the new sign program in printed form is a practical need that is essential to the success of the program.

The documentation step can usually be realized through a sign manual or wall chart where the program is large, or with easily duplicated specification sheets where it is small. The organization, thus guided by an overall plan, can move step by step with each new sign contributing to the cohesiveness of the whole.

Two influential projects have been financed over recent years by agencies of the United States Government, and should be of interest to park and recreation managers concerned with signage.

The first project, sponsored by the U.S. National Park Service, is an example of a large, coordinated signing system, along with a case study of the conditions leading to its development.

The second project, undertaken by the American Institute of Graphic Arts under a grant from the U.S. Department of Transportation, has brought about the refinement of 34 passenger- and pedestrian oriented symbols for use in transportation related facilities.

The U.S. National Park Service Sign System

In the early 1960's, officials of this organization came to realize that a systematic approach to signing for roadways and other applications would be needed to keep pace with the call for new signs, and the maintenance of those already in use.

The Service's sign work at that time was a mixture of approaches. Every park had its own signs, often made according to local ideas, materials, or facilities. Routing crude letters in planks was a common approach, but there was little continuity in signs from one park to another to help visitors understand messages. There was no comprehensive plan to keep up with the number of new parks then being established or the very large increase in visitor use that came during the 1960's. Costs were high, results were marginal, and something had to be done to put the work on a practical basis.

It was clear to staff members concerned with signs that the Park Service should not attempt to handle the assignment itself. An outside graphics design firm was asked to study the entire NPS sign operation, then covering 250 parks with more than 12 million hectares of the most varied terrain in America.

The NPS sign study was a substantial undertaking and an attempt to solve a fundamental problem once and for all with a basic system flexible enough to meet the needs of any park. The study was planned as a pilot and demonstration project so that the findings could be made available to other park organizations.

The resulting effort spanned some three years of study and experimentation. Tests were conducted into materials and structures. Symbol communication was explored and adopted, and included comments by UNESCO's International Committee for Breaking the Language Barrier. New techniques were perfected for the laying down of letters, and for the spacing of words and other graphic elements on panels. Prototype signs were built and put into actual use along roads and trails. Finally, the new signs were installed in an entire park in an attempt to refine the

details of the total proposal.

The results of this project were then documented and turned over to the National Park Service for implementation.

Today, throughout the National Park System, signs are being installed which are based on the system developed in this project. Since more than 300 park areas are involved, the Service is not rushing to re-sign all of them at once. Rather, it installs the newer-type signs as developing parks are made
operational, or as outmoded signs are replaced in the established parks.

Standard Sign Symbols The National Park Service sign system provides for 88 image symbols to convey essential messages. This heavy dependence on symbol markings was one of the hallmarks of this program. Some of the symbols are in established international practice, for example those using a red slash mark diagonally across a symbol to indicate that the activity is prohibited and those using the letter "P" for parking. It may be said that the USNPS program standardized too many symbols. As a rule, symbols should be confined to commonly required services and frequently needed information.

Standard Lettering The NPS typeface is based on Haas Clarendon, an Egyptian letter form based on thick and thin strokes and heavy serifs. It is a distinctive letter which is easy to read, and is well suited for signs when properly handled. The designers modified the Clarendon letter slightly by reducing the size of the serifs to gain more space between connecting serifs.

Letter-Spacing Guides Clarendon letters at the size normally used on NPS signs require special care in placement. The designers therefore perfected a letter-spacing system so that persons relatively untrained in graphics can achieve the correct placement of the transfer letters, which are cut from a plastic material having a pressure-sensitive underside.

Detailed instructions are furnished for (1) formulating the message, (2) determining the letter size, (3) determining the size of the message and (4) determining the size of the sign panel and the layout of the message.

Sign Layout Guides An effective sign depends on its layout. The system uses simple step-by-step instructions for the placement of the messages on signs. To achieve uniformity, rigid limitations were laid down to control the location of every element on the panel. Typical layouts were prepared for all anticipated combinations of elements, including symbols, highway identification markers, and direction arrows.

Sign Colors Brown is used as the base color for all structural and panel parts in the NPS sign system. White is always used for letters, symbols, and borders.

Sign Panels Depending on its size, the panel, or face of the sign, is wood, plastic, or aluminum. Some panels are lettered by silk screen processing near the point of installation and these, of course, have a painted surface. Most signs, however, are faced with one of two types of plastic sheeting; both are thin and flexible for easy application. One

sheet is reflective material.

Sign Supports For reasons of cost, sign panels are bolted to support posts in a simple combination. The posts are usually rectangular tubing in weathering steel, or wood. The color of the steel is deep brown, and where wood is used in place of the steel, it is painted brown. Single-post and double-post supports are employed, depending on the size of the sign. More elaborate sign supports may be used where display emphasis is desired, such as park entrances, monuments, or for building identification.

Supporting Document C9b

WAYSIDE EXHIBITS ENHANCE PARK INTERPRETATION

(Written by Jean Packard; taken from PARKS Magazine
V. 8, No.1, 1983)

Properly designed and sited wayside exhibits and signs can provide immeasurable pleasure for visitors to parks and protected areas, discourage vandalism and lessen damage caused by thoughtlessness or ignorance.

Wayside exhibits can range from the simple to the elaborate—from a hand lettered sign on a stake to a fine building filled with expensive, carefully engineered exhibits. Most, however, fall somewhere between these two extremes.

In determining the need for any sign or wayside exhibit, the first questions to be addressed are:

*Is the message needed?

*What should the message be?

*How should it be presented?

*nIs a protective structure necessary?

Interpretive messages are likely to be most needed and most effective when provided at important points of visitor impact, where the visitor instinctively pauses to look and to enjoy. Most messages should be friendly and informal, although some may require more imaginative treatment. Statements on signs and wayside exhibits should be closely related to what can be seen from their location. Readability and reliability are to be sought in all messages. Sometimes words and materials can be chosen which convey local flavor, which is desirable.

Certain basic principles of location, materials and design apply to most park exhibits, including:

Site Selection

The siting of any sign, marker or wayside exhibit is all-important. Standards that assist in proper location include:

1. Select the best examples of natural or historic sites, objects, features, or structures which tell a part of the park story or contribute to an important supplementary theme or story.

2. The place for the facility should be easily found and readily useable by the visitor. The subject itself should be readily recognizable, and the site should afford the broadest opportunity to interpret the feature with clarity.

3. If several vantage points are available, select the one having the greatest intrinsic or potential visitor appeal from the standpoint of immediate surroundings.

4. Select the sites which meet obvious needs for interpretation, but be reasonable in the distribution of these facilities; avoid overcrowding.

5. Avoid dangers to visitors and installations.
a. Natural hazards:
(1) Rockfalls
(2) Flooding
(3) Wind damage
(4) Overhanging trees
(5) Unprotected cliffs and dangerous walks slippery when wet or icy
(6) Steep grades
b. Traffic and other man-caused hazards:
(1) Blind curves
(2) Lack of adequate parking space
(3) Lack of warning or approach signs

6. Normally, select points which will be visited by reasonably large numbers of people; but do not exclude interpretation of outstanding points which may be lightly visited.

7. Select points where features will not be damaged by excessive use such as a natural process arrested or an irreplaceable archeological or historical structure destroyed.

9. Select sites which provide for the maximum comfort of visitors in their personal enjoyment and study of the feature. So far as possible, avoid sites with distracting influences.

Placement

Placement of interpretive signs and markers should be governed by the following standards:

1. The facility should be so placed that there is little or no question in the mind of the visitor as to the identity of what is being interpreted. Generally, placement should be such that the text may be read, and the natural or historic subject observed, without requiring the visitor to change position.

2. The facility should be sufficiently visible to serve its purpose without intruding unduly upon the scene.

3. Place the facility in a position so that it may be reached and used with greatest physical ease. Ordinarily, the position selected should not require the visitor to stoop, stretch, exert himself unduly in climbing, etc.

4. Normally, signs should be placed so that the bottom of the sign panel is 18 to 24 inches above ground, dependent on its size. Occasionally a sign must be read above parked automobiles or other obstructions, which justifies a longer leg or standard. This should be avoided where possible.

Materials

The choice of materials for signs and exhibits is primarily limited only by budgetary constraints. There is a wealth of commercial products available, ranging from attractive hand lettering on waterproof paper or cloth to the most elaborate permanent exhibits involving silk screening, plastics, metals of various kinds, routed wood, self-adhesive letters, etc.

Native materials should be used where they will contribute to the harmony of the setting and theme of the area. Similarly, plant materials native to the site should be used as backgrounds and to help tie the sign to its site in a natural manner.

Design

Exhibits and signs should be composed of simple elements arranged to present the information in a clear and straight-forward manner. First impressions of an area are often influenced by wayside exhibits or other forms of communication. Size, configuration, color, letters, placement and message must be decided upon and integrated before work begins. While consistency of appearance and materials can provide a theme throughout an individual area or an entire system, care should be taken that excessive similarity does not lead to inattention or indifference on the part of the visitor.

Careful design and placement can also serve as an unobtrusive but effective visitor control. A simple fence behind an interpretive sign can be incorporated into the message while keeping visitors away from a fragile area. Directional signs that become part of a trail keep visitors from wandering off the path, while strategically placed interpretive signs or exhibits keep the flow of visitors moving in one direction and on a designated walkway.

Native materials used wherever possible can lessen the cost of exhibits, provide additional visual interest to the facility itself, and often are more durable than other materials.

Self guided tours are an important interpretive feature of most natural areas, giving visitors the opportunity to explore at their own pace and inclination, while lessening the need for park personnel. A simple theme figure or object can tie together the disparate pieces of such a trail—a silhouette of a soldier in an historic fort, or an easily recognized native animal in a game park can keep visitors moving from point to point while focusing their attention on the primary purpose of the area. Such markers are especially important at every point where a visitor has a choice of routes, such as forks in the trail, or as indicators of hazardous areas. With minimal wording, these figures can indicate direction, destination, distance, walking time, or provide a key for a printed guidebook.

Care must be taken in the design of directional arrows or similar markings. Many an attractive sign has been disfigured by poorly designed or hard to read arrows. These symbols should be carefully studied for each sign and not merely compressed into the design where their function may be lost. The design and construction of each sign or marker should be studied in complete detail prior to installation to eliminate causes of premature decay and rust, and to assure the longevity and permanency of the exhibit (where appropriate).

Shelters

Certain exhibits either require or are enhanced by some type of

protective structure to provide fuller interpretation, as well as give the visitor a chance to rest and be sheltered from the elements. Such protection affords the opportunity for more detailed displays to be absorbed in relative comfort.

There are many different types of shelters or buildings that prove useful and attractive, depending upon location. Grass rondevals are appropriate to the African plains, for example, or stone structures in Great Britain, palm thatch in tropical countries, or heavy timbers in forested mountainous regions. Such use of natural native materials not only indicates the specific points of interest, but provides an economic advantage to a tight budget.

The US National Park Service has developed a standardized kit for an exhibit structure which provides three 38 x 46 inch (96 x 117 cm) panels on which displays can be arranged under a roofed shelter. The metal components and a full set of plans are provided to the individual park manager within the NPS system who then utilizes available materials to build the structure. Such an arrangement allows for economies of scale in ordering metal components in large numbers, while allowing park managers to save money by using readily available, less expensive local materials. This arrangement also encourages use of native materials, and gives park managers the flexibility to provide imaginative and creative interpretation.

Text

Writing for signs is completely different from any other text wording. Clear, logical and precise thinking is essential to condense an inscription to its simplest form and present it logically without boring the reader.

Short sentences, with words of few syllables, uncomplicated by prefixes and suffixes, go far to insure readability. Academic phrases should be avoided or carefully explained; both scientific and common names should be listed wherever possible. In many cases, it is how the text is written, not its length, that determines whether it will be fully read and completely understood.

A checklist of key points to observe in the composition of text includes:

1. Captions, if used, should have "headline" qualities in style and meaning.

2. Do not repeat the caption in the first line of the text.

3. Get the action and interest expressed in the opening sentences of the text.

4. Be dynamic in getting to the heart of the story to be told and answer the question: "What happened here?"

5. Avoid the use of the passive voice; replace the verb "to be" with the action or participial form of the appropriate verb. Use words conveying a sense of movement.

6. Make a few words tell the full story.

7. Avoid the use of technical or unfamiliar words as far as possible, since they make the text difficult for the visitor to understand and his interest in the site may quickly wane.

Lettering

Good typographic practices should be followed in laying out narrative or information signs requiring several lines. Usually they should be composed in legible capital and lower case letters rather than all capitals.

In every case, the lettering should be of simple form, adequate size and executed to withstand weathering. The number of different *sizes of letters* should be kept to a minimum; one if possible, two if they increase the readability, but never more than three—beyond that point readability is almost sure to decrease as the jumble of sizes increases (figure 1).

If the message is complex or lengthy, every attempt should be made to break it down to its component parts. Three separate pictures, each with its own specific caption, is far preferable to one large picture illustrating three points with a large block of type you hope will be read and understood at one time.

Signs to be read from moving automobiles require lettering of strong legibility, discernible at a distance sufficient to permit the sign to be read at the normal speed of travel at that point. Letters should be at least two inches high, and signs should be large enough to accommodate the message required.

Lettering on signs to be read by standing or seated people at close range should only be large enough to be clearly legible from the spot where the visitor will normally read it. Larger eye-catching captions may encourage passing visitors to stop and read the entire message.

figure one

Illustrations

The old saying, "one picture is worth a thousand words," was never more appropriate than in natural area interpretation. Illustrations need to be as carefully selected and edited as exhibit text. If color is used, it must be accurate (especially to describe wildlife), although good black and white pictures can be even more effective than color, when utilized properly.

Some exhibit cases can be constructed to combine illustrations, text and actual items, such as primitive tools or other small objects. "Easel type" displays, with a liftable top can prove durable and weather-resistant, as well as provide double the display space in a limited area.

Color

Colors should be chosen to complement their surroundings rather than compete with them. They must make the sign visible but not spoil the environment.

When more than one color is used, they must be chosen carefully so as not to overpower the area. Be aware that approximately 10 percent of the population is red/green color-blind, so make sure your contrasts are clear when using these shades. The partially blind will also have trouble distinguishing text if there is not sufficient contrast.

The following table is a consensus of several authorities on the comparative legibility and visibility of certain color combinations. The highest or best legibility is listed first.

BLACK letters on a YELLOW background
GREEN letters on a WHITE background
RED letters on a WHITE background
BLUE letters on a WHITE background
BLACK letters on a WHITE background
RED letters on a YELLOW background
WHITE letters on a BLUE background
WHITE letters on a RED background
WHITE letters on a GREEN background
WHITE letters on a BLACK background

Coping with Damage

Every manager has to deal with senseless destruction of signs and exhibits. There are a few helpful guidelines, although the problem will undoubtedly continue to grow as more and more people flock to their parks:

1. Careful selection of materials which can be easily cleaned.

2. Easily replaceable signs at points of heavy use, such as along well traveled roads or well populated areas.

3. Keep the site well maintained; carefully managed areas seem less prone to damage.

4. If closing an area, explain the reason. "Keep Out" often annoys visitors, whereas "trail closed to allow vegetation to recover" provides

an incentive to use an alternative route.

5. Reinforce the idea that the parks belong to those who use them.
People are less inclined to damage their own possessions, or to condone
such actions in others.

6. If an area has been damaged by thoughtlessness or overuse, turn it
into an exhibit. Show what has happened, why, and enlist the visitor's
active participation in the recovery.

Damage, of course, is not limited to the human variety. Wildlife
and domestic stock can also cause problems. Occasionally the remedy may
be as simple as wrapping a strand of barbed wire around a post where
animals have been rubbing, or moving the sign away from a well-traveled
animal trail. Substituting metal posts for wood will discourage gnawing
animals.

In some cases, the only certain remedy to damage is removal of the
offending signs completely For example, if a sign is constantly being
riddled with bullet holes by target-shooting vandals, there is little
use in replacing or repairing it.

Temporary signs

Since no natural area remains constant, there are instances where
a temporary sign or exhibit can provide a useful form of interpretation.
The advantages of such displays include:

1. An opportunity to update information speedily and effectively as
changes occur. This increases the enjoyment of repeat as well as first
time visitors.

2. Displays are relatively inexpensive and easy to make, providing the
opportunity and incentive to interpret temporary points of interest with
minimal personnel time and cost.

3. The displays can be replaced quickly if they are vandalized or
otherwise damaged.

Conclusion

Wayside exhibits, signs and other informative materials come in a
bewildering array of sizes, shapes, colors and materials, some of which
we have attempted to touch upon. In the final analysis, it is important
to remember that these exhibits are not automatically an aid to site
management and interpretation. There are a number of advantages and
disadvantages:

Advantages

Signs can provide information and explanation at or close to the feature
being explained.
The production and normal maintenance costs are relatively low.
They can be changed, updated or removed as needs change.
They can be unobtrusively sited.
They can be in place at all times and are not subject to opening hours.

They do not require expensive staffing.
They can be used at the pace of the individual.
They can incorporate visual images as well as words.
They can be photographed by visitors as personal souvenirs.
As a management tool they can save staff time and cost.

Disadvantages

Signs are passive and require some mental effort from visitors.
They provide one-way communication only— they cannot answer back.
They cannot normally incorporate special effects such as sound
        reproduction without wardening/management problems.
They may attract unwelcome attention to a particularly vulnerable
        feature.
If badly designed, sited or constructed they are vulnerable to vandalism
        and weathering.
If badly designed and sited they can confuse rather than inform.
Signs and exhibits must be considered as part of an overall site
        management plan if they are to be successful.
A properly designed exhibit adds immeasurably to the pleasure and
        knowledge of every visitor who stops to read it. A bad sign or
        exhibit is worse than none at all.

Supporting Document C9c

IN EXHIBITS, THINK LEVELS - THEN THINK DESIGN

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

The 4 Levels

I. *Theme Awareness*— In one or two seconds, the viewer should recognize
and understand the theme. Display this level prominently in the theme
title of the exhibit. Structure artistic design to complement and
support the theme.

II. *Awareness of the Message Components*— Show no more than five parts or
major divisions; the fewer, the better. Accomplish this with conspicuous
headings or subheadings, colors, illustrations, or other "visual
separators." If headings or subheadings are used, they should be
conspicuous but appear less prominent than the title of the exhibit.

III. *Selected Details (Main Body Text and Illustrations)*— Corresponding
to each message component, include only those facts, ideas and other
information necessary to communicate that part of the theme. The content
and tone of this information will determine whether the exhibit is
interpretive or merely informational. A viewer ought to be able to read
each body of text quickly— the briefer it is, the better— and
immediately see its relationship to the theme of the exhibit. Designers
sometimes include within this level a simple hierarchy of detail
consisting of the main body text (which is intended for everyone) and
secondary information that's offered primarily for people who would like
even more detail. The second part of this hierarchy is usually separated
in the layout from the primary body text, and typically printed in
smaller and/or different type. Large, carefully designed exhibits may
sometimes contain two or more of these "sublevels," but often at the
expense of scaring off more casual readers. In most designs, such a
quantity of detail is best saved for level IV.

IV. *How Viewers Can Act on Their New Knowledge*— This level can take many
forms depending on the type of exhibit and its intended lifespan. It
might be the name of a brochure, pamphlet or book that the viewer could
get; it could be a box of brochures or information sheets attached to
the display itself; it could be a schedule of future activities related
to the topic of the display; it could be the name of an expert on the
topic, his/her telephone number or office address; or it could simply be
a suggestion of a place to go, a trail to hike, etc. in order to see
something related to the topic or theme. Be selective give only one or
two suggestions. (In many exhibits, some of the additional information a
viewer might seek is included in the second part of the level III
hierarchy.)

INTERP. C9c-2

figure one

figure two

Supporting Document C9d

FIFTEEN STEPS TOWARD MORE POWERFUL EXHIBIT TEXTS

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
 Interpretation-A Guide for People with Big Ideas and Small
 Budgets." Golden, CO: North American Press/Fulcrum Publishing)

   1. Use theme titles, not topic titles. Example: "We're Losing Our
Soil", not simply "Soil Erosion".

   2. When possible, build sub-themes into level II headings. These
allow viewers to see at a glance the deeper meaning of the theme title.
For example, if your development of the above theme were to be organized
around two main ideas, the level II headings might take the form of
theme statements (for example, "Wind and Rain—The Causes" might be one
heading, and "You and I— The Culprits" might be the other. Notice that
theme awareness, even if presented in a sentence fragment, is what's
important. The same is true of theme titles in level I.

   3. Limit your organization of the message in level II to five or
fewer main ideas. The fewer the better.

   4. Think visually. A good graphic may say the equivalent of hundreds
of words. When you can't illustrate something literally, consider a
visual metaphor.

   5. Limit the main copy in level III to an amount that could be read
by an average reader in 45 to 60 seconds maximum. Given current
estimates of average reading speed, this would be about 225 to 300
words.

   6. Don't include transitions from one part of the text to another.
Doing so assumes that viewers will read the text in that order. There's
a very good chance they won't.

   7. Keep it simple and easy. Avoid having even one technical term in
your text. If technical terms are absolutely necessary (and they
virtually never are), be sure to explain them. Be cognizant that every
word in such an explanation costs you one of the 225 to 300 words you've
got to work with. Ask yourself if it's worth it. Keep texts easy to read
by using as many one-syllable words as possible. This is especially
important with verbs because simple verbs (other than the verb "to be")
are often a language's most powerful verbs (e.g., say "kills," not "is
causing the death of"). English-language readers are referred to an
excellent explanation of this principle in O'Hayre (1966).

   8. Limit sentence length to ten to fifteen words where possible.
According to Witteborg (1981), if a sentence exceeds twenty-two words,
you need two sentences.

   9. Use short paragraphs. According to Witteborg (1981), two or three
sentences is not too short.

   10. Edit out passive tenses and substitute active verbs. Example:

"Rain strips unprotected soils from our land," not "Unprotected soils are being stripped from our land by rain".

11. Put main clauses first in a sentence and subordinate clauses second. Example: say "A lot of farmers are planting trees to hold the soil in place," instead of "To hold the soil in place, a lot of farmers are planting trees."

12. Be personal. Use personal words as much as possible, and stay informal in tone. Research shows that personal words make reading easier and more interesting. They include words such as you, me, I, we, he, she, they, mine, yours, his, hers, our(s), their(s), me, us, them, themselves, ourselves, yourself, myself, people's names (e.g., John, Jane), and words that identify people by gender (e.g., boy, woman, husband, saleswoman, spokesman). For most audiences, words like visitor or simply people may also be personal. Build into the text self-referencing phrases (e.g., "Have you ever seen a sediment-choked river?") and labels (e.g., "The most responsible farmers are trying to stop soil erosion on their land." In some cases, you might want to use a personification vehicle in which the subject of a sign is "speaking" to the viewer in the first-person, "I." In some cases, a trail or old road may be "talking" to the viewer; in other cases, it may be an animal, a tree or a mountain that's doing the "talking."

13. Use bridging techniques. Brief examples, analogies, and comparisons will link your explanations to things viewers already know or care about. This is always a good idea and especially helpful when you're trying to explain the reasons for a rule or regulation. But don't get too complicated. An analogy that takes 100 words may far exceed what most people will read. Even if it's an excellent bridge, you may have wasted your time. See guideline 14.

14. Always think thematically, even when writing texts for markers and regulatory signs. Markers identify important features or objects. Usually they contain only the name of the object and one or two quick, but important facts about it. The facts you choose to include say something about the object—that is, they communicate a theme. Regulatory signs should also be thematic. They inform viewers about important rules and regulations. Done well, they give the reasons for the rules and the benefits of obeying them. These signs are thematic because they say something to viewers about the importance of the rules—that is, they communicate a theme. Simple lists of rules usually communicate nothing.

15. Proofread and spell-check the text at least three times. The last of these three times should be at least 24 hours since you've last read the copy. It's also a good idea to give the draft text to others to proofread. Never guess at the spelling of a word. In my classes at the university, even one spelling or punctuation error in a student's exhibit earns a failing grade. Be just as hard on yourself and your employees. Never tolerate spelling and punctuation errors. They reflect poorly on you and your organization, and they impede communication with those viewers who might be bothered by them.

Support Document C9e

ADDING INTEREST TO EXHIBITS

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

Because exhibits are usually a one-2 way communication medium, making
them interesting can be challenging. Adding interest is particularly
important when you're designing an exhibit for a museum or interpretive
center that already contains a lot of other exhibits. Viewers tire
quickly when they're doing a lot of reading (a condition called "museum
fatigue"), especially when they've been standing on their feet the
entire time viewing exhibit after exhibit. One way to reduce museum
fatigue is to provide benches, rails, foot rests and other resting
devices for visitors. Another way to reduce fatigue is simply to make
your exhibits as interesting and as stimulating as possible. Studies
have shown that there are at least three inexpensive ways to do this:
(1) you can make exhibits visual, (2) you can make them
three-dimensional, and (3) you can make them interactive or
"participatory" Following are some ideas for how to give exhibits each
of these qualities. Remember, however, that these are simply ideas to
consider, not hard and fast rules, and they may not all apply to every
exhibit.

Making Exhibits Visual

Most exhibits contain words, even if only a title, but that doesn't
mean that the words have to convey all or even most of the message. As
we've seen repeatedly in this chapter and in Chapter 4, visuals are
powerful communicators. Don't forget this when you're planning an
exhibit. For every word you consider, consider also whether a visual
might serve you better. This won't always be the case, but if you let
this become your guiding philosophy of exhibit design, you'll find that
your exhibits will soon be saying more with less (words, that is).
Take advantage of existing visual materials such as maps, magazine
photographs, pictorial calendars, and artwork, if you have access to
them. Be sure to request permission to use copyrighted materials. But if
you describe your need and financial situation, and if you work for a
government or nonprofit organization, you'll usually be granted
permission and asked simply to credit the source. (If you're denied
permission, however, you'll need to search for a different illustration
to use in your exhibit.) Materials printed on paper can be mounted on a
sturdy backing (such as cardboard, construction board, foam core,
masonite, or particle board) for use in the exhibit. To avoid
"bleeding," it's best to use rubber cement or a spray adhesive to mount
artwork that's printed on thin paper (this includes most magazine
photographs). Water-based glues will moisten the paper allowing the
material printed on the other side of the photograph to "bleed" through,
effectively destroying your visual aid. Be sure to apply adhesive to
both surfaces before attaching the illustration to the backing. Many
visual aids are three-dimensional or can be made to be
three-dimensional. These are discussed next.

Making Exhibits Three-Dimensional

Studies have shown that three-dimensional exhibits are more interesting to viewers than flat ones. Although some exhibits are, by nature, three-dimensional (e.g., dioramas and models), adding a third dimension to almost any indoor exhibit is easy. Following are eight inexpensive ways to do this. Although you might be able to apply a few of these methods to certain kinds of outdoor exhibits, you should carefully consider the climatic conditions and the potential for vandalism and theft before doing so.

1. You can use three-dimensional letters in the title. If you have the money, you can purchase three-dimensional letters made from any of several different materials (see "Commercial Lettering"), or you can use one of the tracing methods to make your own (see "Cut and Paste Method"). If you make your own letters, be sure to use a sharp cutting tool so that your cuts will be smooth and uniform. You might want to use paint or a felt-tipped marker to color the exposed edges of each letter. Black is often best.

2. You can hide "spacers" behind mounted photographs or blocks of text in order to bring them out from the wall. You can use almost any three-dimensional material as a "spacer." Small pieces of wood or even sturdy cardboard work fine. The thickness of the spacers depends on the distance you want between the mounted material and the wall. Generally, you shouldn't make them so thick that they'll be visible. Commonly they're between about 1/4 to 1 inch (6 to 25 mm).

3. You can put a real object or prop in the foreground of an exhibit case. Even if the rest of the exhibit is only two-dimensional, such an object can give the whole design a three-dimensional quality. If the object is large, you'll probably need to place it low in the design, if not on the floor. Smaller items may look better higher in the exhibit. As with many of the techniques that follow, adding a small label that identifies the object is often a good idea, but it's not always necessary.

4. You can make three-dimensional supports for displaying objects and specimens. Boxes and shelves are especially easy to make if you have the wood or other material. Boxes (usually called "pedestals") can be made different heights and widths so that objects of different sizes can be placed on top of them and extend to different heights in the design. Painting the boxes, varnishing them, or covering them with a fabric (such as velvet, flannel, or cotton) adds to the three dimensional appearance. Shelves can be the simple "L" kind (back and bottom only). You can mount them on the back ground surface with screws and put objects or specimens on top of them.

5. You can make a small plastic or plexiglass box (using glue) and put small objects or specimens (such as artifacts, mounted birds or small mammals, insects, etc.) inside of them. You can mount the boxes directly to the background surface Or place them on a shelf. Besides adding a third dimension, plastic boxes make the items they contain seem important. If you're not experienced working with plastic and glue you might want to ask the advice of a plastics specialist before attempting your own boxes. Commercially made plexiglass boxes are surprisingly expensive. But if you're good with your hands, you can make nice-looking boxes of your own.

6. You can mount three-dimensional objects on the background surface

of the exhibit or on a wall adjacent to your exhibit. Using thick wire or bent nails (be sure to clip the heads off after bending), you can hang things like tools, implements, tree limbs, and other relatively heavy objects on a vertical surface without having to mar them with a screw or nail.

7. You can suspend especially large objects from the ceiling above an exhibit if the building is well constructed and there's enough clearance. Examples of suspendable items include plows, carts, tools, large mounted birds with wings extended, and large animal skeletons or parts thereof, among other things. Depending on the size of the item you want to hang, ceilings usually must be at least 12 feet (4 m) high to avoid injury to viewers or damage to the object. If the object you want to hang isn't too heavy, you might be able to safely attach it directly to the ceiling using toggle bolts or "molly" ("butterfly") bolts. For heavy items, however, it may be safer to drill one or more holes through the ceiling and firmly attach the wire(s) to a piece of framing in the attic. Be sure to plaster and paint over the holes afterwards. A sturdy, well-built ceiling or building frame is absolutely necessary. Use only strong thick wire for hanging heavy objects.

8. You can glue small replaceable or perishable items such as plant specimens, nuts or cones directly to an exhibit surface. To hang heavier objects like small rocks and dense pieces of wood, use "super-glue." Don't directly glue any object that's valuable or irreplaceable. Once it's glued to a wall, it's essentially destroyed.

Making Exhibits Interactive

Interactive exhibits invite viewers to participate physically in the learning process. That is, they give them something to do. Besides being more enjoyable, interactive exhibits are better "teachers" than static ones. Four popular types of interactive exhibits are **quiz boards, arrow-window boards, mechanical exhibits** and **tactile exhibits**. All four types can be used outdoors as well as indoors, but be sure to consider climatic conditions and the potential for vandalism and theft if you're planning to use them outdoors. Use interactive techniques to create variety in your exhibits, but don't try to make every exhibit interactive. Doing so would make all your exhibits seem the same. Occasionally, large urban science centers have this problem. They may have dozens of nice looking (and expensive) interactive exhibits, each one very well designed. But after an hour of pushing buttons, pulling knobs, and playing games they all start to seem alike to their viewers, even though each exhibit is somehow novel. Remember, all emphasis is equivalent to no emphasis.

An exhibit becomes a quiz board simply by giving viewers a chance to test their knowledge. Providing feedback to viewers is the key feature of a quiz board. The two most common formats are question-and-answer boards and matching games. Question - and - answer boards pose one or more questions to the viewer. Correct answers (the feedback) are usually provided under a hinged flap or cover of some kind. (In some cases, viewers are instructed to cover up correct answers with their hands.)

Matching games are often a little more elaborate. Typically, they present the viewer some set of objects (e.g., several different bird nests) and another set of related items (e.g., photographs or drawings of different birds) and ask the viewer to test his or her knowledge by matching each item in the first group to one of the objects in the

second group. In our example, for instance, we'd ask viewers to match
each bird nest to the kind of bird that built it. Matching may be mental
(using labels like A,B,C, etc., in one group and 1,2,3, etc., in the
other group) or it may be electronic (e.g., each correct match causes an
electrical circuit to be completed which in turn illuminates a light or
rings a buzzer, etc.). If you use mental matching, be sure to provide a
list of the correct answers so that viewers can find out how well they
did. You could build this list directly into the exhibit (be sure to
cover it), or it could be kept nearby (at the information desk or in a
notebook). Generally, it's best to provide the answers in the exhibit,
itself, but if this isn't practical be sure the exhibit informs viewers
where they can get the correct answers.

Arrow-window exhibits are just what the name says. They have an
arrow (usually painted or drawn on a large wheel of some kind). On the
background of the exhibit are different headings or illustrations
corresponding to different topics. Viewers can rotate the wheel to make
the arrow point at any topic of interest. As this is done, information
related to the topic (usually some interesting, important or surprising
fact) is exposed in a window on the opposite side of the wheel.

Mechanical exhibits include some type of device that viewers can
operate. This device doesn't necessarily have to demonstrate or teach
anything (for example, visitors may simply push a button to start a tape
player, or pull a handle to expose a picture or some kind of
information). Often, however, mechanical exhibits involve viewers in an
activity that is, itself, instructive (e.g., turning a crank or pushing
a plunger to see how a cider press or butter churn works, inverting a
jar containing sediment and water to see how soil erosion affects
domestic water supplies, etc.).

Tactile exhibits invite viewers to touch objects that are being
displayed. The objects are usually labeled and either mounted (on a wall
or large board) or simply placed on a table. Good touchable objects
include things like rocks, soil samples, animal bones, antlers and
horns, pieces of animal skins, fur and hair, shells, aromatic plants,
nuts, fossils, and common (easily replaceable) artifacts. Since exhibit
viewers so often are asked not to touch things, it's usually a good idea
to include a sign or placard that invites them to handle the objects
(e.g., "Please Touch!"). Be sure not to include sharp objects or
anything that might be dangerous to viewers. Also, don't put artifacts
or stuffed/ mounted animals into a tactile display if they're valuable,
irreplaceable, fragile, or especially significant. There's a good chance
they'll deteriorate, get broken, or even worse, be stolen. It's easy to
turn a tactile display into a quiz board. All you have to do is include
a sign that asks viewers if they can identify the objects on display.
Label each object with a number or letter and provide a list that tells
which is which.

Supporting Document C9f

TEXT-LETTERING CONSIDERATIONS

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

Why Using All Capital Letters Is a Bad Idea

   Words in all capital letters are fine for titles of four or five
words, but that's only because it doesn't take the reader a lot of time
to read them. The fact, however, is that all texts are more readable if
both capital and lowercase letters are used. There are many reasons for
this, but the main one is that capital letters seem crowded together and
their uniform rectangular shape makes it harder for us to distinguish
between them. This isn't an issue of cultural preference (as a colleague
once tried to argue); it's a physical reality that the human eye likes
variation in the heights and widths of letters. Psychologists have shown
that the pattern of "ups and downs" in the letters that comprise words,
and in the words that comprise sentences, is the key to our being able
to recognize and remember words in text form. Using these recognizable
patterns, we're able to read word *groups* (usually of three or four),
rather than only one word at a time. Capitalizing all the letters in a
body of text gives them the same height, and a uniform rectangular
outline, effectively robbing them of their distinctive patterns.
Therefore, when we have to read text in "all caps" we have to read it
one word at a time, greatly increasing the amount of work we have to do.
According to studies, this not only slows us down, it reduces our
comprehension of the material by 10 to 25 percent. Expert typographers
(people who design and make type styles) insist that all "caps" is bad
typography, often even in titles. According to Haley (1991:14):

> "If there were a ten commandments of typography,
> "Thou shalt not set in all caps" would be the
> first. And if there were a typographic heaven and
> hell, some of us would be in a good deal of
> trouble ..."

Haley makes an important point. In order to see why it's true, let's
look at his statement again, this time in all caps:

"IF THERE WERE A TEN COMMANDMENTS OF TYPOGRAPHY, "THOU SHALT NOT SET IN
    ALL CAPS" WOULD BE THE FIRST. AND IF THERE WERE A TYPOGRAPHIC
    HEAVEN AND HELL, SOME OF US WOULD BE IN A GOOD DEAL OF TROUBLE .
    .."

   Comparing the two versions, you'll see that lower case type is not
only easier to read, it also saves space—up to 35 or even 50 percent
more space—than all caps. Reading the lower case version of Haley's
words takes less work because we have to move our eyes fewer times from
the end of one sentence to the beginning of the next. Even more
important, though, is that the lower case version *looks* like less work.
Most non-captive audiences won't pay attention to a message that appears
to require a lot of effort. Imagine how laborious an exhibit text of 225

to 300 words would seem if all the words were capitalized. Except for short titles or headings, don't use all caps. Even in titles, a combination of upper and lower case letters often looks better.

How Big Should Letters Be?

Even people with perfect vision can't read letters that are too small. What constitutes "too small," of course, depends not only on the size of the letters but on their viewing distance. A typographer measures the height of letters in "point size" or simply "points." The point size of a type style is measured from the bottom of the lowest letter (usually the tail of the letter "y") to the top of the tallest capital letter (usually "T"). A type style that's 1 inch (2.5 cm) high measures 72 points from the bottom of the "y" to the top of the "T." Ignoring the rare "tail," however (only "y" and "g" have them), the actual appearance of 72-point letters in most type styles is about 3/4 of an inch (2 cm). A 1 inch (2.5 cm) letter is ordinarily 96 point. This book is printed in 10-point type. Texts intended for close-up reading (e.g., books, newspapers, Bibles, etc.) usually have letters that are 12-point or less. Since people normally read exhibits from a distance of at least two feet and often further away, it stands to reason that no part of an exhibit text should ever be printed this small. As Figure 1 shows, the smallest letter size recommended by exhibit experts is 18 to 24 points (about 1/ 4-inch or 0.6 cm), and this size should be reserved only for the least important part of a text (specialty information, captions, specimen labels, etc.). Exhibits with texts at least as large as those recommended in the guide usually will be readable even to people who have less than perfect vision.

Fig one

Spacing Between Letters
One way to save money on an exhibit is to create your own titles, headings, and body text. If you do this, the amount of space you put

between letters is important. If you put them too close together they'll
be hard to read, and if you position them too far apart viewers will
have a hard time following the flow of ideas. The best way to determine
if letters are properly spaced is to look at them. You'll probably find
that wide capitals like "A," "M," "W." and "Y" will need closer spacing
than straight characters such as "I" and "1." Likewise, letters with
curves (such as a, b, c, d, g, o, p, q, etc. and all their capitals) may
need to fit a little snugger than other letters in order to look right.
As a very rough guideline, Neal (1976) suggested using one and a half
times the thickness of the letter "I." But as she warned, visually
correct spacing will vary depending upon the size and style of the
letters you're using. In lettering, it's always better to trust your
eye.

Spacing Between Words

        Spacing between words is also important because readers need to be
able to see where one ends and the next one begins. Sometimes beginning
designers try to crowd words together in order to "cram" a little more
copy into an available space. But this is never a good idea. Faced with
such a dilemma, it's almost always better to find ways to reduce the
number of words rather than the amount of space between them. On the
other hand, too much space also can be a problem. Unfortunately, there
aren't any formulae or firm rules that tell us how much space is best.
That's because our tastes about such things change over time. In the
1970s, for example, a widely used rule in exhibit design was to allow
about the width of the capital letter "M" between words in a sentence.
In the 1990s, however, we seem to prefer our words a little closer
together than "M-spacing" puts them, often as close as the width of a
lower case "t." Depending on the size and style of the letters you're
using, both M-spacing and t-spacing will probably look fine but the
effect will be different. When texts are intended to be viewed from a
close distance, tighter spacing tends to look better. Conversely, when
the viewing distance is greater, wider spacing is necessary for distinct
words to appear. Judge for yourself which looks best in your exhibit.
        Obviously, since a "t" is narrower than an "M," t-spacing allows
more words per line of text than M-spacing. Be careful, though, not to
have too many words on a line. According to experts, a single line of
text should rarely exceed about 50 characters (including letters and all
the spaces between words). According to Neal (1976), the upper limit is
65.
        Many exhibit experts claim that the amount of space between words
should be uniform. That is, all words should have the same amount of
space between them. If you "justify" the text (vary the spacing between
words in order to produce a right hand margin that's straight), the
words on each line won't be evenly spaced. Although there's no firm
evidence that either is better in terms of readability, most experts
agree that an unjustified or "ragged right" look is more inviting and
more informal than justified type. This may be because we usually
associate justified text with formal publications such as newspapers and
books. This book, for example, has justified text. Notice the irregular
spacing between words in some sentences.

Spacing Between Lines of Text

Spacing between lines of text (or "leading," as graphic artists call it) is one of the most important yet ignored factors in exhibit design. Lines of text that have too much space between them are often hard to read because the eye loses track of which line it's on. Lines that are too close together are even harder to read, and they *look* that way — effectively scaring off potential readers unwilling to wade through them. Both beginning and expert designers are guilty of crowding lines of text in their exhibits. There probably are a lot of reasons for this, but often it's because they're trying to squeeze a little extra information into a particular part of an exhibit. The result, of course, is a text that few people (probably only the connoisseur) will read.

Adequate space between lines of text gives an exhibit a more informal look than tightly crammed blocks of sentences. Trapp et al. (1991) called it "breathing room," an apt metaphor because the words in crowded text do indeed have the appearance of suffocating under their own weight. Opinions abound about the best or optimal spacing, but the fact is that no firm guidelines exist because of the sheer number of variables that can affect readability (especially type styles, type sizes, line lengths and intended viewing distances). According to typographer, Richard Dahn, the best approach is to arrange the text early in the design process, view it from the distance and under the same circumstances the audience will read it, and continue changing it until it has the look you want. He advises organizing the textual material first since the typography in a design has such an impact on how everything else will look.

Placement of Text in an Upright Exhibit

Where you put words in an upright exhibit influences whether they'll be read. Because of our limited range of comfortable head movement and the number of viewers who wear bifocals, you should try to keep all text as close as possible to a right angle with the viewer's line of sight. Unless there's a very good reason, no text and no small objects should be located any lower than 2 feet (60 cm) from the floor. To achieve this you may have to elevate the exhibit by mounting it on a stand or support of some kind. Another option is to hang the exhibit on a wall at the optimal height. Some experts suggest 7 feet (2.15 m) as the maximum height for the top of the display case, itself. Use the following guidelines (adapted from Neal 1976 and Witteborg 1981) to determine the optimal heights of different parts of an upright exhibit:

1. Titles/subtitles (Level I): Place them about 1 ft (30 cm) above eye level. Assuming an average adult height of about 5 feet, 9 inches (1.75 m), the normal maximum height of a title would be around 6 feet, 9 inches (2.05 m).

2. Headings and body text (Levels II and III): Place them somewhere between eye level and about 1 ft (30 cm) below it. Again assuming an average adult height of 5 feet, 9 inches, headings and body text would normally be placed within 4 feet, 6 inches (1.4 m) to 5 feet, 6 inches (1.7 m) above the floor or ground level.

3. If you must mount a body of text or label much lower than this, prop it up toward the viewer at about a 45-degree angle. If you have to locate headings or texts above the recommended level, tilt the text downward from the top edge at about a 45-degree angle.

4. If you need to mount blocks of text on the inner sides of a case, angle them in toward the viewer.

Type Styles

Words in an exhibit text are meant to be read. They aren't to be used to "decorate" an exhibit, and they aren't to be decorated themselves. They're meant to be read and nothing more. This advice, more than any other, should guide your choice and use of type styles in an exhibit text (level III). While it's certainly true that different styles of lettering (typefaces) communicate different moods or, as Trapp et al. (1991) called them, "personalities," it's best to avoid strong ones in an exhibit text. That is, keep the lettering style conservative and readable. In this context, conservative means not frilly or fancy, and readable means just what it says. The two are often related. Although fancier type faces are sometimes selected for titles and main headings, embellished body text in whole paragraphs is difficult to read even though the type style may complement the rest of the design nicely

Beginning designers sometimes "get carried away," trying to make a visual statement in every design element, including type styles. A few years ago, an introductory student produced an exhibit entitled "Fall Colors—They Fall Every Year," in which each letter of the title was a different shade of orange, red, yellow, green, or brown (colors typical of autumn leaves in deciduous forests). In addition, behind each letter was the silhouetted shape of a leaf from one of the tree species he discussed in the text of the exhibit. Although his exhibit was otherwise very well designed, he noticed that few people stopped to view it— probably because they couldn't read the title. After some persuasion, the student conducted an experiment. He substituted large black letters for the decorative title. A day later he notice that people were stopping to view his exhibit. Through his experiment, the student demonstrated a simple but important principle: titles and texts that are readable command more attention than those that aren't. Always use letters that are easy to read.

Supporting Document C9g

MODELS FOR EXHIBITS AND SIGNS

(Reprinted with permission from: Ham, Sam H. 1992. "Environmental
Interpretation-A Guide for People with Big Ideas and Small
Budgets." Golden, CO: North American Press/Fulcrum Publishing)

INTERP. C9g-2

INTERP. C9g-4

AMPHITHEATER

STRUCTURES FOR TRAILS

Lesson 10

PUBLICATIONS AND INTERPRETATION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Enumerate the advantages and the disadvantages of publications as an
       interpretive medium.

2.Plan and design simple publications.

REFERENCES:

Ham, 1992; Sharpe, G. 1982 (Chap. 13); "Parks", Vol. 10(1), 1987,
"Informational Folders for National Parks".

PRESENTATION:

1.1Publications fulfill a function that the other interpretive media can
       not: the visitor can buy them and take them home. They also have
       the potential to present a great deal of information to those who
       are interested.

1.2Present the advantages and the disadvantages of publications.

Advantages

- They give the best opportunity to offer large amounts of information.
- They can be taken home.
- The message can easily be disseminated over an entire region or
       country.
- They can be the least expensive medium through which to present a
       message.
- Compared with other media, publications have less negative impact on
       the environment of the PA.

Disadvantages

- Publications are cold, lacking in the warmth of personal contact and
       the attraction that signs, exhibits, and nature can give; they do
       not demand the participation of the visitor.
- It is difficult to transmit dynamic concepts via publications.
- They allow for communication only in one direction.
- They sometimes are overused when the visitor is bombarded with
       pamphlets and other papers while the interpreter is absent.
- Publications are only for that part of the audience that likes to
       read. Sometimes this is a small part of the audience.

1.3Explain the two types of publications: informative (those that

orient) and interpretive.

Informative

- entry pamphlets, general guides, maps, special newspapers, rules.

Interpretive

- pamphlets for trails or other self-guided routes, guides of the fauna, flora, geology, etc, other educational publications.

1.4 Discuss distribution policies of the publications: if they are free and easily available, the visitors will take them even if they are not interested. It is sometimes better to keep the publications out of sight, and distribute them when an interested person asks about the theme of the publication. Nevertheless, in some cases it is better to hand out certain publications so the specific information is rapidly disseminated. The public values more those publications that have a cost, even if minimal.

1.5 Explain that the preparation of a publication can be quite complicated depending upon many factors: use of colors, dimensions of the publication, photographs and other graphics, etc.

1.6 Explain the situation of publications in the PA system. Is there the possibility of standardizing the format and content of the publications of the various units that make up the PA system?

2.1 Explain how the use of computer software has made publication preparation accessible to anyone with a computer.

3.1 With the participants go over the Supporting Documents which accompany this lesson.

ACTIVITIES:

1. Show a selection of pamphlets and other publications of various PA of the country and of the region. Discuss them in relation to the ideas presented in this lesson.

2. Ask the participants to give ideas concerning the publications that their respective PA should have, keeping in mind the alternative interpretation media, theme, format, and most of all, the message.

3. If time allows, ask the participants to prepare a model of a pamphlet for their PA with text, maps, etc.

4. If possible, and reasonable, demonstrate how to prepare a newsletter or other publication using a commonly used computer software package.

Supporting Document C10a

GUIDELINES FOR THE PREPARATION OF
INTERPRETIVE PUBLICATIONS

(Adapted from Thorsell, 1984)

Interpretive publications, especially pamphlets and brochures, can provide information effectively if prepared with the following guidelines in mind.

1. <u>Overall appearance</u>. They should be inviting to the reader. Don't be overly concerned with the technical aspects of the message but rather place attention on whether the message will be read.

2. <u>Attractive cover.</u> The cover creates the initial impression of the brochure. If it is done well, the reader will be encouraged to open the brochure and read it. The title should be concise and informative.

3. <u>Proper size and shape.</u> Consider the convenience of an envelope size for mailing purposes, or a handy shirt-pocket size.

4. <u>Conciseness.</u> Use as few words as possible to present the message. Visitors in parks are generally not receptive to lengthy publications.

5. <u>Illustrations.</u> These can improve the publication's appearance as well as reduce the length of text required. MAPS ARE A MUST!

6. <u>Eliminate bureaucratic jargon.</u> Don't try to impress the reader with technical jargon and artificial eloquence. Try to be factual, eliminating agency bias and personal values.

7. <u>Local contact.</u> Include an address and contact for those wishing to pursue further the information in the brochure.

8. <u>Management problems.</u> If the brochure focuses on a management problem, indicate the regulations and reasons for these actions. Try not to give the brochure a negative tone.

9. <u>Writing style.</u> Style should be appropriate to the intended audience and it should strike a balance between entertainment and instruction. Once again, text should be succinct, with illustrations and photographs emphasized.

10. <u>Use of color.</u> The use of color in the printing of a publication improves its aesthetic appearance, and facilitates the understanding of illustrations. However, the more colors used, the more expensive is the cost of printing. Sometimes the use of colored paper and one or two ink colors is very attractive and reasonably priced.

Lesson 11

PUBLIC RELATIONS AND THE MASS COMMUNICATIONS MEDIA

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the principal media of mass communications and the impact
        they can have on the image and the management of the PA.

2. Utilize the mass communications media for interpretive and management
        ends in the PA.

REFERENCES:

Fazio and Gilbert, 1981; Lesson E5.

PRESENTATION:

1.1 Public relations is an essential component for the PA administration
        to use for meeting its management objectives. This is a very
        complicated subject including a range of activities from the
        routine interpretation carried out in the PA to relations with
        mass communication media of the region. It is an activity which
        is carried out both within and outside of the PA and for which all
        officials are responsible in part. Normally it is the
        administrative director who is officially in charge of public
        relations. However, often it is the interpreter who has to carry
        out the technical part of the communication with the mass
        communication media.

1.2 Daily newspapers, radio, and television make up the mass
        communication media. These media each day reach thousands, if not
        millions, of people. Recognizing that they represent an under-
        utilized communication and interpretation media for the PA,
        personnel must learn to use this resource if they want to
        accomplish their management objectives to the maximum.

The management of a PA is always done within a social context. The
        resources are managed for people, with people, and by people. It
        could be said that PA management is actually 80% management of the
        public and 20% management of the resource. Since one of the
        objectives of environmental interpretation is to aid in carrying
        out the management objectives of the area, it is obvious that
        interpretation techniques can also help in public relations,
        especially with mass communication media.

2.1   Concerning one's contact with these media, it is necessary to:

-determine the message; that which one wishes to communicate must be
                precisely defined.

-<u>identify the public groups or "target" for the message</u>; Who is it that
          should receive the message: community leaders, farmer
          groups, potential tourists in the city, etc.?

-<u>based on the information defined in the first two points, determine the
          best communication media</u>; it might be television or radio.
           Obviously which groups are best reached by the different
          types of media should be analyzed.

2.2Working with **television** can be difficult as few PA have the video
     equipment and the trained personnel necessary for filming.
     Nevertheless, reporters or film crews can be invited to the PA for
     a specific purpose as long as the personnel (in particular the
     interpreter) is ready to receive them, to give them the necessary
     information, to guide them wherever necessary, and to generally
     orient them as to what they should film and say. It is always
     best to give reporters something written to help them prepare what
     they will say. If not, it is probable that they will say
     something that is not convenient for the PA (see Supporting
     Documents concerning press articles).

By offering greater logistical support (transportation, sleeping
     arrangements, food, etc.) there will be a greater willingness on
     the part of the press to visit the PA. Often a film crew will be
     in a hurry. Have everything prepared so that they can film what
     you want as soon as they arrive. If not, the opportunity may be
     lost.

2.3Concerning the **radio**, normally its coverage will include an interview
     with PA officials or the presentation of radio spots. Again one
     should be well prepared with all the information available (see
     the respective Supporting Documents).

2.4Concerning the **newspapers**, reporters should be received in the same
     manner as camera crews, with a prepared text containing the
     information which is desired to be published. To guarantee its
     dissemination, it is necessary to know what type of information
     and when it should be delivered to the press.

2.5Disadvantages of mass communication media:

-they are not selective, that is, one does not know if the public will
          read or listen to that which one hopes to be communicated;

-often the information that one would like to disseminate is not
          presented as expected, either due to changes made by the
          media or due to misunderstandings;

-to succeed in making contact with mass communication media is not easy;
          they always have their priorities and it may not includes
          themes related to the environment.
2.6In order to improve the possibilities for the PA to really take
     advantage of these media, it is necessary to:

-prepare articles and written texts to deliver to the media
representatives; these must be prepared in an appropriate
style for the media if they are to be utilized in the form
in which they are presented.

-cultivate relationships with key individuals and educate them
little by little, establishing continuous contact so as
ensure that subjects concerning the PA (and of the
environment in general) receive a higher priority.

2.7 Explain how the use of video has revolutionized the visual
communication media. Demonstrate how PA officials can make their
own video programs for use in interpretive programs or in
presenting material to the mass media.

ACTIVITIES:

1. Ask the participants to describe how the mass communication media
have (or have not) been utilized by their PA.

2. Following the outline presented in the Supporting Document, have the
participants write a press release about some trip that has been made
during the course.

3. Establish contact with a radio station or local television station,
so that the participants can present materials to be used in these
media, or be interviewed by them concerning the course.

Supporting Document C11a

GUIDELINES FOR PREPARING MATERIALS FOR THE MASS MEDIA

I. <u>PREPARING A PRESS RELEASE</u>

a. A press release should contain concise expressions of an
     informational nature, in which the core idea to be communicated
     should be expressed in the first paragraph. The rest of the text
     should be an expansion of the ideas presented in the first
     paragraph. That first paragraph should also say enough to capture
     the interest of the reader.

b. A good press release should answer the following questions:

          - Who? The person, group or organization that is the subject
of the story.
- What? The event or situation which is the subject of the story.
- Where? The location of the event or situation.
- When? When did, or will, the event or situation happen?
- Why? What is the reason for the event or situation happening the way
          it did?
- How? The manner in which the event or situation happened; the
          background information.

II. <u>WRITING A RADIO SPOT</u> (Adapted from Roth, 1986)

Radio spots are written to be read at a rate of approximately 120 words
per minute or 60 words every 30 seconds. However, remember to leave
space for music both at the beginning and end of the message. For
example if you have 5 seconds of music at the beginning and end, you
need to subtract this time from the total and use less words in the
leftover time. When working with radio stations, it is advisable to
write the message using double space and wide margins.

The above paragraph has a lot of short words. It has about 80 words,
which can be read in approximately 30 seconds without including
introductory or final music. When I finish this last paragraph, the
total time will be about 60 seconds. This will give you an idea of how
many written words make up a radio spot of 30 and 60 seconds.

III. <u>PREPARING FOR A RADIO INTERVIEW</u>

(Adapted from Mossman, 1985)

Make contact with your local radio station(s). Find out the name of the
senior person involved with "talk" programs. Speak directly to him or
her and present your idea for an interview clearly and simply.

Give them a couple of "news angles", i.e. items that will interest large
numbers of people. News is not all of a political nature; lifestyle
information is also very important. If you do not succeed the first
time, keep on trying. Give your contact a call from time to time to keep
them in touch with what you are doing. Put them on the mailing list for
newsletters, brochures etc.

Once you have arranged an interview, do your homework. Find out who the listening audience is: Mostly young people? older people? indigenous groups? a mixture? and tailor your ideas to suit them. Ask what the interviewer's style is and the format of the radio station. Do they have long segments of talk? Will the interview be only 2 minutes or 5 minutes? Know what you want to say. Do not try to fit everything into a 3 minute interview. Select instead 2 or 3 salient points and concentrate on them. Ask in advance how long the interview will be and ask what sort of questions will be asked (it is most unlikely you will be shown the question line but you should be given some idea of what style the interview will take.)

During the interview, RELAX, RELAX, RELAX. Do not take on an imposing or esoteric pose, but be warm and friendly. It will show in your voice. Do not use big words, but ordinary everyday language. You are there to communicate information to the listeners so it is important you do not alienate them by your language or attitude.

Answer the questions and do not be evasive. If you do not know an answer, say so rather than stumbling to get out of it. If you are riled, do not lose your temper under any circumstances. If you feel yourself getting angry or nervous, lean on the desk in front of you and drop your shoulders forward rather than sitting up poker straight. Do not be afraid to ask for a glass of water.

Remove yourself mentally from the studio. Imagine you are telling your best friend this story over a cup of coffee in your own kitchen. Remember, you are there to be interviewed because you are someone who KNOWS about this subject. If you are familiar with your subject you have nothing to worry about. Do not go armed with dozens of reference files but by all means take reference notes to jolt your memory. Two or three words is usually enough to remind you of what you want to say. Do not read from these notes either, but ad lib in your own words. Reading sounds like reading, and you will communicate better if you are just yourself; act naturally and enjoy yourself.

Supporting Document C11b

ALTERNATIVE LESSON PLAN FOR MASS MEDIA RELATIONS

(Adapted from materials provided by the
Mather Employee Development Center, National Park Service,
Harper's Ferry, West Virginia, USA)

       A.What is meant by Mass Media?
Newspapers, magazines, television, radio, and other means of reaching
       large audiences simultaneously. Each of these has potential
       to be useful to your park.

B.What are some common media you are familiar with? and can you think
       of ways they affect your park?

1.Direct Mail, like newsletters, advertisements, inserts, and other
        "occupant mail". (Direct mail schedule of park
        activities)

2.Magazines (feature stories, event publicity, calendars, and travel
        guides)

3.Newspapers (news coverage, publicity for events, feature stories,
        etc.)

    4.Radio (news, event publicity, information or interview programs,
        etc.)

5.Television (news coverage, park event publicity, features, information
        or interview programs, perhaps some disruption of
        schedules or events)

Some of these are print media, some are electronic, and each has
       specific characteristics and needs.

II.Print Media--Direct Mail, Magazines, Newspapers

A.Direct Mail
    1.Often used by clubs, organizations, public utilities, etc.
    2.Will often print your story free.

    3.Require you to initiate contact.

    4.Items generally are of informational rather than news nature.
        You should tailor your materials to meet their needs,
        their audiences, etc. For example, a youth club might
        want to print information on seasonal employment.

    5.Your park can direct mail your summer events schedule or
        newsletter to the local community. Contact your local
        postmaster for details.

B.Magazines

1.You can reach specialized audiences. Languages, special
            interests, incomes, etc. are reflected in magazine
            subscriptions.

2.Articles and entire issues are often saved for future reference.

3.Deadlines are often very far (months) ahead of printing, as in yearly
            travel magazines.

4.Article space may be predetermined by magazine format of policy.
            Your submissions are frequently edited down.

5.Magazines often use color illustrations, and will prefer color
            transparencies over prints.

6.Weekly/monthly local tourism promotional magazines frequently will
            carry schedules and descriptions of park activities.

C.Newspapers
    1.They range from local to wide circulation. Choose the one(s)
            which meet your needs for a particular release or
            story. Different people read the National Enquirer
            than the Wall Street Journal or Gettysburg Times.
    2.They print timely news.

    3.Audiences can cut out articles or schedules for future
            reference.

    4.Can reach specialized audiences through special interest
            papers--foreign language editions, Wall Street
            Journal, "City Pages", etc.

    5.Stories can be done by the park or by a reporter.
            a.Make sure material is dated or it may be printed after the
                    activity you are announcing. Deliver it to the
                    paper in a timely manner, especially if it is
                    for a calendar of events type column. If it is
                    important, call the paper to be sure they
                    received it.

    b.Feature stories may be written in advance and held until needed. The
                    park may want to do a regular column for a local
                    paper.

            c.You may provide an illustration with an article.
                    Newspapers normally prefer 8xl0 black and white
                    glossy photographs for good reproduction.

            d.Remember that newspapers have space limits, and will edit
                    the story to fit. Start with the most important
                    information first, then move to supplemental
                    points.

III.Writing a News Release

A.Every park has a designated Public Information Officer (PIO).
Do they know who performs this role in their parks?
1.Establishes and maintains media contacts.
2.Writes, edits, clears through park superintendent all
media releases from park.
B.The opportunity to draft releases may arise to publicize an
interpretive program or announce a change of schedule.

C.Use standard NPS news release format--
8 1/2 x 11 paper, indent paragraphs, double space first paragraph. At
the end of the page, write "more" if the release continues,
or ### if it is the end.

D.Always include the date written, the date for release, and a person to
contact for more information. If the release spurs their
interest, they may want to expand the story or send someone
to cover the event.

E.Use the pyramid style of writing. The most important information goes
in the first sentence, with progressively less important
details in the following sentences. That way, if the paper
edits for space considerations, your most important
information still gets to the public.

F.Use WWWWWH--Who, What, When, Where, Why, and How.

G.Have the release sent in a timely manner to all similar publications
in the area if it is a general release. Be fair to
competing papers. If a reporter comes to the park to seek
out a story, you are not obligated to send the same
information to competing papers, but if you generate a
release, it should go to them all.

H.Alternative A: Exercise in writing a news release from unorganized
information provided to class.

Alternative B: Participants can bring in sample news releases from their
parks to critique and/or rewrite.

IV.Electronic Media.

A.Radio.
Because radio has no visual impact, information is organized and
presented for impact by sound. Information reaches the
public immediately upon broadcast, and cannot be saved for
later reference.
1.Radio presents news throughout the day, and is required to
present public service announcements on a regular
basis.

2.Radio reaches specialized audiences and is locally oriented.
Stations have specific segments of the market they aim
for, with special formats and music or talk topic
selections. Identify the audience you wish to reach
and contact the station whose audience profile

matches it. Stations will tell you their intended audiences. Some stations broadcast foreign language programming which may help you reach international visitors and ethnic groups.

3. To reach the radio audience, you need not be physically present at the station, nor does the station have to come to your site.

a. You can conduct a telephone interview, live or taped. You can work with stations to set up interviews of other key park staff.

b. You can send in a pre-recorded tape. Some stations will allocate regular time slots for such "spots" but you must consistently be able to provide new tapes to them.

c. You can submit a script which the station will record.

4. 30 to 60 second spots are common.

Remember, the audience may hear the information only once, so organize the material to make it easy for them to remember. For example: Instead of saying "60 degrees is the temperature outside", give them a chance to know what they are listening for --"The temperature outside is 60 degrees."

B. Television
Television reaches the majority of Americans. It is an active, dynamic medium, involving sound and sight. It reaches people in a number of different ways.

1. Commercial Stations, particularly news shows.

a. News shows are required, and are regularly scheduled by local stations.

b. Federal Communications Commission requires a minimum number of hours of local news programming. Take advantage of their need for material and keep them informed about possible stories. They particularly need stories on weekends and during slow news months like August.

c. The FCC also requires public service announcements and programming. Stations will present 5 to 10 second PSA free of charge if they are of community interest.

d. Television thrives on action. They like to use short clips. The more action, color, and spectacle you have, the more likely you are to get on the air.

e. Be sure the station is called a minimum of one day ahead to notify them of a story. If you called too

far ahead, they may forget you. At any time you
may get bumped by what they consider a more
important story. Speak to the news director if
possible.

f.Keep their deadlines in mind when scheduling events. If
you want it on the six o'clock news, be sure the
event takes place in time for them to get the
film back to the station and edited.

g.Remember, once they arrive they film everything. Be sure
the scene looks the way you want it to.

h.For on-site programs, try to get a clear idea of the
segment they wish to film. Many small stations
with semi-professional reporters often don't
know where they are going. Be prepared to guide
them before and during the interview.

2. Writing a Public Service Announcement for Electronic Media.

A.In writing for electronic media, write for sound. Read it aloud
to see if it flows smoothly. Say what it is first, then
give dates and times, so they know what they are listening
for. The listener must get adjusted, orient self, and swing
attention into line. This delay before reaching the main
point is "warming up the audience".

B.Keep to the medium's time limits. Radio information can go
30-60 seconds, but television needs 5-l0 second spots. If
the announcement is for a specific program like a community
bulletin board, find out what its format is and stick to it.
 Check with the station's public service director.

C.For television, you can send a good slide, preferably in
horizontal format.

D.Write your PSA like a slide script. Double space and use only
the left half of page. Be sure to include all of the
necessary information as for a news release--date for
release, contact person, etc.

VI.Media Contact Considerations for the Front Line Ranger.

Even if your park has a designated media contact person, you may still
encounter reporters. On occasion, you may be the only NPS
person around, so here are some points to remember.

A.Know your park policy on media contacts. Refer reporters to the
appropriate person. Remember that superintendents are
the people authorized to discuss park policy, and you
are well within your rights to politely decline to
discuss policy with reporters, offering them the
alternative of the designated person.

B.Remember, reporters are rarely subject matter experts, although some papers and magazines have special park reporters.

1.Explain well, and spell names for them. Provide briefing statements and press kits. If you provide them with background material and make someone available for follow up questions, they won't be tempted to "fill in the blanks" (possibly incorrectly). Reporters are usually in a hurry, so make it easy for them to get it right the first time.

2.Avoid jargon, in-house language, and slang. They don't know what YCC, YACC, NPS, VC, MARO, etc. are. They will assume that an interpreter speaks a foreign language.   Avoid such sentences as "The NPS YCC program will have an open house at the NHS VC.

C.Remember, reporters are listening and looking at everything. Don't say anything you don't want to see in print or on the news later.

1."Not for attribution", also clarified up front, means you may be quoted as "a government employee", but not named. It is wise to avoid this.

2.Reporters may, upon request, delay publication or broadcast of information (embargo) for good cause. For example, they will withhold names of accident victims until next of kin are notified.

3.You are well within your rights, and probably better off, to politely say "no comment", and refer the reporter to the appropriate contact person.

VII.Exercise in handling the spontaneous media contact. Using video equipment or notebooks, have trainees role play encounters with print or broadcast journalists. Try to recruit a bonafide media representative to play the "interviewer" and provide feedback on trainee responses. Class participants critique the response of the "park employee" in the exercise.

VIII.Conclusion

Mass media is a valuable interpretive outlet, usually available free. To take advantage of it you must initiate and maintain good contacts. Remember the needs of the reporter or station, and tailor your releases or announcements to fit them. If you keep your media contacts appropriate and meet the needs of the media, then the park, the media, and the visitor will all benefit.

Thematic Units –
Unit D: Resource Management in Protected Areas

Training Manual for Protected Area Personnel

Lesson 1

**INTRODUCTION TO THE CONCEPT OF NATURAL RESOURCE MANAGEMENT
IN PROTECTED AREAS**

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   Define what is natural resource management.

2.   Describe the main objectives in the management of natural resources.

3. Describe in general terms the type of resource management appropriate for the PA in which they work.

REFERENCES:

Moore, 1984; Mackinnon et al, 1986; D1a, D1c, E2f; IUCN/UNEP/WWF. 1991; IUCN/UNEP/WWF 1980; PARKS Magazine, V. 2, N. 2, 1977 "Islands in Space and Time"; Special Issue, V.4, N.3, 1994 "Sustainable Development".

PRESENTATION:

1.1 Begin the lesson by asking the participants for examples of natural resources, making a list and then dividing it into renewable and non-renewable resources. Emphasize the point that a **resource** is only a resource if it has utility for man. Afterwards define the terms renewable and non-renewable, and explain why some resources are non-renewable. Which are the important renewable resources in the PA represented in the course? Which are the important non-renewable resources?

Discuss how renewable resources can lose their "status" of being renewable: over-exploitation, loss of ecological viability, management costs. The opposite can also occur that a non-renewable resource becomes renewable: for example, the recycling of aluminum cans. The classification of natural resources as renewable or not is subject to the same time scale as is man. Many non-renewable resources would be considered renewable if viewed over a long time horizon. On the other hand, there are natural phenomena that at present are not considered usable resources, but with improvements in technology or increases in the cost of other resources, may become valuable natural resources in the future.

1.2 Present the concept of resource management and discuss with the participants its importance and necessity.

Man uses resources, altering the natural equilibrium of ecosystems. Normally this use should be "rational", that is it should not produce impacts that would diminish the capacity of the resource to be reproduced at a sustainable level. Sometimes this use is excessive, threatening the

survival of certain species or communities and even affecting human welfare. In order to normalize resource use and to reach a sustainable production it is necessary to control (or manage) the level of exploitation. Explain the concept of sustainable production. (See Supporting Document D1a).

2.1 The objectives of natural resource management in a PA will be directly determined and oriented by:

a) the actual natural resource situation of the PA in question. Each PA is different and as such has different resources, both renewable and non-renewable, as well as different cultural and socio-economic contexts which influence management of those resources.

b) the objectives of the PA. The objectives and the economic   resources vary from one PA to another. At the same time the management objectives of a PA are derived from the management objectives of the PA SYSTEM to which it belongs, which in turn are based upon the conservation objectives of the nation. The objectives of the PA constitute a framework which orients all activities in the area. Natural resource management is one key activity for meeting the objectives of any PA.

c) the management category of the PA. Ask for examples of natural resource management in a NATIONAL PARK as opposed to a RECREATION AREA or to a WILDLIFE MANAGEMENT AREA. Management in the national parks can be especially complicated given that their ecosystems are to be maintained in a natural state, or as little altered as possible, while recreational uses are permitted which can damage ecosystems. At this point some philosophical questions arise: to what point should one maintain - or try to restore - ecosystems to their natural state? Discuss this problem with the participants emphasizing the implications that this has for resource management. The management category orients the "why" of natural resource management in the PA: protection of species or representative ecosystems in danger of extinction; maintenance of scenic landscapes; provision of recreation sites; protection of watersheds; and encouragement of species of fauna or flora for their rational exploitation.

2.2 Each PA ought to have a management plan (or in its place a temporary operational plan) which should have a section on natural resource management. Explain what constitutes this section. This program needs to focus on those fundamental situations related with natural resources (ecosystems, habitats, species) which need to be managed in order to achieve the PA's management objectives. Often when one type of resource is very important for a PA (for example: a threatened or endangered species) special plans are developed which are focused on its detailed management. Together with the participants, review the document "Outline of a Natural Resource Management Program for a PA". Also review the natural resource management section of a management plan for the country. (Also see E.2: Protected Area Planning).

2.3 Emphasize the role of research in attaining an adequate level of resource

management; it is not wise to manage resources without defined criteria. Lead a short discussion about the limitations often faced in management (frequently an action must be taken with no supporting information). Lesson D2 deals with this issue in more detail.

2.4 Due to limitations of funding or of personnel for natural resource management, normally priority is given to the most critical existing situations. These can be endangered species, areas devastated by fire, areas disturbed by road construction, etc.

3.1 The natural resource management program of each PA needs to be coordinated with the other programs. Often there is an overlap of functions among them, especially among management and protection and maintenance, for which responsibilities of each program must be clearly defined. Also one program can help meet the objectives of others. In particular the environmental interpretation program can influence the perceptions of neighbors and visitors, thus facilitating the work of natural resource management.

3.2 The important role that the PA plays within the socio-economic context of the surrounding region becomes more evident every day. Natural resource management can not be limited in perspective only to the PA, but it must consider the entire region. The natural resources do not recognize boundaries; management outside of the PA influences the resources on the inside and vice versa. The role of communication, education, and coordination is more important all of the time. Often, the PA carries out an exemplary management of resources for the area. Sometimes the PA is a very important zone for the social welfare of the region; for example, in protecting watersheds, promoting tourism, etc. Ask for examples of this from the participants. (See D7, D8 and Supporting Documents.)

ACTIVITIES:

1. Ask each participant to give an example of how natural resource exploitation (good or bad) has an important influence over their daily life.

2. Through questions to the participants, identify the roles that the represented PA play in the regional economies in which they are located.

3. Present slides which show rational and irrational exploitation of natural resources.

4. Ask that the participants prepare a list of problems related to natural resource management in their PA.

Supporting Document D1a

<u>IMPORTANT DEFINITIONS</u>

1. <u>Protected area.</u> A legally established land or water area under either public or private ownership that is regulated and managed to achieve specific conservation objectives.

2. <u>Exotic species (introduced species).</u> A species of flora or fauna which humans have taken from its original habitat and placed it in another habitat where it has never existed, and where it has reproductive success.

3. <u>Endemic species.</u> A species whose distribution is restricted to one location or region.

4. <u>Native species.</u> A species which inhabits a zone or region, and which was not introduced by human action; it may live in other places as well.

5. <u>Reintroduction.</u> Process whereby individuals of a species are placed in a habitat where they once lived, but have gone extinct. (see Maunder, 1992).

6. <u>Carrying capacity.</u> When applied to wildlife, it means the number of animals that can live within a specified area without causing significant damage to the habitat conditions required to maintain those animals. For tourism carrying capacity, see B3 and B3a.

7. <u>Endangered species.</u> Those species whose populations have been reduced to a critical point, and which will disappear if they do not receive active support and management.

8. <u>Threatened species.</u> Those species (of flora and fauna) whose populations are encountering difficulties for their continued existence, but with protection can recover to their normal state.

9. <u>Succession.</u> Consists of a series of vegetative growth stages, in which the vegetative community's (e.g. a forest) structure and composition changes over time in response to environmental changes caused by the same community, or by other natural or human disturbance. There is some debate as to whether or not succession processes terminate in a <u>climax</u> situation in which the community becomes stabilized after reaching a certain point in its development, with little or no change occurring. As the vegetative community develops, the animals associated with that community also change. Soil conditions also change. Therefore, succession involves the ample development of the ecosystem of a determined area.

10. <u>Natural resource.</u> Any element of nature: mineral, animal or plant; which can be used by human beings.

11. <u>Renewable natural resources.</u> Those natural resources which under reasonable (sustainable) use do not lose their ability to return to their former situation in the short or medium term.

12. <u>Non-renewable natural resources.</u> Those natural resources which do not have the capability of replacing themselves within a reasonable period of time after being exploited.

13. <u>Sustainable yield.</u> Resource management concept in which the utilization of a particular resource is maintained at a certain level for an indefinite (forever?) period of time without reducing the quantity or quality of that resource.

14. <u>Sustainability.</u> (Taken from IUCN/UNEP/WWF 1991).

If an activity is **sustainable,** for all practical purposes it can continue forever. When people define an activity as "sustainable", however, it is on the basis of what they know at the time. There can be no long-term guarantee of sustainability, because many factors remain unknown or unpredictable. The moral we learn from this is: be conservative in actions that could affect the environment, study the effects of such actions carefully, and learn from your mistakes quickly.

The World Commission on Environment and Development (WCED) defined **Sustainable Development** as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The term has been criticized as ambiguous and open to a wide range of interpretations, many of which are contradictory. The confusion has been caused because "sustainable development", "sustainable growth" and "sustainable use" interchangeably as if their meanings were the same. They are not. **Sustainable growth** is a contradiction in terms: nothing physical can grow indefinitely. **Sustainable use** is applicable only to renewable resources: it means using them at rates within their capacity for renewal.

Sustainable development is used in this Strategy to mean: improving the quality of human life while living within the carrying capacity of supporting ecosystems. A **sustainable economy** is the product of sustainable development. It maintains its natural resource base. It can continue to develop by adapting, and through improvements in knowledge, organization and technical efficiency, and wisdom. A **sustainable society** is one which lives by the nine principles outlined in this chapter:

* Respect and care for the community of life.
* Improve the quality of human life.
* Conserve the Earth's vitality and diversity.
* Minimize the depletion of non-renewable resources.
* Keep within the Earth's carrying capacity.
* Change personal attitudes and practices.
* Enable communities to care for their own environments.
* Provide a national framework for integrating development and conservation.
* Create a global alliance.

Supporting Document D1b

<u>CONSIDERATIONS ON PROTECTED AREA BOUNDARIES</u>

(Adapted in part from Zentilli in PARKS Magazine, V. 1, N. 4, 1977)

The purpose of PA boundaries is to effectively define where a particular type of natural resource management, according to specified management objectives, is carried out; i.e. to differentiate where more traditional human activity ends, and where PA management begins. Ideally, in the long-term, the differences between these different management regimes should become minimal.

In general there are two different situations in which PA boundaries must be dealt with: 1) an undefined area considered to have the necessary attributes to just its existence as a PA, and where boundaries must be recommended and, 2) a revision of already existing boundaries must be made. In all cases certain basic principles should be considered:

1. The boundaries should encompass the values or resources that justify the establishment of the PA. This means that care must be taken to take a PA's management objectives and ensure that they may be fulfilled by the land and resources enclosed by proposed boundaries.

2. All natural or semi-natural areas that exert a major influence upon protection of the PA's resources should be considered for inclusion within the boundaries. This means that the planning process must involve consideration of minimum requirements for providing habitat for endangered, threatened or indicator species, and making provision for this in boundary determination. The concept of minimum viable population for a species should be a factor. The need to provide enough habitat for migratory species should also be a consideration.

3. The boundaries should enclose any areas which are of themselves the setting of the PA's most noteworthy features and which, if left out, might undergo changes or development which would spoil the PA's aesthetic values.

4. Boundaries should consider the existence of appropriate buffer zones, where activities which might threaten the PA's future integrity might take place. Buffer zones are generally inhabited areas adjacent to the PA, where active management and education is needed in order to avoid inappropriate uses which would impact upon the PA. In some cases, now rare, buffer zones are included within PA boundaries. The tendency, however, is to leave these types of zones outside the direct jurisdiction of the PA administration.

5. Boundaries should consider including small areas which facilitate infrastructure for administration, visitor use, protection, maintenance, and circulation, even though these areas may in themselves be devoid of interest from the standpoint of ecological conservation. However, in some cases, these types of facilities are being left outside PA boundaries, in order to minimize environmental impacts from these activities, and also to provide greater opportunity for local people to provide some of these services. Each situation is different, involving a wide variety of natural, economic and social parameters, and should be considered on its own merits.

6. Boundaries should consider political, economical and social realities

prevalent in the region. If the PA will significantly remove or inhibit income producing opportunities, alter traditional habits and customs, or in some way incur negative reactions from the local population, then boundaries must be reconsidered, although not necessarily altered. There are other means for ameliorating PA impacts upon local people that do not require boundary changes. Boundaries that can not be defended, are not worth having.

In practice, boundary determination frequently involves 3 steps:

a: Boundaries are defined by legal decree or legislation; frequently these boundaries have not been determined utilizing sufficient field work, and with time, they are recognized as being inadequate to accurately describe where the boundaries should be. They may infringe upon previously unrecognized private properties, not include essential wildlife habitat, or utilize geographical landmarks that do not exist, or are difficult to find.

b: Boundaries are demarcated on the ground; using legally described boundaries, PA authorities locate and mark the boundaries on the ground. In the process of demarcation, boundaries sometimes deviate from previously defined legal criteria as obstacles are encountered, i.e. cliffs, inholdings.

c: Already demarcated or just legally defined boundaries are revised. Because of inadequacies in the legislation, because of changes that have occurred in boundaries during demarcation, and sometimes political realities, new legislation must be drafted and approved to ratify changes in boundaries.

In deciding upon the landmarks to be used in defining PA boundaries, those features which are easily recognizable and unmovable should be used whenever possible i.e. mountain peaks, rivers, watershed boundaries. However, the use of rivers, in particular, should be done with care. If only one side of river is protected, the other may be open to uncontrolled development which will heavily impact upon the PA. The use of contour lines and latitude and longitude is frequent, but not a very practical method from the point of view of the filed staff. Those points are difficult and expensive to establish on the ground unless staff is equipped with GPS (Global Positioning Systems) equipment.

Boundary demarcation is a complex and expensive process, especially in forested and irregular terrain. Using normal surveying equipment, much manual labor is needed to open a surveying line, and later, to maintain that line as a PA boundary. To facilitate this process, PA authorities sometimes adopt procedures to simplify the amount of work and cost. The planting of certain kinds of easily identifiable trees is frequently used. In some areas, authorities enlist the aid of local communities, who do most of the manual labor in return for perceived benefits from the PA, or just for finally knowing, after many years of indecision, exactly where the PA is!

Supporting Document D1c

WHAT WE SHOULD KNOW ABOUT MANAGING OUR NATURAL RESOURCES

(Taken from: WHAT TRINIDAD AND TOBAGO MUST KNOW ABOUT
MANAGING OUR NATURAL RESOURCES; Meganck and Saunier,
The Naturalist, 1983)

INTRODUCTION

The argument is often presented that the management of natural or wild areas is a luxury afforded only by developed nations where a basic economic and social infrastructure is already in place; that lesser developed nations must address fundamental issues associated with progress defined as increase in GNP or favorable balance of payments or, in extreme cases, even survival. This concept is superficial and outdated and begs the thesis of this paper: that development efforts even in the most underdeveloped nations must consider the conservation and protection of wildlands as a priority if higher quality of life levels are to be attained. Reserved areas "should no longer be seen as luxuries for the rich, but as necessities for the poor." (IUCN, 1982).

This principal was clearly stated in the IUCN World Conservation Strategy:

Earth is the only place in the universe known to sustain life. Yet human activities are progressively reducing the planet's life-supporting capacity at a time when rising human numbers and consumption are making increasingly heavy demands on it. Humanity's relationship with the biosphere will continue to deteriorate until a new international economic order is achieved [and] a new environmental ethic adopted....Among the prerequisites for sustainable development is the conservation of living resources.

The concept of eco-development implies the integration of social and economic objectives based upon the maintenance and improvement of natural support systems. Central to this approach is that development must work toward the goal of improving the quality of life for the larger community. A range of resource management objectives is necessary, therefore, to meet a variety of societal demands - the so called "paved to the primitive" continuum (Table I).

Plans which require a radical and even permanent alteration of many wildland areas to make use of the natural goods and services offered by those systems can be part of eco-development and in fact are indispensable for general progress. However, it must be understood that natural goods and services are not inexhaustible and that exceeding their carrying capacities for short-term gain as well as giving inadequate consideration to their potential, reduces recuperation rates in the long term, in addition to requiring the use of other resources to meet demands for normal economic growth.

Further, it is simply not possible to optimize all development alternatives in any region at a given point in time. And, since trade-offs are therefore implicit in any plan, the affected as well as the target population must be considered. These remarks are justified on the basis of the concept of natural goods and services and its predecessors which speak of

"ecosystem values" or "non market values of ecosystems";

TABLE 1
THE DEVELOPMENT OPPORTUNITY SPECTRUM

Total Preservation	Extensive Use	Multiple use	Intensive Use	Permanent Alteration of Resource Base
Scientific Reserve	National Park Watershed Preserve National Conservation Reserve	National Forest Multiple Use Area Hunting Reserve Recreation Park Scenic Landscape	Agriculture Tree Plantations Urban Park	City Quarry, Mine Soil-extraction Oil Extraction Dam, Other Industry

Examples of Management Categories

II.   **CONCEPTUAL BASIS**

Natural Goods and Services derive from the natural components and processes or form and function of ecosystems. When these characteristics are of interest to any identifiable human population in time and space, they are classified as natural goods and services; they are generally equivalent to the classical "natural resources" but are much more explicit and inclusive. Thus, within the resource "forest," the goods or products may be woody fiber for limber, firewood, pulpwood, or posts; ornamental and medicinal plants; fruits, chemical substances, etc. Ecosystem services include such processes as nutrient storage, distribution and cycling, provision of wildlife habitat, biomass production, flood control, storm surge protection, etc.

Each item helps identify an actual or potential interest or use group. For those groups, specific goods and services have a value. That value may be economic, social, or cultural; it may be scientific, but no less important; and it may be based on the necessity for the maintenance or improvement of human life quality (Table 2).

In addition to the natural goods and services, many of the natural characteristics of ecosystems are hazards which endanger certain aspects of life quality such as personal security and health, and the protection of economic services (Table 3). And, many of these same characteristics serve important positive functions. Hurricanes, for example, as well as providing the outlet for solar energy built up in tropical latitudes, help rejuvenate mangroves and coastal estuaries and are also significant for the dispersal of seeds and other genetic material particularly to islands. Other pervasive stresses such as drought and wind help maintain species vitality through selection.

Table 2

table 3

If we define development as (1) the use, improvement, enhancement, conservation, and protection of natural goods and services; and (2) activities leading to the lowering of risk to natural hazards in order to improve life quality, then conservation and protection are often significant development activities. An effort to conserve or protect an ecosystem which offers a natural service of flood control is no less a development activity than the construction of a flood control structure. And though neither "free" nor "maintenance free," conservation is generally less costly than construction.

A second conceptual point needs to be made. That is that any ecosystem of the human environment will have a long list of natural goods and services of interest to a number of different populations or interest groups that are useful for the development activities of individual sectors. Potential conflicts between the various user groups exist because the use of two or more goods and services from the same or linked ecosystems is often conflictive if not mutually exclusive.

If, for example, one takes any of the numerous accounts of environmental impacts which appear daily in newspapers and magazines and asks the questions, "Who caused it?" and "Who felt it?", the majority of cases will show one economic sector or subsector causing problems for another. Upstream forest clearing may provide fiber for the mill operator or a few years of marginal pasture or arable land, but negative impacts may be long term, and significantly increase cost for downstream water treatment, hydro-electric generation, flood protection and sediment removal.

III   PRESERVING DIVERSITY, OR THE MAINTENANCE OF DEVELOPMENT OPTIONS

Development has always been dependent upon the preservation of biological diversity. Medicinal plants have been used for millennia and recent medical advances are directly related to a constant supply of new pharmaceuticals, an estimated 40 per cent of which are derivatives of natural products from the tropics.

The recent discovery of a perennial species of corn in an undisturbed area in Jalisco, Mexico, is often cited as one having great economic importance. Such discoveries are dependent upon the preservation of natural areas. And, while extinction is a normal biological process, technology has compounded our ability to rapidly and radically alter entire ecosystems eliminating many potential, and as yet unknown benefits, accruing from the natural goods and services. Decisions as to the use of the Caroni Swamp ecosystem in Trinidad are relevant. What are the trade-offs in changing the management direction of this system to, for example, rice production and the resultant losses of direct goods and services such as fish production and scarlet ibis-based tourism income, or such services as nutrient cycling and the abatement of inland floods through the storm buffering by the mangroves?

While the case for continued management of the Caroni as a mangrove forest swamp may be "strong compared to any development alternative", the

challenge for planners and decision makers becomes one of determining the "highest and best use" of a given parcel of land within the context of national goals.

While it is possible for the Caroni under evolving circumstances to be referred to as a park, wildlife reserve or scientific preserve without altering its size or basic function (Table 4), a decision to cut and drain the forest to plant rice has a much greater finality in terms of future uses and the recuperation of actual values.

This does not mean one decision is "good" and one "bad"; on the contrary, both options have multiple benefits for society and both fit the above definition of development. The decision, however, should not be political nor depend on current pricing structure only. Rather it should be the result of a logical planning process that includes both these concerns and the ecosystem's numerous valuable natural characteristics. Otherwise, a few years later recuperation costs may be prohibitive and the areas may have to be written off as a failure of development planning.

Given then, that preservation and conservation are meaningful development activities, how can the full range of future development options be guaranteed through the maintenance of natural areas? Certainly local efforts are important for development to meet specific needs in the Caribbean states. However, another important step is through the establishment of a worldwide system of protected areas.

At present (1982) there are in excess of 2,500 parks, forest and equivalent reserves throughout the world covering some 386 million hectares or roughly 2.3 per cent of the earth's terrestrial surface. However, simple numbers of parks or hectares can be misleading - selectivity is the key. Because the majority of these areas are parks which are oftentimes established to meet recreation demand or for aesthetics, their distribution is skewed and does not represent the full range of natural systems nor obviously the full range of natural goods and services.

The vast majority of Mexico's parks, for example, are in pine forests near the capital while both arid and tropical zones, together comprising more than 70 per cent of the country, have been largely ignored. Additionally, there are many "paper parks" throughout the world - parks that are legislated but not properly managed. These areas contribute little towards social and economic development as reserves, and, in fact, their existence may negatively affect the designation of similar manageable areas in a given nation.

An overview of existing protected areas at the broadest levels reveals that all eight Natural Realms and 14 Biomes are represented worldwide. But in excess of 25 Biographic Provinces of the 197 in the world, the majority in developing countries, are not receiving any real degree of protection. Therefore, new areas should be established to ensure that the full potential of natural goods and services are available should science or industry require. As Ayensu and Miller (1982) state, in order to prioritize the establishment of potential protected areas, to guarantee the future welfare of society, "particular attention must be paid, perhaps, for the first time, to addressing crop cultivars and materials important to industrial and medicinal processes."

The attainment of this goal underscores the need for the development of a strategy to assist developing countries defer the cost of conservation; the installment of a worldwide system to inventory and monitor natural areas; and the formulation of development projects which include due consideration for the protection of natural goods and services.

During the last 10 - 15 years most parks and reserves have been established in tropical areas in the developing world; a trend which is reason for both national pride and concern. At the recent World Parks Congress it was suggested that since wealthy developed nations gain most from conservation of Third World genetic resources, they should help pay maintenance costs. For example, a one per cent tax on imports of tropical woods, pharmaceuticals and seeds by developed states was discussed as a way to help finance research and ensure continued future benefits of science.

While monitoring establishment and management of protected areas at the

biogeographic province level is a task of comprehensive scale, very limited knowledge exists of protection at the species level - only 20 per cent of the flora and fauna of the world has even been described. The inventory procedure should be aimed at cataloguing elements of diversity - plants and animal species, plant communities, aquatic systems, critical habitats and other natural features - that are of particular interest because they are rare, or endangered. The assumption is that if a worldwide system of protected areas is completed, at least a majority (and perhaps as much as 75 per cent) of the range of indigenous species and systems will be protected, if only fortuitously.

Several organizations including the OAS (Organization of American States), the IUCN (International Union for the Conservation of Nature and Natural Resources), WWF (World Wildlife Fund), and TNC (The Nature Conservancy) are already studying the applicability of inventorying models. However, while methods are being developed entire ecosystems are being lost.

table 4

Supporting Document D1d

**IMPLICATIONS OF ISLAND BIOGEOGRAPHIC THEORY
IN SELECTING AREAS FOR PROTECTION AT THE NATIONAL LEVEL**

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

Island biogeographic theory is concerned with the distributions of plants and animals on oceanic islands and island-like areas on the mainland such as mountain tops, lakes and isolated forest patches (Diamond, 1984). It has been found that the number of species and, to a certain extent, the actual species inhabiting islands, is highly predictable and dependent on the size of the island and its relative remoteness from colonising sources. The number of species stabilises when the rate of local extinctions equals the rate of new immigration. The former is related to island size while the rate of immigration depends on the proximity and richness of the coloniser land mass.

According to the theory of island biogeography, small protected areas isolated by modified habitats behave like "islands" and will lose some of their original species until a new equilibrium is reached, dependent on the size, richness and diversity of the area, and its degree of isolation from other similar habitats. Larger reserves lose fewer species at a slower rate, but any loss of natural habitat will lead to some loss of species (see Fig.1). As a rough generalization, a single reserve containing 10 per cent of the original habitat will support just 50 per cent of the original species present (Diamond, 1975). Practical studies show that, by and large, this theory holds true. An extensive literature exists on the theory of island biogeography and its relevance to protected area design, selection and management. Diamond (1984), Soule and Wilcox (1980), Frankel and Soule (1981), Simberloff and Abele (1976), and Wilcox (1984) provide useful synopses of the subject, with particular relevance to ecosystem conservation and the protected area manager. The main guidelines are summarized below, although it should be recognised that the field is a relatively new one and not all conservation biologists would concur:

• Protected areas should be as large as possible and preferably should include thousands of individuals of even the least abundant species. They should be of a compact shape with biogeographically meaningful boundaries. For example, watershed boundaries are preferable to rivers, which often bisect essential bottom land habitats of a range of species. Where a distinct vegetational type, such as a forest patch, is to be conserved it may be necessary to include the whole ecotone and a buffer of the neighbouring habitat type. So far as possible, a protected area should include the year-round habitat requirements of as many of the native animals as possible.

• Protected areas should encompass as wide a contiguous range of ecological communities as possible (e.g. altitude range) as few species are confined to a single community and few communities are independent from those adjacent to them.

• Precautions should be taken against protected areas becoming completely isolated from other natural areas. If possible, they should be located in clusters rather than dispersed, or they may be joined by corridors of semi-natural habitats.

However, these rules only relate to essentially similar blocks of habitat; for instance, two reserves close together in the same biogeographical sub-division will generally not preserve as many species in total as two reserves further apart and falling in different biogeographical subdivisions.
While it may be true that no protected area is ever large enough to

retain its full biological diversity once it becomes isolated from other
similar habitats (and it is as well to realise this and expect some species
losses), this does not mean that even small areas will not protect some of the
component species, often with reduced niche competition (which can favour rare
species). Further, overt manipulation of the ecosystems and their elements can
reduce the loss of species, although this may become an on-going exercise
which in the long run may be more expensive than acquiring more land at the
outset. In any event, it is useful to set pragmatic goals which take into
account the size of an area and the actions needed to conserve a realistic
level of biological diversity they contain, bearing in mind that attempts to
determine minimum or optimal-sized areas for protected areas and the genetic
diversity they represent are still at the "research and development" stage
(Wilcox, 1984) and results may come too late to be applied.

It is worth noting that biological diversity is not uniformly
distributed and "hot spots" can often be recognised such as areas of high
local richness or local endemism (Wilcox, 1984). The Amazonian Pleistocene
refugia are such an example (see Example 3.6). Attempts should be made to
include these "hot spots" in the protected areas system to get better "value"
for number and uniqueness of species protected per area.

A useful general strategy is to include at least one large protected
area in each biogeographical sub-division. This should usually include as many
ecological communities as possible with omissions and variations being
represented in smaller satellite areas.

In selecting areas for protection at the national level there is a need
to select sufficient coverage to safeguard against the loss of the
biogeographical features being protected due to some natural catastrophe, such
as epidemics, flood, earthquake or changing lake levels. This insurance is
enhanced if particular biogeographical entities are protected in more than one
country as this reduces the risk of their loss through local political strife.

Example 3.6: Pleistocene refugia as sites for protected areas

*In the mid-1970s, the Brazilian Institute of Forest Development
established a new system of identifying conservation units based on highly
relevant scientific criteria. The methods used to create seven new
conservation units (covering 7 million ha) in the Amazon could be usefully
applied elsewhere.*

*The Brazilian Amazon Conservation Plan utilised all pertinent scientific
literature available, including data on biogeographic regions, vegetation
formations, Pleistocene refugia for birds, lizards, plants and Lepidoptera and
information on planned and existing conservation units, plans for development
centres of the Brazilian Amazon and conservation areas proposed by the
RADAMBRASIL project. All of this information was transferred to transparent
maps drawn to the same scale so that when the maps were overlaid, it was
possible to identify areas of apparent conservation potential. Field
expeditions were made to evaluate areas with high potential.*

*Even though 90 per cent of the Amazon is tropical rain forest, other
types of vegetation contribute to the area's biological diversity and should
be protected in the conservation programme; these include liana forest, open
forest, semi-deciduous forest, mangrove, Varzea forest and grassland and
savanna. Every biogeographic region of the Amazon was assessed and national
conservation priorities established according to three criteria. First
priority was given to areas which two or more independent scientists
identified as possible Pleistocene refugia, areas likely to support a high
level of endemic plants and animals; second priority to areas likely to
represent several vegetation formations and perhaps a refuge; and third
priority to all other parks and reserves recommended by government and
development projects.*

*Using this methodology, Brazil has already established 7 million ha of
new national parks and biological reserves in the Amazon and plans to create
30 new protected areas, including a number of management categories not yet*

represented there.

Figure 1: Species Numbers According to Island Size and Distance from the Mainland

Figure one

Lesson 2

RESEARCH AND NATURAL RESOURCE MANAGEMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the role of research in natural resource management in a PA.

2.   Define the context in which possible interactions between PA personnel
       and researchers should occur.

3. Describe aspects related to the activity of researchers in the PA.

REFERENCES:

Moore, 1984, sections 8.4 and 13.2; Mackinnon et al, 1986; Oldfield, 1984;
PARKS Magazine, V. 2, N. 2, 1977; Harmon, 1994; Usher, 1986; Westman, 1985.

PRESENTATION:

1.1 There is a directly proportional relationship between the level of
      knowledge about the resources of a PA and the adequate management of
      those resources. The existing information about the natural resources
      in a given PA can be minimal or abundant. Even when information is
      abundant, it is frequently not adequately incorporated into the
      decision-making process. What is important is that the PA personnel be
      conscious of the actual situation in their area at any given time. In
      order to have active research in a PA that is oriented towards the real
      necessities, it is important to have:

      -     a list of priority studies that can help to orient researchers.
      - contact with educational and research centers where these studies can
            be promoted.
      -     resources with which to provide logistical support to researchers.
      - willingness on the part of PA personnel to actively collaborate with
            research.

1.2 Emphasize the importance of research in order to attain an adequate
      management of resources. Research is one of the tools by which criteria
      is established for appropriate resource management. Management can
      include such diverse activities as the absolute protection of an area to
      the planned alteration of the resources. Give examples of the
      importance of research in resource management from your country.

1.3 Some of the research objectives in a PA could be:

      - To understand the composition, structure, functioning, and dynamics of
            the ecosystems present.
      - To develop a detailed inventory of the existing resources in the PA.
      - To observe and document the changes occurring in the PA due to use,
            and/or human impacts, and or natural causes.
      - To provide the necessary information so that the managers of the PA can
            make the correct decisions.
      - To provide information for the environmental interpretation program.
      - Monitoring of environmental impacts after carrying out an
            infrastructure project.

      Ask the participants to complement this list.

1.4 Ask the participants to explain the differences between the general types of scientific research - pure (theoretical) and applied - and that they give examples of each. Explain the difficulty at times of determining the difference, since an apparently "pure" scientific study can sometimes become applied research, even in the short term, when the situation in the PA changes. Often it is difficult to classify a study given the continuum between pure and applied science.

1.5 In reality often one must develop or execute a resource management plan without the necessary scientific information, simply because the information doesn't exist or because it is not available to the people in charge. All work can not be stopped due to lack of scientific information. Sometimes decisions must be made based upon the existing knowledge of the PA staff, which often will be adequate for the job at hand. Nevertheless, in critical situations an effort should be made to bring in a specialist. It is critical to monitor and to evaluate after the fact, the work that has been done.

2.1 The personnel of a PA can make scientific collections of plants, animals, and minerals to create an inventory of the resources in the area and to provide study samples required by the researchers. This is a constant task as the ecosystems are always changing. These efforts by the personnel normally should be coordinated by a scientist who knows the study area well, and who can identify specimens using collections, keys, and his own knowledge. Research in a PA can be a group effort between researchers and the PA personnel, each with his own goals, but collaborating with each other to reach the PA's objectives. Environmental monitoring is another job of the personnel that should be done on a continuous basis (see Lesson B2).

2.2 In those cases when a study is being conducted that is important for the area, the role of PA staff should be to support the effort while not allowing the scientists to take too much advantage of their services and support. When there are PA personnel available, it is helpful if they accompany the scientists. There should exist a mutual respect between the two camps. The presence of scientists can be very useful to the personnel in that they can learn basic knowledge of techniques for collecting and of observation, as well as other technical information about the natural resources of the PA. It is critical that the scientists meet frequently with the PA administrator to inform him of their progress and findings.

2.3 In some places the personnel of the PA carry out some research activities, normally under the supervision of a scientist in the PA system or from a university. The work that these personnel normally carry out is related to environmental monitoring:

- Following-up the results of a management activity.
- Monitoring the status of a population of flora or fauna.
- Establishing and periodically measuring vegetative plots (to observe regeneration or vegetative succession).

If time allows these procedures can be presented in greater detail (see Supporting Documents: D4a, D4b; D3a).

PA staff have multiple responsibilities and conducting research activities normally receives low priority. In Costa Rica a para-taxonomist program has been begun in which local people are trained by scientists to make collections of insects and plants and to carry out other tasks.

3.1 Often conflicts occur between PA personnel and scientists due to a lack of

understanding of the work that each does. For some scientists it does not matter that the site is a PA, but only that it contains something of interest to their study. Sometimes the study can be of great value to the PA and sometimes not. At the same time normally those who manage the PA lack basic information about the area, and may not understand how scientific research can aid the PA. Yet when a scientist arrives to conduct a study, sometimes it is oriented toward a topic of little or no relevance to the immediate management needs in the PA.

In many countries the system for permitting research prioritizes those studies that have immediate importance for the management of the PA. Nevertheless, it is being recognized that the PA are ideal places to conduct all sorts of studies, since they are unique management units where biodiversity is relatively well-protected. As a result the pressure is increasing to use them as natural laboratories, and it is very difficult to exclude research which is not relevant to the PA management. However, priority can be given to certain studies. This may mean lending logistical or financial support to those studies which attempt to provide pertinent information for the management of the PA.

3.2 While a scientific study can be invaluable for the management of a PA, scientific activity can produce negative impacts in the area. For example, the collection of plants and animals, quadrant sampling, the construction of platforms or observation centers, the installation of monitoring devices (cameras, recorders, etc.). These types of activity normally are regulated at the national level, with variations among countries. Nevertheless, independent of such regulations each PA should have its own defined rules concerning scientific activities based upon its particular characteristics.

3.3 It is important that any management program or activity be monitored and that the results be analyzed.

ACTIVITIES:

1. Ask that the participants present the research situation in their respective PA: What type of research has been conducted and what is being done at present? What role does the PA personnel play in these studies? Do the studies fit with the priorities of the PA? How is the scientific activity regulated in their PA? How well do the regulations work at the level of the PA and at the national level?

OPTIONAL ACTIVITIES:

1. Go to the field and teach the participants how to establish a quadrant for monitoring vegetative succession and then conduct an inventory of the flora within the quadrant.

Supporting Document D2a

RESEARCH IN PROTECTED AREAS

(By Lic. Carlos Martín, Head of Ecological Investigation
Nahuel Huapi National Park, Argentina. Adapted from
"Flora, Fauna y Areas Silvestres," Year 1, No. 3;
FAO Regional Office, Santiago, Chile)

What is the importance of scientific research in a system of wild protected areas, particularly within the context of Latin America?

One must first accept that, in all of our countries, our understanding of the ecosystems we must manage and conserve is very limited. Another common characteristic is the degree of human intervention to which the protected areas are subjected. By this I not only am referring to the recognized uses admitted by the different management categories, but also to the widespread presence of rural and urban communities found either within or on the periphery of protected areas and which exploit resources from them. Our knowledge is quite limited about the impact from this wide spectrum of uses, and of how tolerant the ecosystems are of these impacts.

Why is it important that we understand more? The answer can be synthesized in two basic ways.

One reason is that to better understand the ecosystems in which we work is a prerequisite for better management and administration, in order to reduce errors and minimize risks. This becomes specially meaningful when one recognizes that many of the protected areas in the region are now or soon will become unique examples of ecosystems. Given this, the price of our errors can be very high in terms of conservation; that is we may be responsible for causing irreversible losses. It is essential to increase our knowledge of the ecosystem components, about their interrelationships, their interdependencies, and their natural dynamics, in order to perfect the criteria for management that we use and to reach our objectives. It also is important to foresee the impacts of human use on the PA's in order to develop appropriate use models, to stimulate or to discourage preexisting uses, and to apply the necessary corrections while there is still time, depending upon the resilience of the different ecological systems.

Another very important reason is that greater understanding of the ecosystems in which we work allows for stronger arguments to justify the existence of these areas and of their management.

Protected areas, especially in the context of developing countries, are subject to constant external pressures in order to increase their use or to remove their protected status. In the face of these pressures, simple arguments in defense of PA's based solely upon principle become less plausible. Knowledge is needed to strongly justify the existence and the importance of each of these areas and to support management decisions, in particular those that might restrict or deny certain uses. To use the argument "No, because it is a national park" or "no, because the law or the plan doesn't allow for it" should be the last rather than the first, and never the only argument to brandish. We should always remember that this type of "no" often leads to conflict situations, with the ever-present risk that it will ultimately be resolved at a political level well beyond our control. To justify a policy or a management decision does not imply eliminating conflict, but it is an important tool which can result in the changing of attitudes, in the building of alliances among various sectors of the community or among political decision makers.

The role of research in supporting stronger and more articulate arguments concerning the social, economic,, and cultural benefits derived from PA's is, in my opinion, of primary importance, and its contribution to conservation ought to be considered at the same level as the most concrete protection operations.

RESEARCH POLICIES

Given the need and the importance of increasing our knowledge about the protected areas and their uses, we would agree that one function and responsibility of our institutions is to promote the scientific use of the PA's. I refer here to research in a broad sense including all the administrative problems inherent in such systems. Nor would I discriminate between pure research and applied research. It would not make sense to limit oneself to applied research knowing that, for example, information generated by pure research about the value of a species, is of fundamental importance for conservation.

As to the responsibility for facilitating and promoting the scientific use of PA's, it is necessary that the responsible administering institution formulate its respective POLICY concerning types of research, and at the same time define specific research PROGRAMS for each PA in the system.

Within the basic outline of a research policy it is necessary to define:

a. What will be the restrictions put on research activities given the protected character of the areas?

b. The lines of investigation that the institution considers priorities, whether to be developed within the areas under its jurisdiction or outside of them. An example of the latter would be research into aspects of a new area possibly to be incorporated into the conservation system.

c. The mechanisms to be used in order to execute priority projects (signed agreements, subsidies, logistical support, publication of results, etc.)

d. The system that will be used to negotiate research requests and the agreements to be made so as to insure that the results, reports, or publications that the research generates are shared with the institution. It is essential to define an efficient system of control of scientific use and distribution of results. Unfortunately it is all too common that the amount of research conducted in the areas is far in excess of the knowledge which is available and utilized in the institution.

It would be ideal if each area had its own research program in which specific objectives were defined for scientific use of the area such as: priority projects, types of support to be provided, and local plans for follow-up of projects, etc.

WHO SHOULD CONDUCT THE RESEARCH

The process of formulating a research policy implies the making of a decision about the role that the institution will assume in research. One can compare the value of creating a research department within the institutional structure or of deriving research from the outside, that is through short-term contracts or through agreements with universities or other research institutions.

Neither of these options may be ideal. For example to endow the institution with its own research facilities would be expensive and difficult to justify. As such it likely makes more sense to leave the responsibility for conducting research in the hands of those entities which have that has a primary objective, specially given the severe budgetary restrictions that face our institutions.

In any case, it appears that the central problem does not lie in who should conduct the research in the PA's but rather to define the group of activities that need to occur within the institution to insure that the scientific use generates the benefits that were mentioned earlier.

Research in the system of PA's is a sufficiently important and diverse subject as to merit being a formal function of the administration of these systems. A functional section of an institution dealing with research would include the following activities:

a.To analyze all the preexisting scientific information that has been generated, in order to improve the management and conservation of the protected areas. In particular to provide the technical information necessary for use in environmental education, interpretation, planning, resource management, and for general decision making.

b.Understand the characteristics, objectives and problems of conservation in the different PA's that make up the system.

c.Define priority research areas, both to improve the management and consolidation of the system of existing areas, as well as to strengthen and scientifically support the process of selection and incorporation of new areas.

d.Maintain active contact with research and resource management institutions and help to stimulate and facilitate the scientific use of PA's; negotiate mechanisms for cooperation and interinstitutional complementation; and propose research in priority areas for the institution.

e.Oversee and support the work of researchers who conduct projects within the protected area system.

f.Evaluate the feasibility and the impact of proposed research projects, and suggest pertinent modifications in order to minimize negative impacts and/or maximize the usefulness of the project results for the institution.

g.Coordinate the oversight and follow-up of the research carried out in the system, and the delivery from the researchers of the obtained results.

h.Carry out or participate in research projects that are of highest priority for the institution.

i.Develop work methodologies and provide necessary instruction and training in order to augment the quantity and quality of information that is provided to personnel working in the system.

This list is not complete, but hopefully it is sufficient to make clear that all the functions can not be satisfactorily dealt with by a group of researchers or by completely depending upon other institutions. This group of activities best defines a functional area that could be called "research-management" which has as its primary duty the oversight and management of

research matters.

Those in charge of this function ought to have research training and
experience, but they must understand that their role within the institution is
principally to establish a bridge between the scientific information generated
and the administration of protected areas. It should be clear that while this
function does not exclude the possibility of also being in charge of the
execution of projects, it does signify a basic change in the traditional work
profile of a researcher.

The manner in which to best incorporate these functions within an
organizational structure can vary a great deal depending upon the structure of
each institution. Nevertheless, it would be best to maintain some unity in
its execution. As such it would be preferable to select a small
interdisciplinary group dedicated to these activities, rather than spread the
activities out among different technicians in charge of interpretation,
resource management, planning, etc.

As to where this group should be located it would be best if it were regional
in nature. One reason is that because of the diversity of areas and
ecosystems with which the group is concerned, a decentralized group will be
better able to oversee research policy appropriate for each biological
reality. Another important reason to decentralize the group is the likelihood
that the members could make direct contact with the personnel in the PA's and
with the science and technical institutions of each region.

No matter what organizational structure each institution finds the most
convenient, it is indispensable that it abandon a passive approach towards
research. Scientific use is one of the goals of protected areas, but it also
is a basic tool for conservation and as such it must be actively incorporated
into the activities of the systems of PA's.

PARK WARDENS AND RESEARCH

Without a doubt the personnel assigned to the PA's hold a great deal of
empirical knowledge, and it also is certain that a considerable part of this
information is never incorporated into management. Often the park wardens are
the only residents in remote areas with difficult access, communication, etc.
and the valuable technical information they are able to obtain due to their
location often is not taken advantage of.

In order to increase the ties of park wardens with research and technical
management in the PA's one must recognize the importance of the product being
sought and the necessity to use more efficiently the available scarce
resources. The next step would be to find realistic mechanisms that permit
the establishment of solid and stable bridges between park wardens and
research professionals. Some years ago in Argentina an initiative was taken
to train park wardens so as to be able to initiate their own research
projects. For various reasons the experience deteriorated rapidly (due to
conflicts with their primary functions, and to the fact that the personnel
lacked both the basic resources and the professional orientation required to
successfully carry out the initiative).

Except in isolated cases, it is not practical to include research as part of
the work plan for park wardens given the existing situation in developing
countries. The ties to which I referred above are much more elemental, and
are based upon the belief that one can obtain important information concerning
what is happening in the ecosystems, their state of conservation, impacts,
changes, state of critical components, etc, in a way that does not interfere
with the basic functions of the park wardens (patrolling and extension).

A preliminary technical effort, conducted with a strong dose of common sense, is necessary in order to develop appropriate mechanisms which could lead to successful results.

The collection of basic data in each area should be a priority; it is essential that a system be developed with data sheets which guide the park wardens in the collection of standardized and relevant information; monitoring should be carefully designed and programmed according to the objectives sought; simple field guides for identifying signs of different species or of other indicators would be necessary to increase the veracity of the information; a short field training of participating personnel also will increase the efficiency of the process.

A fundamental step is to foresee and organize the destination of the information obtained. Who, how and where will it be filed? How often will the data be analyzed? Who will be the technical liaison with the park wardens during the process? What feedback mechanisms are foreseen to keep the field personnel informed as to the results obtained? Training should also play a role in this process. It is not a simple nor spontaneous process to extract information from nature. To improve the capacity for observation of the personnel will require a constant training effort, oriented at reenforcing basic ecological concepts, to incorporate indicators as basic work tools, to understand and utilize basic monitoring efforts, etc.

Nevertheless this long list of conditions is basically a simple and low cost system, which could be gradually implemented beginning with simple assignments such as the use of photographic monitoring of restoration processes, the development of field sheets for taking data on critical species, or the installation of transects in order to permanently monitor changes in the fauna or vegetation.

There is much to learn but to begin building these bridges is quite possible. We are not talking about ambitious nor expensive projects, on the contrary it is a way to obtain a greater yield from our actual operating systems. The effort required to initiate these programs in any case is much less than the increase in knowledge that they would generate.

Supporting Document D2b

<u>SYNTHESIS OF RESEARCH NEEDS IN PROTECTED AREAS</u>

(Taken from; Mackinnon, 1986)

Lesson 3

MANAGEMENT OF FORESTS AND OF OTHER TYPES OF VEGETATION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Use their knowledge of the natural processes and other processes that occur in forests to explain reasons for managing forests in the PA.

2. Describe the principal methods used for managing forests in a PA.

REFERENCES:

Lanly, 1982; Moore, 1984; Chapter XIII; Oldfield, 1984; Parks Magazine, Vol. 7, no. 3; Mackinnon et al. 1986; Child, 1984; Given, 1994; Hamilton and Snedaker, 1984; PARKS Magazine, V.3, N.1, 1992, Imbach and Godoy; Sharma, 1992.

PRESENTATION:

1.1 Ask the participants what are their ideas concerning how forests help us. What are the general functions of forests?

How many of these forest functions can we include as objectives of a PA? All of them? There are many types of PA, with different management categories, and each with different objectives. By managing forest within a PA, according to its management category, one can accomplish one or more of the following objectives:

-       avoid fires
-       provide for the collection of timber
-       provide for the extraction of wood
-       produce water
-       control water flow
-       maintain and favor certain genetic resources
-   maintain, favor, or concentrate certain species of fauna or flora
-       protect soil
-       favor research which supports rural development
-       protect visitors (eliminating risk trees in public use areas)
-       obtain other forest products: nuts, rubber, dyes, etc.

1.2 Explain the problem with exotic species and how they can at times be of great benefit and at other times be serious pests (eucalyptus is a good example).

1.3 Discuss with the participants the concepts of vegetative succession and climax, and the influence these have on management in the PA.

1.4 Explain the problem of deforestation in tropical forests and the role that the PA play in the protection of genetic resources being lost by deforestation. Describe what are genetic resources and the need to protect them. Give examples of wild genetic resources in your country or region.

2.1 Explain the methods utilized to reach the objectives listed in section 1.1 and give examples of some of them. Be certain that the participants understand the limitations and disadvantages of each method, and in which management categories they might be appropriate to apply.

-       prescribed fire (see D9b, B10)
-       herbicides and insecticides
-       selection tree harvest
-       reforestation and afforestation
-       limited planting with certain species
-       biological controls
-       control of human activity

2.2 Describe in detail some case studies which exemplify the way that forest management helps meet the management objectives in a PA. (Examples: prescribed understory burning to encourage regeneration in forests of Sequoia (Sequoia sempervirens) in the U.S.A.; prescribed burns to maintain savannah habitat and ecosystem in Costa Rica; reforestation with native species to help the recovery of impacted areas; maintaining natural succession which has been interrupted due to excessive efforts of fire protection.)

2.3 Factors to consider when determining management options:
-       management category and objectives of the PA
-       impact of forest management on other resources (fauna, water, soil)
-       impact on nearby human populations in the region
-       the utilization or not of exotic species
-       studies which support management activities and studies designed to monitor the results of such activities
-       impacts on the visiting public
-       availability of trained personnel, equipment, and funds.

ACTIVITIES:

1. Ask that the participants speak of examples of vegetation management that they have seen. They should explain the management objectives, the methods used, the results, and whether the management activity is sustainable in the long run.

2. Have each participant design a vegetation management project for his PA. The project should be in agreement with the management objectives of the PA, should detail the methods to be utilized, should define the desired results, and analyze if the project will be possible given the available personnel and financial resources. How will it be determined if the results are those which were desired? Have each participant give a short presentation of their project and ask the others to critique it in a constructive fashion.

Supporting Document D3a

PLANT ECOLOGY: FIELD PRACTICES

(By Lic. Mónica Mermoz and Lic. Carlos Martín, Training
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General Introduction: Vegetative Sampling

If one wants to obtain information about the vegetation over a large area, it
would be impossible to count, measure, or characterize all the plants present.
For this task there are different methods for sampling through which one can
infer the characteristics of the entire area of interest. A sample represents
a portion of the universe being studied. In the above case the sample would
be the area which we analyze in detail in order to reach conclusions about the
entire area.

A sample is made up of a group of sampled units (for example small parcels or
plots). In order that the analysis of a sample allow one to draw valid
conclusions for the larger area, it is critical that the sample be
representative, or in other words, that it typify the larger area. For
this reason the size, the number, and the spacial distribution of the sampling
units that make up the sample are very important. For example, if one wishes
to determine the opinion of the inhabitants of a city, one will have to
carefully decide how many people to interview and in what parts of the city
the interviews will be held. If the number of interviews is inadequate or if
the individuals interviewed come only from one sector of the city or from one
social group, the sample and the conclusions that are extrapolated from it
will not be truly representative of the opinion of the habitants of the city.
Similarly in a sampling of vegetation, it is very important to decide how may
units will make up the sample, what will be their size, and how to spatially
distribute these units.

It should be mentioned that while it is easy to imagine a plot as the sampling
unit, there are many methods for conducting a sample of the plant ecology that
use points or lines as units.

The spacial distribution of the units can be:

a.At random
b.In a regular or systematic form (at predetermined intervals)
c.Subjectively selected as being "typical" or representative of the greater
          area.

While the random distribution of the units is that which presents the greatest
difficulty for applying on the ground, it is the only one that allows for a
statistical treatment of the data obtained.

Parameters of the Vegetation

Some of the most commonly utilized parameters in the study of plant
communities include:

a.Frequency: the frequency of a species (life form, etc.) is the number of
          sampling units in which the species is present, divided by the
          total number of sampling units analyzed. It is expressed as a

percentage.

This is an often used parameter due to the ease of obtaining it. While it
does give an idea as to the abundance of a species in a community,
it does have some limitations in that it is not an absolute
parameter. The frequency depends both upon the number and the
grouping of the individuals. That is, for example, a certain
number of individuals in an area will have a lower frequency if
they are grouped than if they are randomly distributed.

b.Density: this is the number of individuals per surface unit. This is an
absolute parameter that does not have the restrictions mentioned
for frequency. However it demands more effort and time to be
obtained. In some cases there can be problems in recognizing just
what is an individual (this is common in the case of grasses or
plants that reproduce vegetatively from underground organs).

c.Cover: this represents the amount of space, projected over a plane, that an
individual, species or life form occupies. This can be obtained
quantitatively as a percentage (for example summing the area
covered by the individuals of a species, along a line or a narrow
band, and dividing by the total area). It can also be obtained
subjectively, estimating within a given area, the percentage of
ground that is covered by the projection of the foliage of the
individuals of a species.

This is a very important parameter from an ecological point of view given its
relationship with the biomass of each species in the community.

FIELD PRACTICE NO. 1: VEGETATIVE STRUCTURE USING THE RICHARDS PROFILE

Introduction

When observing the vegetation in different places, one can detect differences
even when not recognizing the species present. Trees, shrubs, and herbs when
present in different proportions with different heights or different
arrangements give the vegetation a distinctive or particular "aspect". These
characteristics of the vegetation, related to their spatial distribution, make
up the vegetative structure. One can differentiate:

a.Vertical structure, formed by the distribution of vegetation along a
vertical axis, resulting in different layers.

b.Horizontal structure, formed by the distribution of the vegetation along the
horizontal axis.

The vegetative structure is strongly influenced by environmental factors
(climate, soil, slope, etc), which is why one sees great structural
similarities among, for example, the vegetation in tropical zones around the
world, independent of the differences in species composition. It can be very
important to describe the structure of vegetation, which provides ecologically
useful information, even in regions that have not yet been studied
floristically. One aspect worth mentioning is the importance of vegetative
structure as an indicator of wildlife habitat value. Often one can make a
preliminary judgement if a certain area is adequate for certain faunal species

based upon its structural characteristics, disregarding the species of vegetation present.

One useful method for studying forest structure is that developed by Richards. The method consists of a scale of a profile of a strip of forest which offers a realistic image of the vegetation and helps make a rapid, visual comparison between different types of forest.

Field Procedure

A representative strip of forest is selected and marked using stakes and measuring tape or strings (if using a string it should be marked at one meter intervals). A vertex and two adjacent sides of a predetermined rectangle are selected to be used as the two axes of a coordinate system. Working within the rectangle, each tree is registered (following an order so as to not count the same individual twice). The following information is recorded:

a. Position: using the coordinate system selected (one side considered x and the other y) the coordinate pair (x,y) is registered which serves to identify the position of the individual tree.

b. Scientific or common name.

c. Circumference (or diameter) of the trunk, at breast height.

d. Total height.

e. Height to the lowest branches.

f. Height to the lowest leaves in the crown.

g. Crown diameter (if the crown has an irregular form, the maximum and minimum diameters are measured).

The measurements of crown diameter and of trunk circumference are made using a measuring tape. If forceps are available one can directly measure the diameter of the trunk. A clinometer is used for the height measurements (this can be replaced by a homemade instrument). The most direct measurement is made when the person stands at such a distance from the tree as to maintain a 45° angle with the instrument. Aim the clinometer at the height you wish to measure (crown, branches, leaves, etc.). In this case the height is obtained by measuring the horizontal distance from the observer to the tree and adding the height from the ground to the eyes of the observer.

In order to ensure that the final representation is realistic, a sketch should be made of the typical growth form of the tree species present.

In the Richards Method normally one does not consider the forest understory. If one does want to develop a more complete profile, measurements can be taken of the shrubs (and the herbaceous plants) which fall on the line marked by the string which defines one of the long sides of the rectangle.

Laboratory Work

a.   Making the Profile

At the bottom of a sheet of graph paper, a scaled drawing is made of the rectangle studied. In the drawing the trees are placed using the measured coordinates and the crowns are positioned using the measured heights.

On the upper part of the same graph paper, following the same scale used in the lower part, the forest profile is made. This profile should schematically represent the image that a photograph would give when taken from the front of the analyzed strip of forest.

Note: In this practice all woody plants with a trunk diameter greater than or equal to 10 cm. is considered a tree.

Given that the real forest strip has a certain width (the shorter side of the rectangle) and that the profile will be in only two dimensions, some tree trunks may be totally or partially superimposed. For this reason it is best to begin schematically with the trees closest to the "front" of the strip.

Depending upon the characteristics of the vegetation, the profile of the understory vegetation might be done on tracing paper (always using the same scale), so that it can be later superimposed on the profile of the overstory vegetation.

b.   Comparison of Profiles: one can compare profiles of forests done by other groups and in other regions, comparing number of canopy layers, crown characteristics (open or closed), distribution of individuals or whatever other aspect is of interest.

FIELD PRACTICE NO. 2: TRANSECTS

Introduction:

A transect is a line or band along which a study is carried out. The analysis of transects is an appropriate means for studying vegetation in relation to environmental factors (soils, slope position, microclimatic parameters, etc.).

The word "gradient" is used to refer to gradual changes that exhibit certain outcomes (species abundance, temperature, humidity, etc.). When one wishes to study the variability in vegetation in relation to an environmental gradient, generally a transect is used along which the vegetation is studied as to its relationship with the environmental factor of interest.

Two aspects must be very clear in the use of transects. One has to do with the most appropriate choice of direction in which to lay out the transect, and the other has to do with the possible influences of other factors that exist along the direction chosen for the transect. It is possible that the combined influence of various environmental factors can lead to erroneous conclusions if one does not make a careful evaluation of the potential effect of each one over the vegetation (for example, to assign changes in the vegetation to a given factor, when in reality the change is a product of some other or a group of interrelated factors). Ideally one tries to lay out a transect in such a way that only one factor varies and the rest remain constant.

The Method of Line Intercept (The Canfield Line)

This permits an estimate of coverage of different species based upon the measurement of sections along a line touched by individuals of each of those species. Those plants which touch the line or which are either above or below the line are counted in this sampling system.

Usually the different layers of vegetation are measured separately, beginning with the lower layers in order to obtain the data before these are disturbed by the sampling.

Procedure:

First a baseline is established perpendicular to the gradient to be studied and along that random points are marked (as many points as there are work groups). Each one of these points will serve as the origin of a perpendicular line transect to the baseline.

Each transect is marked with a measuring tape or with a string which is marked at one meter intervals.

Beginning with the lower layers of vegetation, register the position along the line of those species with individuals which "touch" the line in the first meter. The same operation is then repeated for each subsequent meter. The data from each meter interval should be registered in different columns of the field sheet.

Laboratory Work:

Summing the intercepted length for each species in each interval, the coverage of each species can be calculated for each interval (intercepted length for species A X 100 and divided by the length of the interval).

For each species a graph should be developed (horizontal axis = the successive intervals of the line, vertical axis = the cover of that species in each interval).

Afterwards the graphs for the different species can be compared and the data analyzed statistically for the different transects sampled.

Finally the results should be discussed.

FIELD PRACTICE NO. 3:   VEGETATION CENSUS

Introduction

Observing vegetation in a large enough area allows one to distinguish subjectively, a priori, different vegetation "types" based on its features and dominant species. Still a more rigorous determination of these "types" requires a consideration of not just its structure but also of its floristic composition. For this it is necessary that the samples taken be of a large enough size so as to contain a majority of the species present. The least area in which the floristic composition of the community is adequately represented is called the minimum area. The minimum area depends upon the number of species present and upon the size of the individuals.

The basic steps for sampling vegetation are:

a.Subjective identification of the different vegetation "types" (generally
done through interpretation of aerial Photographs).

b.Determination of the minimum area for each of these types.

c.Conducting various samples in each of the identified types, utilizing the
determined minimum area.

Procedure:

A. Determination of the minimum area: The work should be done in one of the
vegetation types already selected through photointerpretation.

1.A small area should be selected, for example 0.25 m^2, and all the species
present in the area should be noted on a field sheet. The total
number of species identified should be written at the right of the
list, and a line should be drawn underneath the last species
noted.

2.The plot's area should be doubled, and the procedure should be repeated;
all new species seen should be noted on the field sheet (species
present that already were noted above should not be registered
again). Again the number of species noted in the second plot
should be written at the right of the list, and next to that the
total number of species noted on the two plots should be
registered.

3.Step two should be repeated until it is found that by sampling new plots no
significant increase in the number of new species identified is
noted.

4.The results should be plotted on a graph in which the number of new species
identified per sample area is represented on the Y axis and the
number of sample plots on the X axis. The resulting curve should
be steeply sloped at the beginning (as the first sample plots had
the greatest number of new species) and as the number of plots
increases, the number of new species falls until the curve
eventually tends to horizontal. Based on this curve the minimum
area is determined at which point further sampling does not lead
to a significant increase in the number of new species described.

B. Vegetation Census: Once the minimum area is determined and the sample
sites selected (within the vegetative types detected from aerial photographs
sites should be selected that are estimated to be representative, based on
floristic composition and structure) the census can be conducted:

1.An area is marked off with stakes and string equal to the determined minimum
area.
2.On an appropriately designed field sheet the general site and specific
census data is registered. For this census three vegetation
layers are defined: greater than five meters, between five meters
and 50 cm., and less than 50 cm. in height.

Beginning with the lowest, layer the following data is noted:

- The total cover of the layer: subjective percentage estimation.

- The name of each species present in the layer (if the species is unknown it
        should be noted by a number and a specimen collected and labeled
        by the same number to facilitate its identification). The
        relative cover of each species should be estimated utilizing the
        cover-abundance scale of Braun Blanquet:

        0: little cover
        1: present, but with cover less than 5% of the area
        2: any number of individuals with cover between 5 and
   25%
        3: any number of individuals with cover between 25 and
   50%
        4: any number of individuals with cover between 50 and
   75%
        5: any number of individuals with cover above 75%

Continue sampling the other layers using the same system and remembering that
        some species can occur in more than one layer.

Lesson 4

WILDLIFE MANAGEMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the reasons for managing wildlife.

2. Describe the principal methods used in managing wildlife and the limitations of each.

REFERENCES:

Moore, 1984, chapter XIII, PARKS magazine, Vol. 9, no. 2, "The Wildlife Observation Hide"; Vol. 2, no. 3, "Use of Chemical Restraints in Handling Wildlife"; Mackinnon et al, 1986: Makombe, 1993; Schemnitz, 1980.

PRESENTATION:

1.1 Present an overview of why it is necessary to manage wildlife. Explain the general reasons: although in national parks the ideal is to allow ecosystems to regulate themselves, the majority of parks have an insufficient area size to protect all the species found within their boundaries (due to the facts that some species migrate out of the park, that there is inadequate habitat in the park, or because of gene pool considerations). Consequently, it has become increasingly necessary to pursue active management of some wildlife populations in order to insure their continued existence. Also, some PA have objectives concerned with increasing the numbers of certain species for production or protection reasons.

At this point it would be opportune to lead a discussion about the minimum size of a PA, and the number of species and number of individuals within species that can be sustained in a certain area - i.e. a discussion of island biogeography theory (see Supporting Document D1d). Define the **minimum area** necessary for a PA, what defines this criteria, and the factors which limit the application of the criteria.

1.2 Present specific reasons for managing wildlife and give examples of each:

     -to return equilibrium to an altered ecosystem
     -to encourage reproduction of a certain species in danger of extinction
         (reintroductions, captive breeding, etc.)
     -to encourage the reproduction of a certain species desired for
         commercial production for the benefit of neighboring human
         communities
     -to control or eliminate exotic species
     -to concentrate or attract species to sites where they are more easily
         viewed by tourists
     -to remove from human use sites, for the protection of the wildlife
         species

RES MAN D4-2

2.1 Explain the different methods for managing wildlife; giving examples and indicating the advantages and disadvantages of each:

- habitat (or vegetation) management
- control of human use of wildlife in certain sectors
- control of exotic species
- introduction of species
- reintroduction of species
- selective hunting (by PA staff or by the public)
- capture for commercial or medicinal use
- capture and transfer from well populated areas to areas with low or non-existent populations
- chemical control of certain species (e.g. poisoning, birth control)
- artificial feeding programs
- protection
- programs for cleaning up garbage disposal sites and controlling access to garbage

It would be useful at this point to repeat the explanation of the problem of introduced (or exotic) species.

2.2 Focus on the importance of research in the management of fauna. It is important not only to know how to proceed, but also how to monitor the results.

2.3 The relation between wildlife and humans is critical for a PA, and wildlife management frequently is oriented around this relationship: whether to provide the opportunity for a tourist to see some animal, to protect some species from excessive hunting, or to increase wildlife populations for use by human communities outside of the PA. On the subject of tourism, try to give the participants a point of reference concerning visitors and wildlife which will permit them to answer the following: Under which circumstances should visitors be allowed to get close to wildlife? When should visitors be permitted to feed wildlife? Discuss why this practice is not recommended in most cases. Discuss how the management category of a PA to some extent determines the type of wildlife management permitted, for example a national park vs. a national reserve or other type of PA.

2.4 Discuss in detail a case study of wildlife management in a PA.

ACTIVITIES

1. Ask that each participant prepare and present to the group a brief overview of a wildlife management project that would be appropriate to implement in his PA. The entire group should provide constructive criticism of each presentation.

Supporting Document D4a

DETERMINING THE NUMBERS OF ANIMALS

(Translated from an original Spanish language publication written
by Claudio Chehebars, Ecological Research Group,
National Park Administration, San Carlos de Bariloche, Argentina)

To have good estimates of the numbers of animals by species is a dream of
every administrator of a protected area. This information is very important
for understanding the richness of the ecosystem being protected, in particular
if one hopes to manage the system.

Nevertheless, this is one of the dreams most difficult to attain. Despite
advances in modern technology, it is still very difficult, if not impossible,
to know with great certainty how many individuals of each species inhabit an
area.

ABSOLUTE ABUNDANCE

Absolute abundance is the total number of individuals of a species that
inhabits an area. For example, if one affirms that in a lake at a given
moment there are 250 rainbow trout, one is stating a number which is the
absolute abundance. Obviously this type of data is very desirable, but it is
the most difficult to obtain with any confidence.

There are two ways that one can arrive at the absolute abundance:

a. By total count: simply put, one counts all of the individuals observed.
This is applicable for many types of birds and of large ungulate
mammals (specially diurnal species) in open spaces. This also can
be done by making a special hunt for the animals: one can turn
over all the rocks and tree trunks in a small area and count all
of the frogs, for example. The total counts are called a census.

b. By estimation: When it is impractical, very expensive, or impossible to do
a total count, one can use a method for measuring a sample that is
considered representative of the total population. Then, by
applying some statistical procedure one can obtain an estimate of
the absolute abundance. This can be done in two ways:

i. By counting in a sample: A simple case could involve a band of flamingos
standing in a lake. If the distribution of the animals is more or
less uniform, one might from above count all of the flamingos in a
square (or an imaginary portion of the total) and then estimate
the total number by simple multiplication.

Unfortunately, usually the situation is much more complicated and requires
complex statistical treatments and special precautions. For these
an expert in sampling is needed.

Also there are sampling methods which involve captures and recaptures but the discussion of these is outside of the objectives of this course.

ii. <u>Using indices</u>: This consists in measuring an attribute of the population and then relating it to the total number of the population present. Generally environmental characteristics associated with the species are used: that is signs such as caves, nests, tracks, excrement, sounds or calls, and others. In most cases the indices derived from such signs serve only as estimates of relative abundance, although in some cases they can give acceptable estimates of absolute abundance. Some populations of birds can be estimated based on the number of nests, and some mammals based on the number of caves or cavities. In any case one needs data that allows one to relate signs to the population number. For example, one needs to know with certainty (based on previous study) a good average of number of individuals per nest, as well as the dynamics of nest use by the animals in question to know if the nest is occupied or abandoned.

RELATIVE ABUNDANCE:

It can be very difficult and expensive to obtain good estimates of absolute abundance, and for many management objectives a relative estimation is sufficient. For example, one might be able to say that "In May twice as many individuals are in the area as compared to April", or "in the valley of the Huemel River the species is approximately 3.5 times more abundant than in the Vinegar Stream Valley, although in neither case is the total number of animals known."

In these cases the information is expressed with an index of relative abundance, which is not a firm number of animals, but rather, perhaps a number of deer excrement per m^2.

General indices of animal signs are used which need to be carefully calibrated. However in these cases it is not necessary to relate the signs with the number of animals which produced them. In addition to indices based on animal signs, sometimes indices based on animal captures are used.

FECES SAMPLES AS RELATIVE INDICES FOR DEER

Feces sampling is a process by which the absolute or relative density of an animal species is estimated based upon the number of excrements (pellets) or groups of excrements found in an area. The method is principally applicable for ungulates. This type of sample provides an objective measure of important population fluctuations and also helps to determine the types of habitat preferred by the animals as well as the patterns of seasonal use. While the method has its difficulties and limitations, it has the big advantage that the pellets are inert evidence to which one can apply a systematic sampling scheme and a statistical analysis.

As mentioned, while it is possible to use the method to measure absolute abundance or density, this requires baseline data which is difficult to attain such as the rate of decomposition of the excrement, and the daily rate of animal defecation. As such, for the purposes of this course, we will consider this technique only for obtaining indices of relative abundance.

We will practice applying the technique (in a determined site) with the objectives of estimating:

> - differential use of different habitats and areas
> - changes in animal density over time, in an area

Fifteen transects should be established, each 100 meters long. Three should be in open grassland, three in grassland with shrubs, three in swamps three in natural forest, and three in pine plantations (if this habitat doesn't exist in the area, choose another type of vegetation). The initial transect in each habitat type should begin at the edge and run perpendicularly from the edge into the selected area so that each successive sampling point is further from the edge. If the habitat type being sampled is extensive, the second and third transects should continue further into the area (that is further away from its edge). If the habitat types are too small to allow for transects to be laid out in this fashion, these can be laid out parallel to each other with a minimum of 30 meters between.

Circular plots 10 m^2 should be established at 20 m. intervals along each transect (that is there will be 5 plots per transect). The plots can be delineated by pivoting with a string 1.78 m. in length. Two people should work each plot.

In each plot the type of vegetation should be described utilizing the methodology of analysis of vegetative structure described in the Field Practices on Vegetative Ecology. Also the topographic characteristics of each site should be noted as well as the distance from the center of the plot to the nearest edge of the habitat type.

In each plot all the groups of deer pellets (excrement) should be counted. A group of pellets will be considered those that have 20 or more pellets. It has been observed that generally deer deposit groups of pellets when they inhabit an area, while they deposit pellets in lines when traveling. If a group of pellets is on the edge of the plot it will be counted only if more than half of the mass lies within the plot. In case there are various groups close together, an attempt should be made to distinguish them by form, size, color, or dryness. If the pellet groups appear to come from the same species of animal, they should be counted as separate unless they are definitely connected by a line of pellets.

As groups of pellets are counted, they should be removed from the plot and eliminated. This helps "put the system to zero" thus facilitating the count in future samples which should be repeated every two months.

Obviously it is necessary to be certain from which animal species the pellets originate. In areas inhabited by several different species of ungulates which

produce pellets which look alike, it may not be possible to apply this method.

Once the counts are made, all the groups should combine their data in one data
sheet. Each of the plots must have a number in order to be registered on this
data sheet. In the space entitled **AVERAGE**, the average number of groups of
pellets per plot in each habitat should be calculated. This average allows
one to compare the relative use by deer among the various habitats sampled.

Once all of the sampling is completed the "affinity index" can be calculated
for each habitat. It is calculated in the following fashion:

Affinity index = (percentage of all the pellet groups counted which were found
in the habitat) divided by (percentage of total number of plots which were
located in the habitat type).

For example, if there had been a total of 500 groups of pellets counted, and
100 of those were in the open grassland; and there were 15 plots in the open
grassland as part of a total of 75 plots, then:

$$\text{Affinity index for open grassland} = \frac{(100 \times 100) / 500}{(15 \times 100) / 75} = 1$$

An affinity index value of 1 indicates that the deer do not have a preference
for the open grassland. If the index value were greater than 1, it would
indicate that this habitat is being used in a greater proportion than it
exists on the landscape, that is it indicates a preference. If the index were
less than 1, it would indicate that the habitat is used much less than its
availability would allow, that is that it is being "avoided" or is not
preferred by the animals.

Besides calculating the affinity index for each habitat over the period of the
course, the affinity index can be calculated for each habitat for each season
of the year. This can be important as it might allow to detect, for example,
that in winter one habitat is used more, while in summer the preference
changes to another habitat type.

It is also suggested that, if the transects are all in one zone, a map be made
in which the results are displayed. This will allow for a visual display of
the animals tendencies, and may help in the interpretation of the results in
terms of the topographic conditions, surrounding areas, spacings, etc.

The accompanying graphs, while based on purely hypothetical data, serve as
examples of the types of graphs that might be made. In Graph No. 1 (number of
groups of pellets vs. time) one can see both the tendencies of use over the
year in each habitat and the differences in use between habitats. In Graph
No. 2 (number of groups of pellets vs. distance from the habitat edge), one
sees that in the swamps and the open grassland there is more use near the
habitat edge than in the interior, and in the forest habitats there is more
use in the center than near the edges. One could argue that the forest is
used more as a refuge than as a feeding area, something that is accentuated in
the exotic forest which would be utilized even less as a feeding area than the

native forest.

(Insert graphs here)

* Graph 1 displays number of pellets vs. time. In this each
habitat type should be drawn in a different color.

* Graph 2 displays number of pellets vs. distance from the
nearest habitat edge.

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Supporting Document D4b

BIRD OBSERVATION

(Translated from original Spanish language document written by
Claudio Chehebars, Ecological Research Group,
National Park Administration, San Carlos de Bariloche, Argentina)

In this paper ideas are presented for conducting routine observations of birds
in the area, in order to obtain information about the annual cycle of birds,
their migration, their movements, and their relative densities.

The fundamental prerequisite for this work is to be able with certainty to
identify in the field the bird species of the region. It is important to
emphasize that when in doubt it is preferable not to register information that
might be false. One should remember that even the best observer sees only a
part of the world around him. What interests him is that which he has seen
and identified with certainty. To register the data on field sheets
facilitates the exercise allowing one to go over the list at the end of the
day, marking off those birds that have been observed.

One needs to define the area which will be observed. The ideal area is that
surrounding the work station, and those contiguous areas that are frequently
visited without extending more than one or two km.

Most of all one is interested in verifying the presence of a species in the
area. Also the number of individuals seen can be registered. It is
difficult, if not impossible, to remember the exact number of individuals of
each species. Nevertheless, the observer generally can remember if he has
seen one, two, three, five, various, more than 10, many, etc. It is essential
to be conservative in your estimates of numbers, registering only the number
seen with certainty. If you are certain of having seen 4 but believe that
there were actually more, write +4. Practice counting the number of
individuals in large flocks, and if possible compare your number with the
estimates of another person, as this will help to correct subjective
deviations. In those species which are distinct between the sexes, one can
register the sex seen as well as the presence of young.

If one wants to conduct a **systematic sample** of birds in an area (for example
rather than a routine sample of the station surroundings, but of an area
visited only one time), one can proceed with some of the following methods:

- Transect sample: This is used in open environments. One selects a
    straight line that crosses the different micro-environments if the zone
    is heterogeneous (if the zone is homogeneous a transect still can be
    used and oriented in any direction). The transect can be 1 km. long,
    and one can establish more than one. The transect is divided into
    intervals of 100 m. and the environment along each interval is recorded.
     One then walks along each interval recording the species, number of
    individuals, and perpendicular distance from the transect at which the
    individual was noted.

- Sampling by point count: One selects a line similar to that in the

previous system. The observer walks to a point and waits. After
waiting 2 or 3 minutes, all the birds seen or heard during the following
5 minutes are recorded by species, number, distance, and location (using
the directions of a clock, for example, putting north at 12 o'clock).
The points are spaced apart every 100 m. Maintaining a consistent 5
minute observation time is important in order to make the sampling
uniform, which then allows one to compare the results with those from
other areas. This method should be used in forests or other closed
environments.

Whenever possible, it is best to consult with a sampling specialist in order
to apply the most adequate method. With both of these methods it is best to
conduct one census at sunset and another early in the morning. The morning
census is the most important as it generally will yield 20 to 30% more
species.

The advantage of applying a systematic sample is that the results can then be
compared between different census in distinct places and times, or in the same
place at different times.

One should also dedicate extra time to observe special environments (rock
outcrops, caves, lakes, etc.) and use these casual observations to amplify the
species list. The use of binoculars is indispensable. Also it is important
to record all nest construction identified in the zone.

Seldom is it necessary to make collections in order to know the birds in a
zone. In any case a park warden normally would not utilize bird collection
methods. The use of mist nets generally is not justified except in the dense
tropical forest where the diversity is high, and it is often difficult to
identify by sight and sound. In most environments there are few species that
can not be identified by simple field techniques. The collection of specimens
should be done only in special circumstances with qualified ornithologists and
with orders from one's supervisor.

It is suggested that uniform criteria be used when classifying the abundance
of species, although always the best information is when the actual number of
individuals estimated is recorded. The following criteria are suggested for a
census of 3 hours in duration: A species is ABUNDANT when it is seen in large
numbers, whether in flocks or frequently seen individuals - the species is
numerically dominant in the locality. A species is COMMON if it is seen
frequently, but not in great numbers (species that are not numerically
dominant in the locality). A species is SCARCE if only between three and ten
individuals are seen in the transect. A species is RARE if only one or two
individuals are seen.

NOTE: While four condors seem like a lot, they ought to be classified as
SCARCE. A common mistake is to consider 8 large birds to be abundant while
the equal number of small birds are considered to be scarce.

A possible field practice, could involve different work groups conducting a
census - some using transects and some using point counts. In all cases these
will be replicated as people will work in groups of two, walking together but
taking their census independently. Later the results can be compared and
discussed in order to compare the individual differences in the observations.

Supporting Document D4c

REINTRODUCTIONS: SPECIES CONSERVATION AND RESTORATION

(Presented at IV World Congress on National Parks, 1992, by
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1. INTRODUCTION

The effects of fragmentation and degradation of protected habitats is
necessitating an interventionist approach to management. Techniques such as
reintroduction and restoration will become increasingly utilised .

Protected areas are subject to species movement on a vast scale. Some
invasions have been intentional such as the introduction of rabbits
(Oryetolagus cuniculus). Others such as the sweep of rinderpest into Africa or
the marine Lessepsian migrations via the Suez Canal have been the
unintentional outcome of man's activities. Accordingly, in some highly
modified areas of the world, such as the Netherlands the discipline of
phyto-geography has been declared redundant. Such movements despite all
efforts will continue and will be difficult to predict; the arrival of screw
worm in Libya is a case in point .

The latest episode in the history of anthropogenic migrations is the movement
of endangered taxa between captive situations, in zoos and botanic gardens,
and wild habitats. The majority of anthropogenic migrations are associated
with economically inspired activities; species reintroductions in contrast are
a reaction to the increasing spate of extinctions. The scale of the problem is
enormous, we cannot hope to undertake the required numbers of reintroductions.

The IVth world Congress on National Parks and Protected Areas would appear to
be an appropriate venue to review reintroduction, in particular its value as a
tool in reinstating degraded ecosystems. A number of guidelines have been
developed, notably by the IUCN (1987), the ICBP and WWT (Black, 1991), the
Botanic Gardens Conservation International (in preparation) and
Reintroductions Specialist Group of the S.S.C. (in preparation). The workshop
at this meeting should use the above guidelines to draft a revised IUCN
position statement.

2. DEFINITIONS

Although debate will continue on definitions, reintroductions have been
defined as follows:

Reintroduction:

"the deliberate release of individuals of a species into an area from which it
has been lost, with the aim of establishing a self sustaining and viable
population."

Restocking

"the release of individuals to reinforce an existing population with the aim of increasing population viability."

Using the above definition, introduction can be defined as follows:

Introduction:

"the deliberate release of individuals of a species into an area from which it is not native, with the aim of establishing a self sustaining and viable population."

Howell and Jordan (1991) define restoration at different levels as follows:

Complete restoration:

"the establishment of a group of species in abundances and proportions similar to those in natural communities such that natural processes occur."

Functional restorations:

"the use of community like groupings of plants to perform general processes similar to those characteristic of the natural communities, e.g nutrient cycles, or erosion control. In these plantings close adherence to the structure and composition of natural communities may not be important: these may be simplifications or may emphasize some species at the expense of others. ... To be considered restorations .... the plantings must be made up of native species in diverse groupings. We would consider functional plantings of non-natives or low diversity to be "rehabilitation" or "revegetation" efforts but not "restorations""

Experimental restorations:

"the establishment of the visual or emotional essence of natural communities, often with a simplified array of native species." This term can be equated with the amenity or landscape design approach.

Underpinning these definitions is the following statement:

"The maintenance of natural ecosystems and biological processes must remain the overriding priority in conservation. Reintroduction/restocking is a useful tool only when either a population has been lost or reduced or no other more effective conservation measures are likely to restore a population viability. Such a programme (i.e. reintroduction) must always be part of the wider ecological and socio-economic aspects of ecosystem protection and restoration."

3. <u>WHY SHOULD WE UNDERTAKE REINTRODUCTIONS?</u>

Recent reviews of plant and animal projects illustrate the wide range of projects and review the reasons for undertaking such work. Species reintroduction and habitat restoration are often viewed as two distinct processes; reintroduction operates at the species level, whilst habitat restoration operates on a coarser scale and involves reinstating large scale

habitat components to a recognised archetype. Both operations serve the same fundamental functions, namely the restoration of both biological diversity and ecological function. As such both operations are a method for linking species level conservation with that of ecosystem level conservation. Noss & Harris (1986) illustrate this relationship with the example of the Florida Panther, _Felis concolor coryi_.

The proposed reintroduction will require the creation of a linked network between existing and proposed reserves in the Florida Panhandle, thus promoting the conservation of the panther and consolidating the status of protected habitats.

Reintroductions are expensive, the cost of one surviving reintroduced Golden Lion Tamarin (_Leontosithecus rosalia_) is estimated at approximately $22,000. A provisional cost of reintroducing red wolf (_Canis rufus gregorvi_) is quoted at $11,250 per animal. Such expensive operations have to be justified. It is intuitively recognised as worthwhile to reintroduce an extinct population, it appeals to the emotions and is the ultimate in publicity for the ex situ agencies! In the long term it is also presumably cost effective to re-introduce captive populations, moving them from an intensively managed facility with high capital investment to a self sustaining natural environment. This implies a greater financial responsibility for in situ management by the ex situ agencies.

The vast majority of re-introductions are undertaken to promote the conservation of an individual species. The protected area manager will recognise the arguments of the ex situ agencies who are amongst the main promoters of reintroduction programmes. But what does the protected area gain? If the conservation of a natural ecosystem is the aim of the protected area, then presumably the more complete the representation of the original biota the better, provided this is undertaken within the physical and social constraints of the area.

The reintroduction of species will not only contribute towards the restoration of the area's original biodiversity, it can also restore habitat diversity to the benefit of other species. In India the decline of the Swamp Deer _Cervus duvuaceli_ has been linked to the extinction of "bull dozer" herbivores such as the elephant _Elepas maximus_ and rhino _Rhinoceros unicornis_. Such bulk feeders remove coarse vegetation and encourage the finer species favoured by the deer. Through reintroducing rhino to protected areas where swamp deer occur the status of both species is aided and original landscape diversity regained. There are plans to reintroduce the beaver _Castor fiber_ to Czechoslovakia for the purpose of restoring Czech wetlands.

The loss of certain species can initiate a series of extinctions, the reinstatement of such keystone species is an obvious priority. On Juan Fernandez (Chile) the rare _Sophora fernandeziana_ is planted both to bolster the species' low population and to support the dependent populations of the endemic hummingbird _Sephanoides fernandensis_. The extirpation of the elephant _Loxodonta africana_ in West African forests is resulting in changes in forest composition. The loss of primates may initiate a decline in certain fruit species.

It is proposed that the extinction of large predators on Barro Colorado Island, Panama, has led to an increase in the numbers of vertebrate seed

predators, thus influencing tree regeneration. Simons et al (1990) report the reintroduction of red wolf to Horn Island off the coast of Mississippi has resulted in a reduction in the unnaturally high numbers of raccoon and nutrias. The reintroduction of the Yellow crowned night heron (Nycticorax violaceus) to Nonsuch Island, Bermuda, resulted in the population of the land crab Gecarcinus lateralis returning to a state of balance.

Some reintroductions will possess political or social value. The reintroduction of the grass Zizania aguatica, an ancient and valued wild food, to sites in Northern Wisconsin was preceded by Native American ritual. Nabhan (1991) refers to the "restorying" of wild areas, reinstating their cultural value and initiating an associated cultural revival.

The establishment of a new population may also serve to divert potentially damaging public attention away from a wild population. This strategy has been employed in Britain with terrestrial orchids and alpine gentians. With plants a restocking may be required because populations are reduced to a single sex, for instance 5 of the 13 known populations of the New Zealand native Fuchsia procumbens are either male or female.

The translocation of stock to prevent inbreeding has generated debate. Some authors argue that human population pressures and stochastic/demographic influences are a more urgent concern. Harcourt (1991) illustrates this with the example of the Virunga population of the mountain gorilla Gorilla gorilla, even with an effective breeding population of only 50 individuals the genetic heterogeneity will be reduced by 10 per cent during the next 100 years, at the same time the local human population will, at current rates of increase, have quadrupled.

Despite concerns of this nature it is apparent that the increased isolation of protected areas will necessitate some degree of artificial gene flow in the future. At what point is the genetic identity of a subspecies or geographical race sacrificed to maintain the viability of the population and the species as a whole?

Reintroduction will be one method of reinstating locally extirpated fauna where taxa isolation has prevented immigration. Sedentary organisms such as some butterflies have been the subject of such reintroductions. Some butterflies appear are poor colonisers, for example some European species will lie prevented from colonizing by a barrier as narrow as 50 to 100 m of inhospitable vegetation.

4 SHOULD THE REINTRODUCTION BE UNDERTAKEN?

A feasibility study should be undertaken as the first essential phase before undertaking such a costly exercise. The practical, demographic, genetic and legislative criteria for this have been reviewed by Black (1991), Kleiman (1989) and Stanley Price (1991).

The selection of species for reintroduction will often be dictated by opportunity. The ex situ agencies are holding more extinct and endangered taxa than can be adopted for reintroduction. Should geographical areas of priority be identified to allow coordination between ex situ agencies, for instance both zoos and botanic gardens are involved in reintroduction projects in the Mascarenes.

In retrospect it has proved apparent that some species have the potential to recover by natural means once the factors causing the original decline are removed. An example is the Peregrine Falcon (Falco peregrinus). In the USA a large scale reintroduction project was undertaken, and populations in Europe have recovered without intervention. A British rarity thought extinct Senecio paludosus reappeared when traditional land management was restored. With some species the very small populations, or very slow growth of captive stocks will rule out reintroduction in the immediate future. For a number of plant species now reduced to single sex or effectively sterile clones, for instance Encephalartos woodii or Ramosmania heterophylla, reintroduction with the aim of establishing a viable reproducing population is clearly not an option.

5. THE MECHANISMS OF REINTRODUCTION

The mechanisms for reintroduction are under-researched. In particular the lack of long term monitoring for many projects will hinder the accumulation of expertise. The mechanics of plant reintroduction have been particularly poorly studied and documented. At present too many plant reintroductions are undertaken in an ad hoc manner with too little emphasis given to population viability site management and monitoring. This is due in part to the reactive nature of rare plant rescue, reacting in response to land development. In a sobering review of rare plant rescues in California (Hall 1987) found the majority of the projects were unsuccessful in the short term.

In contrast to animal projects the utilisation of dormant propagules in situ has potential for salvaging extinct local populations. The Peter's Mountain Mallow, Iliamna corei, has been salvaged from the soil seed bank . Experimental work at the University of Edinburgh is investigating the use of soil spore banks for salvaging pteridophyte populations. Plant populations are relatively easy and cheap to sample; propagules and pollen can be stored, and through conventional and in vitro propagation plants can be rapidly and easily multiplied through both sexual and clonal methods.

The utilization of botanic garden stock raises the same questions applied to the use of captive animal stocks for reintroductions. The health implications of using ex situ stock especially with regard to viral, bacterial and fungal pathogens, should be seriously examined. In particular the need to develop accurate tests for plant viruses and fungal pathogens are required There are logistical difficulties as the ex situ facilities holding the largest collections of endangered species are usually remote from the original habitats.

All the specimens of the extinct Easter Island tree, Sophora toromiro, are held scattered in a number of Chilean and European collections. There is no coordinated attempt to review or manage the stocks in cultivation. There is also a risk that closely allied species cultivated as S. toromiro could be unwittingly utilised for reintroduction. The lack of internationally coordinated Action Plans for endangered plants needs urgent review.

6 WHERE SHOULD REINTRODUCTIONS TAKE PLACE?

For most of the animals recommended for reintroduction the extinction pressures have operated at the species level, rather than at the habitat

level. Accordingly substantial areas of intact habitat remain within the taxa's former range. For example destruction of the Partula snail's habitat on Moorea has been minimal. The extinctions are due solely to the introduction of a predatory snail.

The availability of suitable habitat is of critical importance, some relictual taxa such as the Tassili Cypress Cupressus dupreziana are no longer regenerating in the wild, probably due to climate change. While the site is subject to human interference and is clearly not suitable for regeneration, reintroduction should not be considered. Disease problems may well prevent a reintroduction, the conifer Torreya nucifera is threatened by fungal pathogens in its native area of the Florida Panhandle, whilst this threat continues reintroduction may not be a feasible option.

The restricted geographical range of a species may be an artifact of habitat destruction, the selection of sites for such anthropogenic endemics (sensu Gentry 1986), must depend upon an imperfect record of past distribution. Cronk (1989) using relictual distributions, historical records and pollen records has employed multivariate analysis to chart hypothetical plant distributions and vegetation associations on the island of St Helena. It could be argued that the efforts to reintroduce a viable population of the Hawaiian Goose (Branta sandiwicensis) will be hampered until the bird's original lowland habitat, is free from introduced predators.

7 REINTRODUCTIONS AND INTRODUCTIONS

Following the eradication of invasive elements the degree of recovery may remove the need to intervene. The control of rabbit on Round Island (Mauritius) has allowed recovery of an aged and non-regenerative population of Latania loddigesii. The removal of goats from an Hawaiian island resulted in the appearance of an unrecorded native vine Canavalia kauensis. On Little Barrier Island, New Zealand, the removal of feral cats resulted in a six fold increase in the population of stitchbird (Natiomystis cincta) with stock subsequently used for reintroduction to other islands.

Clearly any reintroduction programmes located where the quality of the habitat has been degraded should be preceded by habitat restoration. This may be a relatively simple operation of reducing grazing pressure or it may involve a full scale park restoration. Although recovery may produce a vegetation visually similar to the original, it can be different in composition. There can be an increase in invasives and rarities may fail to regenerate. On Round Island although Latania has started to regenerate other palms such as Hyophorbe lagenicaulis and Dictyosperma album will require artificial propagation and reintroduction to ensure population growth.

The effects of introduced invasives are well catalogued. Some of the most pernicious threats, that will hinder reintroductions, are highly specific pathogens and predators that will be difficult, if not impossible, to control, such as Avian Malaria in Hawaii. These represent a fundamental challenge to the protected area manager, for instance at the moment there is no known way to eradicate the predatory snail Eugiandina from Moorea. Other examples include Phytophthora cinnamomi in Australia and New Zealand, brown tree snake Boiga irregularis on Guam, and Balsam Woolly Aphid on Abies fraseri.

8. INTRODUCTIONS AS A CONSERVATION TOOL

The IUCN Position Statement (1987) states that no alien species should be deliberately introduced into any habitat "not perceptibly altered by man". This was drafted in response to the catastrophic effects exotic introductions have had on oceanic islands, for example rabbits on Laysan Island eliminated 26 plant species from the island between 1903 and 1923; and freshwater bodies, for example the introduced Nile Perch (Lates niloticus) devastating the endemic fish fauna of Lake Victoria. The Position Statement does not take into account situations where an introduction is proposed to further the conservation of a species.

The Guam Rail (Rallus owstoni) faces imminent extinction on Guam due to predation from the introduced brown tree snake. The Smithsonian Institution's National Zoological Park has introduced the species to the nearby Rota Island, an island containing suitable habitat and no brown tree snakes. Similar strategies have been proposed for the Rodriguez fruit bat Pteropus rodricensis; Mauritius parakeet, Psittacula echo and the Manipur brow antlered deer (Cervus eldi eldi)

Similar operations have been undertaken with plants as an insurance against the extinction of single site endemics, and to deflect public interest from vulnerable wild populations. Examples of single site endemics introduced to second site include Pediocactus knowltonti (Cactaceae) and Antirrhinum charidemii (Scrophulariaceae) in Andalucia, Spain.

9. THE RESTORATION OF BIOTAS

Easter Island (Isla de Pascua) in the southwestern Pacific Ocean was formerly forested, the main species being Sophora toromiro, an extinct palm Paschalococos disperta and Triumfetta semitriloba. Clearance was complete by about 500 yr BP. Associated with this was the extinction of the endemic Achatinellid snails and the possible collapse of the island's indigenous culture. Sophora toromiro survived until the middle of this century when seed was collected from the last specimen in 1955/56, with reintroduction trials undertaken by the Chilean authorities (CONAF). Research has shown the extinct palm to be closely related to the extant Jubaea chilensis. Should this species native to Chile be introduced as a substitute for the related but extinct palm?

The time since extinction is important; at what point in time does a reintroduction become an exercise in archaeo-zoology? Similarly where the native sub-species have become extinct, what should be used for a reintroduction? Can the introduction of a non-native sub-species or sub-specific hybrid be sanctioned? The scimitar horned oryx (Oryx dammah) reintroduced at Bou Hedmar National Park, Tunisia, originate from a variety of provenances and are not the same population as the last individual killed in Tunisia in 1906. In addition to the oryx the addax (Addax nasomaculatus) has been reintroduced with plans for the dorcas gazelle (Gazella dorcas) and ostrich (Struthio camelus). Some taxa are no longer available for reintroduction, such as the north African ostrich, north African wild ass (Equus asinus). The North African cheetah (Acinonyx jubatus) which survived in North Africa until 1930 and the bubal hartebeest (Alcephalus busephalus) which became extinct in North Africa between 1930 and 1950. Should substitutes

of another subspecies or species be selected to re-assemble the original
biota?

The majority of such exercises for practical and political reasons will take
place on islands. Examples include the restoration of Nonsuch Island, Bermuda,
various islands in New Zealand. Due to the need to coordinate restoration,
plant and animal reintroduction, it is important that more multi-disciplinary
teams act to effectively conserve island ecosystems such as those of the
Mascarenes. Such a plan is being developed for St Helena, linking botanical
and zoological conservation, by the NGO Conservation Forum for United Kingdom
Dependent Territories.

10. <u>DISCUSSION</u>

The apparently static vegetation communities that define so many protected
areas, are in fact highly dynamic systems that are subject to comparatively
rapid change. Walker (1989) has shown in Chobe National Park, Botswana, the
present co-occurrence of numerous elephant with mature Acacia woodland
represents a transient and non-sustainable situation. How many other protected
areas will change in the future, accordingly the carrying capacity of the
areas will change. Should we therefore be adopting a less site specific
attitude to reintroductions and adopt one that takes into account the future
fluctuations in a reserves carrying capacity and adopt a more flexible habitat
orientated approach encouraging reintroduction within the taxa's known
geographical and climatological range? This would result in an increase in the
number of strict introductions, i.e. release into sites where the taxa has not
been recorded, but within the known distribution of the taxa. Most modern
plant communities are transitory assemblages that have fluctuated in
abundance, distribution and association in response to climatic change. This
pattern of fluctuation may accelerate in response to changes in atmospheric
CO_2 levels; some authorities see a future scenario of large scale species
introductions in response to global warming (Davis, 1989).

To be most effective should we be thinking less about the reintroduction of a
single species and more about using reintroduction as an integrating
cross-disciplinary mechanism to promote habitat restoration and to consolidate
protected area viability? An increasing number of reintroductions will be
preceded by some degree of habitat restoration; by its very nature
reintroduction projects will foster cross-disciplinary linkage. Is the
re-establishment of extirpated and degraded faunal and floral associations the
chasing of a conservationist's Arcadian fantasy? Or is it a pragmatic response
to present and future challenges?

Lesson 5

WATERSHED MANAGEMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Describe the importance of the PA in the protection of watersheds.

2.Describe the methods used for watershed management and be able to apply them
    in their own PA where appropriate.

REFERENCES:

FAO, 1976; FAO, 1977; FAO, 1978; Lessons D9 and B11: Supporting Documents 5a
and 5b, and B11a; Kunkle, Johnson and Flora, 1987.

PRESENTATION:

1.1Explain what is a watershed: the land surface drained by a major river and
    its tributaries. Explain the problem of determining what is a watershed
    and what is a sub-watershed. As each stream has its own drainage
    system, it can be considered a watershed; it is simply a question of
    scale. The watershed of a stream or river includes all of its
    tributaries, but it does not include the larger waterway into which it
    drains.

1.2Ask the participants to speak of their own PA and to indicate if they are
    important as watersheds. Give examples of a PA that is an important
    producer of water for a city or region.

1.3Explain those factors which influence the quantity and quality of water
    that is produced by a watershed:

        -       area of land surface
        -       slope of land surface
        -       length of waterways
        -       slope of waterways
        -       soil types
        -       vegetative cover: type and quantity
        -       human activities
        -       type of underlying rock
        -quantity and type of precipitation (and its distribution by types of
            storm events).

1.4Together with the participants review the supporting document D5a. Ask if
    they can think of other problems and mitigating measures which they are
    aware of, especially those specific to the PAs they represent or
    surrounding lands.

2.1Explain that watershed management is basically the management of soils and

        the vegetation that grows on them, to meet determined objectives for
        water production.

2.2 Explain reasons for managing watersheds and give examples:

        - production of potable water
        - production of irrigation water
        - production of water for the generation of electricity
        - sedimentation control
        - protection of water impoundments
        - reduction in the severity of floods and droughts
        - combinations of some or all of the above.

2.3 Present some methods used in watershed management, and describe the impact
        that these methods can have in different situations.

-vegetation management: reforestation, replacing one type of vegetation with
            another (some species consume more water than others, while some
            are better than others in erosion control).

        -management of waterways: channelization, strengthening of stream
            channel structures, etc.

        -construction of physical works: dikes, terraces, dams.

        -control of human activity: grazing, agriculture, structures (roads,
            trails, buildings).

        -passive protection by doing nothing (allowing the area to revegetate
            naturally).

2.4 Describe the most commonly used methods of watershed management in PA.
        Some PA were created especially to protect a specific watershed.

ACTIVITIES:

1. On a topographic map, have the participants identify a nearby watershed.
Make a field trip to observe and detail all the factors that influence, in a
positive or negative manner, the quantity and quality of water that is
produced by the watershed.

2. Divide the class into groups and have each group develop a list of the
methods they would utilize to improve the situation. If the watershed is
located in a PA, be certain that the needs of the people who use the water are
considered in the development of the strategy for watershed improvement.

Supporting Document D5a

COMMON WATERSHED PROBLEMS IN RURAL AND FORESTED AREAS, AND PROTECTION MEASURES THAT ARE APPLIED

(Adapted from Kunkle and Stiffler, 1985:

COMMON WATERSHED PROBLEMS

Highlighted below are some of the most common watershed problems found in rural and wildland areas.

1. Overgrazing by domestic animals (cattle, goats, etc.) is a major problem in many countries, inducing vegetative changes and reducing infiltration so that erosion may result. Along coasts, grazing may create sand dunes, which blow inland.

2. Road and logging trail construction in many places is the principal source of sediment, especially if roads have no maintenance. Logging by heavy tractors downhill is especially disruptive because runoff water can concentrate in the tractor trails and cause gullies.

3. Shifting cultivation, where forests are cleared to grow crops for a few years, frequently leads either to erosion or conversion to useless vegetation such as Imperata, possibly also increasing fire hazards.

4. Fires, the burning of protective vegetation, can leave soils exposed to water or wind erosion.

5. Plantations of exotic trees, (pines, eucalypts, etc.) may use more water than some native vegetation and even increase erosion; for instance, erosion may occur under teak.

6. Agricultural use of lands too steep to be suitable and safe for farming can cause landslides, gullies, and loss of top soil. Agricultural use of coastal areas or arid sites can lead to wind erosion. Poorly designed terraces can actually cause erosion.

7. Improper agricultural practices frequently lead to soil loss. For example, desire by farmers to keep soils cultivated bare (such as orchards) can cause heavy erosion by tropical rains.

8. Removal of windbreak trees along coasts or windy areas can cause wind "blowout" (wind erosion). Removal of existing windbreaks (trees along fields) can lead to renewal of wind erosion.

9. Overcutting of fodder or fuelwood trees eventually will kill the trees, leaving watersheds exposed to erosional forces.

10. Use of pesticides, fertilizers, and other chemicals by agriculture can pollute water, kill fish or pose risks to water supplies.

11. <u>Mineral extraction (mining) and oil development (drilling),</u> in steep lands can lead to erosion or to water pollution by toxic metals and other chemicals.

12. <u>Development of dams</u> without proper planning may lead to disease problems (for example, increase of <u>Schistosomiasis</u>, malaria, or other water related diseases).

THE ENVIRONMENTAL IMPACTS

The above mentioned agricultural practices can lead to environmental impacts that include the following:

1. <u>Sedimentation of reservoirs</u>, siltation of irrigation works, turbidity (sediment) in water supplies. Sediment and debris may cause localized flooding.

2. <u>More droughty conditions</u> (more "flashy" streams) can occur where watershed impacts have greatly reduced infiltration rates, thereby interfering with ground water storage processes.

3. <u>Land productivity itself is lost</u> as soils and ecosystems are degraded or lost.

4. <u>Species diversity</u> can be reduced and important plant and animals species lost, such as traditional medicinal plants found growing in the forests or wild animals used as a food supply by some cultures. Tourism may also decline as the species disappear.

5. <u>Fuel or fodder shortages</u> will be worse as these tree species are eliminated through overuse.

6. <u>Pollution by agricultural or forestry chemicals</u> can threaten human and animal health, and pollution from mining activities can destroy fisheries downstream.

7. <u>Debris and landslides from upstream locations can cause localized flooding</u>, block stream channels, and flood out villages or farms downstream.

MEASURES FOR WATERSHED PROTECTION AND RESTORATION

Many conservation measures can be used to protect or help rehabilitate watersheds. Below we list and briefly describe a few of these measures that are usually appropriate:

1. <u>Use proper guidelines for logging</u>. Plan the logging. Design the projects. Do not tractor logs downhill on very steep watersheds. Leave protective "buffer strips" of trees along streams and keep machinery out of streams. Equipment and practices that will be less harmful to soils, such as cable

logging, are preferred for conservation.

2. <u>Plan and design roads</u>. Road design beforehand should hold down the total mileage of roads, help locate roads so as to protect streams, and be more cost effective. Most important is to provide road drainage and maintenance. Old roads that are no longer in use need to be vegetated to avoid erosion.

3. <u>Encourage using land according to its capability</u>. Carry out some land-use planning. This may include retaining protective forests, restricting cultivation to certain slopes and soils (for example, no cultivation at over 50% slope) and restricting grazing to below certain slopes (no grazing on slopes over 75%). Planning will include identification of high risk areas to leave as protective zones.

4. <u>Apply agricultural conservation practices</u> such as terracing, contour plowing, "minimum tillage", etc., especially in hilly or mountainous areas where eroding slopes need special attention.

5. <u>Afforestation</u> of degraded lands (such as overgrazed pastures) can help protect catchments. Nitrogen-fixing trees are useful for degraded lands. Brushy lands of no value can be converted to trees.

6. <u>Agroforestry</u>, including growing trees with crops (for example, trees for wood supply mixed with coffee, or use of nitrogen-fixing trees in pastures) can help protect soils. Planting bands or strips of trees can provide erosion protection along hillsides. Introducing shifting cultivators into agroforestry programs is desirable.

7. <u>"Underplanting" of erosion-preventing vegetation</u> under trees (for example planting legumes under teak), can help reduce erosion from new tree plantations.

8. <u>Windbreaks (or shelterbelts)</u> can save soils from wind erosion, retain moisture of farm fields, and provide wood, shade, honey production or other benefits for farmers.

9. <u>"Social forestry"</u> and "village-level forestry" are names given to some forestry extension work. Foresters give important service by helping farmers plant trees for shade, fodder, fruit, nuts, local wood lots, etc., thereby helping preserve soils and taking the pressure off public forests. Economic incentives are necessarily a key part of social forestry programs.

10. <u>Coastal dune areas or other areas suffering from "desertification" can be stabilized</u> through routine techniques of sand dune fixation, often coupled with windbreaks.

11. <u>Stall feeding</u> (where animals stay in stalls and feed is cut and brought to them) is a good way to protect against pasture or range erosion. Other livestock control measures that follow range "carrying capacities" are essential.

12. <u>Some chemical-mechanical conservation techniques</u> can be useful, such as spraying "mulching" on road cuts (a mix of asphalt, straw, seeds) to grow

vegetation there. "Wattling" of bare slope (use of sticks in rows to hold back erosion) and various types of nets or covers can be used.

13. <u>Streambank and shoreline protection</u> can include rock (riprap), "gabion" works, vegetation planted at water's edge, and various mechanical structures. <u>Torrent control</u> measures (more permanent structures to control steep channels) may be appropriate in certain cases. Proper protective areas or "buffer strips" along streams can protect channel areas.

14. <u>Gullies</u> can be corrected using rock or brush check dams, usually in conjunction with vegetative measures.

15. In dry or even seasonally dry regions, <u>"runoff harvesting"</u> techniques (catching and concentrating runoff) can be effective in improving land use and enabling trees to grow in drier areas.

16. <u>Better information, training, and extension work is vital</u>, including the dissemination of guidelines on how to plant and care for trees, local training on conservation, and environmental education.

17. <u>Institution building</u> may be needed, which may entail development of extension services for conservation or inclusion of a new division in an existing agricultural extension program.

18. <u>Control fires in forests and grasslands</u>. This may include controlled burns or "prescribed fires", using fire as a management tool.

19. <u>Control mining</u> in watersheds. For example, surface mines can include both protection and reclamation requirements.

20. <u>Establishment of national or local conservation policies</u> and economic incentives is a basic need in encouraging soil protection, afforestation, livestock control, and other environmental protection measures.

Supporting Document D5b

PROTECTED AREAS AND HYDROLOGICAL RELATIONSHIPS

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

Water resources are so vital to human life, agriculture and industry that their proper management is of fundamental concern to society. In the tropics, where almost the only way to cope with the fast growth of population is to expand the area under agriculture and increase the productivity of existing croplands, many of the day-to-day problems arise from the fact that at any one time there is usually too much or too little water on the land. The most common means employed to achieve better control of water flow are the development of irrigation schemes and improved drainage. Colossal sums of money are invested in water canals and dams to enhance water supplies but these investments can be jeopardised easily by poor protection of the water catchments on which they depend.

Watershed protection has, therefore, been used to justify many valuable reserves which otherwise might not have been established, and irrigation agencies can make powerful potential allies for protected areas which protect watersheds. For instance, the magnificent Guatopo National Park in Venezuela (Example 5.2), is justified by its contribution to the welfare of the nation in providing the water for Caracas, the capital. The Canaima National Park, also in Venezuela, safeguards a catchment feeding hydroelectric developments which Garcia (1984) estimates will save the nation $US 4.3 billion per annum in fossil fuel oils. The watershed protection function of Canaima is so important that the Venezuelan Government recently tripled the size of the park to 3 million ha to enhance its effectiveness.

In many parts of the world, the total costs of establishing and managing reserves which protect catchment areas can be met and justified as part of the hydrological investment. MacKinnon (1983) examined the condition of the water catchments of 11 irrigation projects in Indonesia for which development loans were being requested from the World Bank. The condition of the catchments varied from an almost pristine state to areas of heavy disturbance, due to deforestation, logging or casual settlements. Even where hydrological protection forests existed, these were poorly protected by the Forestry Department as the areas were considered of low priority and provided with inadequate budgets. By using standard costings for the development of proper boundaries, establishment of guardposts, recruitment of guards and purchase of basic equipment, plus the costs of reforestation where necessary, and even resettlement of families in some cases, the costs of providing adequate protection for the catchments were estimated. These ranged from less than 1 per cent of the development costs of the individual irrigation project in cases where the catchment was more or less intact to 5 per cent where extensive reforestation was needed and a maximum of about 10 per cent of development costs in cases where resettlement and reforestation were required. Overall these costs were trivial compared to the estimated 30 per cent to 40 per cent drop in efficiency of the irrigation systems expected if catchments were not properly safeguarded.

It is evident that the costs for protecting watersheds should be an

automatic component of irrigation loan requests and that the protected area management authority should provide the necessary management paid for out of the irrigation budgets. In one case in Indonesia, the Dumoga Bone National Park, this has already been done in collaboration with the World Bank, helping to establish one of the country's model protected areas. Protected areas can also be threatened by development projects outside their boundaries which cause changes in hydrological regimes. Upstream catchments may need to be protected to prevent flooding, siltation or pollution of a protected area. Abnormal depositions of sediments may influence key ecosystems or communities in reserves. Such pollution can be a particular threat to coastal systems such as coral reefs, which are sensitive to the quality of effluent streams.

Hydrological projects may also cause changes in the water table which may threaten the integrity of natural ecosystems in protected areas. For instance, a planned dam and hydroelectric plant in Silent Valley, India, would have flooded a large area of unique habitat in that reserve. The Manu National Park in Peru is threatened by the planned construction of a canal which will cause major changes in the water regime of the area. Modification of river flow in the Zambesi River below the Kariba Dam has resulted in accelerated bank erosion and the river has become wider and shallower in the Mana Pools National Park of Zimbabwe.

Clearly it is vital that the protected area management authority has close working relations with the water resources agencies to avert such threats where possible and to ensure that safeguards are included in major projects to protect the hydrological regimes of the affected protected area.

Example 5.2 The Guatopo National Park, Venezuela, as an example of a protected catchment serving urban water needs

Caracas, the capital of Venezuela, is a modern city of over 7,000,000 people. A substantial proportion of its water emanates from the Guatopo National Park, one of 10 national parks in Venezuela which serve the country through the conservation of important river catchment areas.

The park, which covers 100,000 ha of magnificent rain forest, is situated in attractive mountainous country less than two hours drive from the city. It was established and depopulated at considerable expense in compensation ($US 16.4 million) in 1958 in order to protect the catchment areas serving four dam sites. In 1982 the park supplied the metropolitan area with 3500 litres of very high quality water per second and this is expected to rise to 20,000 litres per second by 1985.

This example provides an especially useful illustration of a very tangible and quantifiable value of a national park. This is in addition to its very considerable natural values and its use as a site for visitor recreation close to a large urban complex.

Lesson 6

MANAGEMENT OF AQUATIC AND COASTAL RESOURCES

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Demonstrate understanding of: (1) aquatic and coastal resources, (2) the
      conflicts and controversies surrounding their use, (3) the methods that
      a PA can utilize to optimize the management of these resources, and (4)
      the consequences of not protecting these resources.

REFERENCES:

Salm and Clark, 1984; Parks magazine, Vol. 8, no. 3, "The Great Barrier
Reef..."; Vol. 7, no. 2, (several articles); Vol. 8, no. 1 (Tropical Coastal
Areas); Special Issue on "Parks and Pollution", V.1, N.2, 1990; Kelleher and
Kenchington, 1992; Kenchington, 1990; Snedaker and Getter, 1985; Sorensen,
1984; MacKinnon, 1986; Davis, 1993; Dugan, 1993; Norse, 1993; D5a.

PRESENTATION:

1.1Explain the differences between the management of terrestrial resources of
      the coastal transition zone, and of marine resources. These are very
      different environments and many of their resources are not fixed in one
      area or one PA: for example, fish can migrate over long distances, and
      many species utilize different habitats at different stages of their
      life cycle. Also there is an added problem of control (one can not see
      well what occurs under the water) and of access (boats can enter at any
      time) as well as the difficulty of conducting research in a marine
      environment. It is particularly difficult to establish manageable
      boundaries for a PA in these environments. Also in coastal areas, there
      usually exists the problem of dense human inhabitation and intensive
      resource use by communities that depend upon the natural resources at
      hand.

1.2Explain which are the different marine and coastal environments and how
      they are physically and ecologically related:

      - beaches
      - sand dunes
      - cliffs
      - mangroves
      - swamps
      - estuaries
      - lakes
      - coastal waters
      - continental shelf
      - deepsea waters
      - islands

- reefs

1.3 Identify critical habitats for important species: mangroves, beaches, coral reefs, zones with large quantities of algae. How can these sites be located and protected?

1.4 The management of a PA which contains all or some of these environments must recognize that each environment is a link in an ecological chain; all are interrelated and the management of one will influence the others. Some examples should be given: (1) fish whose larvae stage live in mangroves, juveniles in coastal waters, and other stages in deepsea waters; (2) shrimp which feed a short distance from the coast on organic matter from mangroves.

1.5 Which are the resources to be managed?

- water
- mineral resources (beach, corals)
- fish
- mollusks
- birds (sometimes colonies of birds)
- other marine and coastal lifeforms (algae, plankton)
- landscapes
- vegetation (mangroves and others)

Explain that in reality these resources are not usually managed directly, but rather the human activities that affect them are managed.

1.6 In a PA created to include these environments, the focus of management is on the resolution of resource use conflict. Normally these environments are already being utilized for a variety of reasons: commercial fishing, sport fishing, coral or sand extraction, tourism, water skiing, diving, boat traffic, dumping of garbage, waste and chemical products, housing, industry, etc.

These are areas of great conflict. Explain why these uses are in conflict. Also explain the institutional interests involved in these areas: institute of fisheries, of marine commercialism, of tourism, military, etc. Generally there are serious jurisdictional problems in these areas.

1.7 How can the management of a PA be optimized under these conditions? Solicit the opinions of the participants concerning important management tools:

-research: What are the species and other resources found in the area and what is their status?
-     management plan
-adequate zoning which seeks to delimit the different use zones, thus reducing conflicts in use (and perhaps eliminating or controlling some uses)
-     rules and regulations concerning resource use
-institutional coordination to resolve jurisdictional problems and to

arrive at an integrated management of the PA (role of coastal
management zones)
-education: it is essential that the PA organize a program of education
and environmental interpretation for the residents of the zone and
other PA users in order to convince them, first that the PA is
essential to insure the socio-economic well-being in the long run,
and second that the established rules are necessary to resolve
conflicts concerning the use of the area and to stabilize the
natural resource base. Discuss the best means for involving the
community in this effort.
-participation by local interest groups in deciding how resources should
be managed.

1.8 Explain the most important considerations to observe when managing these
environments: (see Salm and Clark, 1984)

- mangroves and swamps
- coral reefs
- lakes and estuaries
- open sea
- small islands

1.9 Select a case study of a coastal and marine PA and explain in detail how it
was formed and how it hopes to arrive at an integrated management of its
resources. Discuss the relevance of involving the community, the PA
personnel, the budget, and law enforcement.

ACTIVITIES:

1. Present a hypothetical case (or a real in-county example) related to the
management of a coastal zone and ask the participants to describe how they
would manage the situation.

2. Ask the participants to explain if zones exist in their PA similar to those
described in this lesson. They should explain the importance that these zones
have in their respective PA and what type of management is pursued in them.

Supporting Document D6a

<u>SELECTION OF MARINE AREAS</u>

(Adapted from Kelleher and Kenchington, 1992)

<u>Introduction</u>

Defining the location and extent of marine areas for inclusion in MPA's
(Marine Protected Areas) involves a different emphasis on considerations than
for terrestrial protected areas, even though the primary reasons for creating
them are likely to be the same - namely:

*to maintain essential ecological processes and life support systems;
*to ensure the sustainable utilization of species and ecosystems; and
*to preserve biotic diversity.

On land, the concept of habitat critical to the survival of rare or endangered
species often plays a decisive role in identifying areas worthy of protected
status. The area of a distinctive habitat may be small, limited to a
particular soil type or contained within a single catchment. Despite the
exceptions of airborne seeds, spores and pollen, and of birds and insects that
fly or drift in the air, linkages for most land animals are generally short.
As a consequence endemic species, critically dependent on particular habitat
areas, are relatively frequent and there is a dismal history of extinctions.
The case for protection of an area to save a species from extinction is
usually powerful and likely to receive public support.

In the sea, habitats are rarely precisely or critically restricted. Survival
of a species cannot usually be linked to a specific site. Many free-swimming
species have huge ranges and water currents carry the genetic material of
sedentary or territorial species over large distances, often hundreds of
kilometres. The same genetic community is likely to be represented throughout
a large geographic range, occurring wherever substrate and water quality are
suitable. As a consequence, endemism is rare and is usually confined to
species which brood or care for their young rather than have them dispersed by
currents. There is no authenticated record of recent extinction of a
completely marine species with planktonic larvae. The concept of critical
habitat of endangered species is thus restricted in application to areas
critical to marine mammals, sea turtles, and sea birds and to the habitats of
the occasional endemic species. Therefore, in the sea, the ecological case for
protection of an area can less often be based on concepts of critical habitat
of endangered species or threat of extinction but it may more probably be
based on protection of critical or important habitat for commercially or
recreationally important species, or for protection of a particularly good
example of a habitat type with its associated genetic diversity of its
communities.

In most countries, there is a long history of public or sectoral use of marine
areas close to the coast, often for subsistence. Attempts to exclude these
uses from traditional areas may jeopardize the physical or economic survival
of the people. Community opposition will, in such cases, be very strong and
will jeopardize successful management of these areas. We believe that it is
better to create and manage successfully an MPA which may not be ideal in

ecological terms but which nevertheless achieves the purposes for which it is established than it is to labor futilely and vainly to create the theoretically "ideal" MPA. It follows from these humanitarian, economic and pragmatic considerations that where there is a choice of ecologically suitable areas, as there often is in the sea, the dominant criteria for selection of MPA locations, boundaries and management systems will commonly be socio-economic. Clearly, where there are few, if any alternative uses, ecological criteria should be critical and decisive.

All of these problems affecting choice of area and boundaries can be reduced where political, legal and social conditions allow the creation of large MPAs covering complete marine ecosystems. This allows integrated management regimes to be established which provide for continued human use while achieving the three primary objectives of the World Conservation Strategy, summarized in the first paragraph of this Introduction.

Key Factors Affecting the Selection of MPAs

Conservation, protection and management of marine and estuarine areas are being addressed by a diversity of legislative and management approaches around the world. The aim of this section is to identify some key factors which lead to a different nature or scale of approach to marine, as opposed to terrestrial, environments.

MPA plans, like those for terrestrial national parks, are directed primarily towards the protection of the ecosystem of the area or of particular marine species or their habitats. Great awareness is needed of events outside the boundaries that readily impinge on the habitats within, because the effects of external influences on the marine environment tend generally to be pervasive rather than localized.

The concept of parks and reserves in terrestrial habitats is that of a closed cell of naturalness in a matrix of impact. A terrestrial park will be viable if this cell is sufficiently large, or if small, is linked to others. In contrast, it is very rarely possible for a closed cell of any kind to exist in the marine environment. Therefore the minimum size of an MPA necessary for viability is likely to be many times larger than the minimum viable size of a terrestrial reserve.

In the sea, currents constantly carry sediments, nutrients, pollutants and organisms through an area, but because of the ability of wind and tide generated currents to mix water masses, particularly in continental shelf areas, events originating outside the boundaries of the MPA may affect populations within it. However, partly for the same reasons, it is generally true that marine ecosystems have a capacity for restocking and regeneration exceeding that of terrestrial communities.

The principle of a buffer zone protecting a core site from impact is well established, for instance in UNESCO's Biosphere Reserve system. It should be applied to MPAs. However, since coastal and continental shelf environments are often linear in nature and subject to heavy established use so buffering, although desirable, may be impracticable.

In marine areas, because of the open nature of the system, protection of some

communities and fragile habitats may only be achieved by making protected areas sufficiently large so that the impacts are adequately buffered or diluted, thus leaving some part of the critical community relatively undisturbed.

On land, management plans for national parks usually preclude the removal of native biota, although management of national parks with large animals may involve controlled culling programs. As has been pointed out previously, for ecological reasons it is desirable that MPAs be large. However, they will usually only be politically feasible if they provide for controlled exploitation of resources in some part of the MPA. Of course such uses should be allowed only if, and to the extent that, they are compatible with the protection of the resources for which the MPA was established and with the principles of the World Conservation Strategy.

It is thus generally the case that consideration of continuing human use within and adjacent to MPAs should play a major role in their selection, design and management.

Several countries have made significant progress in establishing "national representative systems of Marine Protected Areas", in accordance with IUCN resolution GA 17.38. The biogeographic classification system used by a country in developing such a representative system need not be universally applicable. Indeed if the world were to wait for general scientific agreement on the "best" such classification system, it would probably be a long time before a start was made in establishing MPAs. The important thing is that the biogeographic system used in a particular country suits that country's existing scientific heritage and information base.

The following list identifies factors or criteria that can be used in deciding whether an area should be included in an MPA, or in determining boundaries for an MPA.

Naturalness

- The extent to which the area has been protected from, or has not been subject to human-induced change.

Biogeographic importance

- Either contains rare biogeographic qualities or is representative of a biogeographic "type" or types.
- Contains unique or unusual geological features.

Ecological importance

- Contributes to maintenance of essential ecological processes or life support systems, e.g. source for larvae for downstream areas integrity
- The degree to which the area either by itself or in association with other protected areas, encompasses a complete ecosystem.
- Contains a variety of habitats.
- Contains habitat for rare or endangered species.
- Contains nursery or juvenile areas.
- Contains feeding, breeding or rest areas.
- Contains rare or unique habitat for any species.

- Preserves genetic diversity i.e. is diverse or abundant in species terms.

Economic importance

- Existing or potential contribution to economic value by virtue of its protection e.g. protection of an area for recreation, subsistence, use by traditional inhabitants, appreciation by tourists and others, or as a refuge nursery area or source of supply for economically important species.

Social importance

- Existing or potential value to the local, national or international communities because of its heritage, historical, cultural, traditional, aesthetic, educational or recreational qualities.

Scientific importance

- Value for research and monitoring.

International or National significance

- Is, or has the potential to be listed on the World or a national Heritage List, or declared as a Biosphere Reserve, or included on a list of areas of international or national importance, or is the subject of an international or national conservation agreement.

Practicality/feasibility

- Degree of insulation from external destructive influences.
- Social and political acceptability, degree of community support.
- Accessibility for education, tourism, recreation.
- Compatibility with existing uses, particularly by local.
- Ease of management, compatibility with existing management regimes./

PUBLIC PARTICIPATION

Involvement and active participation of users of marine environments in development of legislation and in establishing, maintaining, monitoring, and implementing management of MPAs is almost always of key importance to the acceptability and success of management. It is thus highly desirable that the concept of public use or user participation is established in legislation. The key requirement is that procedures are sufficiently detailed to ensure effective and appropriate public participation.

Accordingly, opportunities should be provided for the public to participate with the planning or management agency in the process of preparing management and zoning plans for an MPA, including: the preparation of the statement of MPA purpose and objectives, the preparation of alternative plan concepts, the preparation of the final plan, and any proposed major changes to the plan.

Supporting Document D6b

SOME INTERNATIONAL VALUES OF WETLANDS

(By Samuel E. Jorgensen, in PARKS Magazine, V.5, No.3, 1980)

Nature richly endowed much of the inland and coastal surface of the earth with valuable wetlands. Until recent times most of mankind has failed to recognize just how tremendous these values really are, for even today wetlands are among the most seriously endangered of all biotic communities and ecosystems. Uncounted thousands of hectares of highly productive wetlands throughout the world are still being destroyed by drainage, dredging, filling, mining, pollution and other forms of degradation, and converted to other uses. Many were of great international value. Ironically, some of the drained areas could not be used for the intended purpose.

The International Union for Conservation of Nature and Natural Resources, Gland, Switzerland, defines a wetland as follows:

" Areas of submerged or water-saturated lands whether both natural or artificial, or permanent or temporary, and whether the water is static, or flowing, or fresh, brackish or salt. Water-dominated areas to be considered would include marshes, sloughs, bogs, swamps, fens, peatlands, estuaries. bays, sounds, lagoons, ponds, lakes, rivers. springs and reservoirs. Where marine or coastal waters are involved, waters up to a depth of 6 meters at low tide are included."

Beginning some 50 to 100 years ago conservationists in Europe and North America started the long and difficult struggle to protect and preserve wetlands from destruction. Prior to that time few voices were raised in opposition to extensive drainage, dredging, filling and conversion of wetlands to other uses. For example, it is estimated that originally there were 50,800,000 hectares of wetlands in the United States of America. These had been reduced to 32,000,000 ha by 1954. The area drained since 1954 is now (1980) being determined.

Unfortunately, in the early days of opposition to destruction of wetlands and continuing to some extent up to the present time, the principal argument espoused by conservationists in opposition to drainage was the value of wetlands to migratory birds and other wildlife, and in particular waterfowl — ducks, geese, and swans. Information was lacking or overlooked on many other values such as wetlands' role as nurseries for fin- and shell-fish production. Wetlands are multi-purpose in nature and are extremely high in biological productivity.

Opposing wetland destruction on the basis of their values to migratory birds usually failed. Fortunately in recent years other wetland values have been recognized, many of them on an economic or commercial basis. "Money talks," and these economic values resulting from the production of finfish, shellfish, fur animals, waterfowl, amphibians, reptiles and other animals and plants have been successful in slowing the destruction of some wetlands. However, wetlands destruction continues at an alarming rate.

At this point it is timely to discuss the tremendous economic values of one type of wetland — estuaries. The U.S. Fish and Wildlife Service defines an estuary as:

"a semi-enclosed coastal water body having free connection with the open sea within which sea water is measurably diluted with fresh water drained from the land."

It has been determined that estuaries are often far more biologically productive than the best farm lands. They are of great value in the production

of certain marine fishes, shellfish and other forms of life. In the U.S.A.
studies have shown that some unspoiled estuaries have a capital value of up to
$200,000 per hectare.

The Wadden Sea shared by Denmark, West Germany, and the Netherlands is
an outstanding example of a tremendously valuable estuary producing fish and
shellfish each year to the value of about US $140 million. Recent studies
indicate that its future may be threatened by pollution, and industrial
development.

That progress can be made in the struggle to save a significant part of
the world's wetlands is shown by the interests currently underway throughout
the world. This is illustrated by the Ramsar Conference convened by the
government of Iran at Ramsar, in 1971 and sponsored or cosponsored by some
eight international conservation agencies. The governments of ten European
nations, two Asian and three Middle Eastern countries, plus South Africa and
the Soviet Union sent representatives to the Conference while six more nations
sent observers and many international non-government agencies also sent
observers. This conference drew up the "Convention on Wetlands of
International Importance— Especially As Waterfowl Habitat."

The Ramsar accomplishments were the culmination of tremendous efforts
over many years by the participants . The firm basis for the Ramsar Convention
was laid in a series of preparatory meetings over a period of ten years held
in France, Scotland, the Netherlands, Poland, Turkey, and the Soviet Union,
with participation by many other States and agencies. Unfortunately to date,
ratification of the Ramsar Convention by the world community of States has not
been as high as expected.

(As of 1990, 52 States had ratified or acceded to the Convention, and
463 wetlands had been listed as RAMSAR sites).

In 1976-1977 the Council of Europe adopted a Wetlands Campaign to focus
attention on the necessity of action to save these unique natural features.
Earlier, progress in North America in preserving wetlands was notable during
the 1960s. This was given a great boost in 1961 when the U.S. Congress enacted
the Wetlands Loan Act authorizing $105 million for wetland acquisition for
conservation purposes. Since then the U.S. Fish and Wildlife Service has
acquired more than an additional 700,000 ha of wetlands habitat in the prairie
pothole "duck factory" region of the north central United States. Total cost
has been US $165 million through 1970.

The Canadian government and the Canadian Provinces have major wetland
preservation programs. Ducks Unlimited (Canada), a private conservation
agency, has an enviable record in acquiring lands via easements, then Hooding
them to create excellent wetland habitat in the major migratory bird
production and habitat zone of North America.

In spite of these significant results, in North America wetlands
continue to be destroyed at an alarming rate. For example, during the 1960s in
the United States some 140,000 ha of wetlands in the northern prairies were
drained. More than 800,000 ha of river bottomland overflow areas were
protected from Wooding and put into cropland in the Mississippi River delta
and about 350,000 acres (141,645 ha) of extremely valuable coastal marshes and
estuaries were destroyed by development for other purposes.

Worldwide, the many aspects of wetlands bring benefits to vast numbers
of people. Tragically these many values are often not realized by landowners
and others who may have little, if any, incentive to preserve them. Often this
is because of the lack of knowledge of their intrinsic value as wetlands.

Following are some of the tangible and intangible values of wetlands.
New values and uses continue to be discovered.

Tangible Wetland Values

1. <u>Recreational Values.</u> Wetlands, particularly coastal and estuarine,

offer unequalled values in their diversity of life, scenery, esthetics, and Opportunities for recreation. Hundreds of millions of people worldwide visit wetlands annually to study, observe and enjoy the natural life present. Undoubtedly, recreational values are equivalent to millions of dollars annually. Examples of such areas are the Wadden Sea (Denmark, West Germany, and the Netherlands), Camargue (France), Parc National des Oiseaux du Djoudj (Senegal), Okeefenokee Swamp (Georgia, U.S.A.), Lake Nakuru (Kenya, East Africa).

   2. Production of Plant and Animal Life.

(a) *Fish production*. Wetlands throb with life. Estuaries serve as spawning, rearing and nursery areas producing finfish, shellfish, shrimp, lobsters, clams, and other animals.
(b) *Waterfowl production*. Every year wetlands produce or provide habitat for hundreds of millions of migratory birds including ducks, geese, swans, shorebirds, flamingos, etc. They serve as breeding, rearing, migration and wintering grounds on every continent. More than 160 species of birds are dependent upon wetlands for their existence in North America alone.
(c) *Fur animals*. Muskrats, beavers, mink, otters, nutria and other forms are directly dependent upon wetlands for their existence. These animals are valuable fur producers. The flesh of some is used as human food.
(d) *Amphibians and reptiles*. Wetlands in warm climates produce valuable crops in the form of frogs, alligators, crocodiles and related animals of great value for food and leather.
(e) *Upland wildlife and big game*. Wetlands provide nesting habitat for many species of game birds such as pheasants, grouse, partridge, etc., and are vital as roosting cover during winter. The presence of emergent vegetation in wetland areas provides escape and winter cover for white-tailed deer in the prairie regions of North America, and food for moose or other ungulates.

   3. Timber production. Wetlands produce valuable timber such as cypress, hemlock, and poplar.

   4. Berry production. Important foods for human consumption are produced in wetlands, including cranberries, blueberries, lingon berries, salmon berries and many other edible fruits. Wild rice is an extremely valuable crop.

   5. Boating. Millions of persons pursue and enjoy boating, sailing, canoeing, ice boating, ice skating, swimming, water skiing and other sports on open-water wetlands. England's Norfolk Broads is an example.

   6. Water supply. Wetlands help recharge underground aquifers; are important direct sources of water for domestic use, for use by livestock, for ice harvest, for transport by boat and sled, for irrigation, contribution to underground water supply, for industrial use.

   7. Forage and fuel. Wetlands are important producers of plant material for forage, fodder, and bedding for livestock, for thatching roofs, for utensils, for construction of homes, for insulating material, for construction of livestock shelters, Wetlands have produced billions of tons of peat, a most important source of fuel in many lands.

   8. Fire protection. Wetlands serve as fire breaks and barriers to range and forest fires, and as sources of water in fire fighting.

   9. Water control and the hydrologic cycle. Wetlands by their nature serve the important functions of water regime regulation and play vital roles in flood and erosion control. Estuarine wetlands serve as vital buffers to

coastal storms. They keep water on the land where it serves man best. They serve as biological filters and recycle nutrients.

Intangible Values

1. <u>Scientific and educational</u>. Wetlands offer unequalled opportunities for scientific studies of ecosystems, biotic communities, biological productivity, and scientific research. They provide outstanding outdoor laboratories and classrooms for students. Examples are the Camargue in southern France; the Delta Marsh in Manitoba, Canada; the Wildfowl Trust properties at Slimbridge, Gloucester, England.

2. <u>Aesthetic values</u>. Wetlands provide aesthetic enjoyment to millions of persons from the urban areas who visit them for the pleasure and appreciation they get from these natural wilderness and primitive areas— where they can see, hear and feel mother nature at her best, where they can bird-watch and study and photograph nature.
Wetlands are important in bringing visitors from many lands together to enjoy a common interest while promoting a better understanding among people. Significant attractions can be found in almost every country—even in arid lands where wetlands are relatively rare—and priceless! Lake Ichkeul in Tunisia is an example.

3. <u>Endangered species</u>. Many wetlands support and provide the sole habitat for endangered animals and plants. Others serve as vital stepping stones on migration routes for endangered migratory birds. Some wetlands, if destroyed, would see the end of magnificent flocks of birds, i. e., the flamingos of Lake Nakuru, Kenya, and pelicans in the Rib Lakes of Ethiopia.

4. <u>Recycling values</u>. Wetlands as complete ecosystems are of great value in recycling nutrients and organic wastes, in recycling and rendering harmless certain toxic chemicals. Wetlands produce oxygen thus helping to maintain the supply of this vital element.

5. <u>Maintenance of Gene Pools</u>. Many wetlands are complete ecosystems and thus are vital in the maintenance of gene pools. Their genetic values cannot be ignored or overlooked.
From all of the foregoing it is clear that wetlands have important international values, many that should be protected through cooperative international effort. The Ramsar Convention serves this purpose, and states which have not yet become Parties to the Convention should do so. Instruments of ratification or accession should be deposited with the Director General of UNESCO.
Wetlands are vital links in the web of life. Their loss or continuing destruction—and the inevitable loss of species that always follows—will only make man and his societies much the poorer for it.

Lesson 7

MANAGEMENT OF NATURAL RESOURCES AND THE PUBLIC

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Demonstrate an understanding of the importance of involving the public in management decisions and for promoting public education concerning resource management issues.

2. Explain some of the processes used to achieve active public participation in decision-making concerning resource management in a PA.

REFERENCES:

FAO, 1983; PARKS: V.1, N.2 "A new Approach to Amboselli ..." V.1, N.4, "Nat. Pk Planning ..."; V.3, N.1 "Involving the Public .."; V.9, N.3 & 4, "An Approach to an Integrated Land Use ..."; V.10, N.1, "Public Participation and ..."; Mackinnon, 1986; Gorkhali, 1986; Lewis, 1995?; Makombe, 1993; McNeely, 1995; Saunier and Meganck, 1995?; Renard and Hudson, 1992; Wells and Brandon, 1992; Supporting Document D12b.

PRESENTATION:

1.1 Begin the class with a case study in which the management of some resource failed due to the lack of cooperation or comprehension on the part of the public. There are thousands of examples. Ask if the participants know of some, specially from situations in which they were involved.

1.2 Analyze the factors which led to the failures discussed above. Focus on the role of public participation in decision-making as a method for improving these situations (see Supporting Document D7e).

2.1 The interests of the public should be considered during the three phases of any management program or action:

   a. planning
   b. execution
   c. evaluation

2.2 Emphasize that the PA do not exist in isolation, rather all that is done or not done in them influences in some way the neighboring people and communities, and sometimes the entire nation is affected. Recent studies show that 86% of the national parks in South America have inhabitants within their boundaries, and this situation will continue in the great majority of cases. What are the methods which can be used to incorporate the public's interests? Different degrees of public participation are possible:

   -meetings in which opinions can be received concerning
      proposed management activities;
   - meetings to inform and educate about the results of
      management activities;
   - informal visits to communities to interact with those people most
     affected by management in the PA, in order to receive criterion,
     to inform, to educate, and to maintain good public relations;
   -publish pamphlets and newspapers about the activities in the PA and
     insure that they arrive in the hands of the most pertinent
     individuals;
   -invite those people most affected by the PA to visit the area as part
     of a special tour;
   -formal presentations to schools, civic groups, etc. to   orient
     them about the management program and about conservation in
     general;
   -form permanent committees of citizens, authorities, etc. that
     function as advisors on management in the area;
   -involve local populations directly in the administration of a PA.

Achieving appropriate levels of community participation involves a large
  amount of extension, and there are few PA that have success in their
  management program without having an extension program. It can be
  difficult to know how to receive and to utilize the public's comments
  and concerns. Tact, patience, and organization is required, but it is
  important that one be convinced that these actions are necessary.

Traditionally the PA administration has not done, nor wanted to do, much
  extension activity outside of the PA. Discuss the reasons for this with
  the group: for example the lack of training in this activity; the excess
  of work within the PA; the lack of means, both technical and economic;
  the Management Plan did not define it as a priority activity; etc. In
  general public participation is important in achieving PA objectives.
  However it has its costs, both in terms of financial expenditures and
  the time needed to achieve adequate levels of participation. The greater
  the level of participation, the greater the costs.

2.3 Some people believe that if the PA personnel do sufficient extension and
  public relation work outside of the PA, that a large part of the
  problems found within its boundaries will be eliminated. Discuss this
  with the participants in order to arrive at conclusions as to how this
  concept would function in their own PA.

2.4 As to mechanisms for controlling the public use of natural resources, one
  can contemplate:

   - zoning of the PA
   - use permits
   - patrolling
   - rules concerning resource use (size, age, place, etc.)
   -education and orientation; in the long run, most believe that only
     through the education of resource users and of the local
     population can the objectives of a PA be met.

-community participation; if a community is convinced of the need for a
    specific management activity, it will police itself and others,
    thus becoming an effective control mechanism for the PA.

ACTIVITIES:

1. Prepare a short survey and send the participants to interview local
citizens about some theme related to the management of a nearby PA. When
conducting the interviews, the participants first should explain the objective
of the management activity and of what it consists. Later they should ask if
the interviewee agrees with the action and what are their reasons, pro and
con. It should be analyzed if the interviewees really understand the
objective of the management activity and the reasons why they understand it or
not.

2. Arrange a visit for small groups to a nearby farm. On the farm the
participants should identify problems of natural resource management (erosion,
pasture degradation, water contamination, etc.). The participants should
question the farmer about these problems: Does he recognize the problems? If
so, why does he not take measures to change the situation?

Supporting Document D7a

COMMUNITY-BASED MANAGEMENT OF PROTECTED AREAS

(By Yves Renard and Leslie Hudson, Caribbean Natural
Resources Institute (CANARI), Clarke Street, Vieux Fort,
Saint Lucia, West Indies; Presented at
IVth World Congress on National Parks and Protected Areas)

The workshop on community-based management of protected areas, which will be held on February 17 and 18, will be guided by three fundamental observations.

The first of these observations, which is made clear by the deliberations of this Congress, relates to the inadequacy of the prevailing model for parks and protected areas. Despite widespread support for conservation, both the designation of new parks and protected areas and the management practices of existing areas tend to achieve only part of their objectives and to provoke controversy. This conflict is present in both developed and developing countries, and the reasons - social, economic, ecological, political, and cultural - are many. Different sectors of the public attach different values to natural resources and the benefits they provide. Resident peoples in the vicinity of parks often feel that the designation of such sites is imposed by outsiders who do not necessarily share local interests and concerns. Little attention is usually paid to economic and cultural impacts, traditional rights of access to the land and its resources, or the hardships of dislocation. At the same time, national or international interests advocating for protected areas view local sacrifices as necessary for serving the greater public good.

The second observation is, indeed, an evidence, but it is an evidence that has for too long been ignored or suppressed. It is the recognition that there is an intimate relationship between people and protected areas, and that the conflict just described derives from this. This intimate relationship between people and protected areas, which will be directly addressed by Workshop 1- and will be an integral part of the deliberations of several others, can be viewed in a negative sense, as a source of conflict and controversy. But it can also be viewed as an asset, offering positive and productive benefits. This complex reality is the premise upon which this particular workshop is based.

The third observation derives from the two earlier ones. It is the recognition that we need more of a community-oriented approach to the management of parks and protected areas, that we need to include all concerned groups in the planning and implementation of activities that improve their quality of life while protecting their natural resources. It is therefore necessary to develop and use new management approaches and instruments that permit the involvement of all relevant community groups, including resource users (e.g. fisherfolk and farmers), local residents, park staff, government officials, members and staff of non-governmental organizations, and elements of the private sector (e.g. tourism businesses).

The workshop will focus on these issues, and it should be introduced with two definitions:

* the definition of **community**, as a group of people who
consciously share a common functional or moral link, such as
kinship, occupation, place of residence, religion or values;

* the definition of **management**, as applied to natural resources,
as the set of rules, labour, finance, and technologies that
determines the location, extent, and conditions of human
utilization of these resources, and consequently determines the
rate of resource depletion and renewal.

The workshop on community-based management will operate from these
premises, and will therefore be concerned with three levels of
discussion.

At the conceptual level, the workshop will try to advance our
collective thinking on a number of issues and approaches. First, it will
confirm that our rationale for a new approach to park management is
clear and convincing, and that we appreciate the benefits of
community-based approaches, which can be summarized as follows:

* build popular support for parks and protected areas, in
particular by involving local people and investing their interest
in the well-being of their natural resources;

* address the cultural, social and economic needs and concerns of
the communities most directly affected by parks;

* ensure that anticipated benefits from parks reach these
communities;

* help fill the gap when governments or other management entities
lack the necessary funds and personnel for effective park
management;

* integrate community knowledge of natural resources into park
management;

* be responsive to variations and changes in social and
environmental conditions;

* provide training and opportunities for skill development in
order for communities to participate in park management.

The workshop will then explore models from around the world, many
of which have evolved around the theme of **co-management**, which we can
define as the sharing of management authority and responsibilities by
governments and communities (including NGOs, private sector institutions
and grassroots organizations). Indeed, the workshop will argue that one
needs to go beyond the concepts of participation and community
involvement, to create meaningful partnerships in which the rights,

aspirations, knowledge, skills and resources of communities are fully respected and enhanced. The concept of co-management is built on the spirit and the form of these relationships.

The workshop will then attempt - and this is the second level - to establish some of the principles to guide co-management, recognizing that this concept does not apply only to special cases, but that it is relevant to all situations. Indeed, the first of these principles is likely to be that all protected areas should be established with respect for, and understanding of, the needs and aspirations of the communities which are or might be, in one way or another, affected by the development and operation of that park.

Another of these principles will recognize the need for participation in all stages of park planning and management, as indeed in all domains of development.

The third principle that the workshop will advocate is that parks and protected areas must be seen in a broader social, economic and cultural context, and that they must contribute, in a significant manner to such development objectives. Parks cannot remain isolated entities, and they must on the contrary become instruments of genuine development.

Yet it is clear to many of us, and particularly to those of us who are familiar with conditions in the developing world, that one of the greatest obstacles to that genuine development is of a social and political nature, that it is found in the imbalances of power and the inequalities of society. In this context, parks call be instruments of development only to the extent that they do not contribute further to the process of alienation and dispossession, but assist in processes of community empowerment, self-esteem and local control.

These and other principles will be discussed, with some degree of detail, during the workshop which we have the privilege of convening next week.

We then envisage that the workshop will devote much of its energy to the formulation of some of the instruments that are required to implement this approach, suggesting that these instruments provide the framework for the design and implementation of co-management arrangements. We can therefore, at this early stage, offer the following preliminary directions:

* **participatory planning**: collaboration and shared responsibilities are possible only to the extent that all actors are given the opportunity to shape the decisions which they will implement or benefit from. Public involvement is necessary from the early stage of the park planning process, giving the community an opportunity to contribute its knowledge, to evaluate options, and to participate in the decision-making process. Methodologies for participatory planning are relatively well-known, but it will be interesting and useful to examine them, in the context of parks and protected areas, and to distill some of our collective experience in that regard.

* **information**: this participation is however impossible if the various social actors do not have access to the information needed

for evaluation and decision-making. Several key issues arise here, which the workshop intends to discuss in detail, for example, the question of the relevance of the participatory research methodology, the distribution of information and research results, as well as the potential of novel approaches to participatory and community-based resource monitoring.

* **institutional arrangements:** central to the discussion on co-management is the design of new institutional arrangements which are capable of meeting the objectives of popular participation, local development, and community empowerment. It is perhaps appropriate to recall the inability of current institutional arrangements to facilitate such processes, and to note the complexity of, and obstacles to, the institutional reforms that are now required. This is a very broad domain, which we hope to explore in more detail during the workshop, and which requires attention in the following areas:

> - the reform of governmental institutions, in this instance the park authorities and the other resource management agencies, to allow them to play a creative animating role, and to ensure that they are able to enter into meaningful partnerships with community institutions, user groups, and other social actors;

> - the role of community and other non-governmental organisations, understanding their nature and functions, and enhancing these functions to ensure effective representation, local action, and community benefits;

> - the place of technical assistance and cooperative agencies, who have up to now contributed, to a significant extent, to the processes of dispossession and dependency which were described earlier. They must now learn to operate in a manner that respects community needs and contributes to the strengthening of community institutions.

* **legal instruments:** in order to permit these new institutional arrangements, legal instruments are required, which respect and in some cases strengthen customary laws, which provide the basis for community responsibility, which protect the rights and interests of diverse users and which offer a vehicle for conflict resolution and arbitration.

* **technology:** effective park management requires more than regulations and institutions. It also requires appropriate technology in several areas, such as sustainable resource utilization, habitat restoration, and wildlife management, and these tools must be made available to all actors. Indeed these are tools that need to be developed - for example, in the field of resource monitoring - for the specific use of local communities.

* **financing**: this is another clear requirement, where new ideas and instruments are also needed, to ensure that financing is available to all the actors, and that community institutions can operate on a stronger and more stable base.

* **local benefits**: co-management arrangements can be meaningful only to the extent that the parks are able to generate social and economic benefits for local communities. This is an issue which will be discussed more thoroughly in other workshops, but we will note it here as an indispensable ingredient of the approach advocated.

Co-management has no set formula - it is more of an attitude or an approach that takes into account the particular set of circumstances presented. In this workshop, the papers to be presented will begin to explore the realm of possibilities for co-management arrangements.

One of the examples will be from Australia's Uluru and Kakadu National Parks, where much of the land is actually held in title by its traditional aboriginal owners, then leased to the Director of National Parks and Wildlife. A Board of Management, consisting of a majority of aboriginal owners, oversees each park and has among its responsibilities the preparation and monitoring of management plans with extensive public involvement. An increase in tourism has added to the challenge of balancing its demands with conservation needs and indigenous rights; our workshop will examine how these diverse interests cope with such conflicts.

In Zimbabwe, local governments have been given the authority to manage and administer the wildlife resource, a significant source of revenue, in their areas. An intricate institutional and legal framework, which is constantly being refined, has been established as a result. Communities and governments have become partners in developing broader regional land use plans, and useful lessons will be drawn from that experience.

Perhaps one of the least obvious potential partnerships in co-management is with young people, yet this has been the case with a small bird sanctuary in central Italy. A cooperative of local youth has been entrusted with management of the area, under the scientific and technical supervision of WWF-Italy. In addition, in the past three years, the sanctuary has generated job opportunities, offered training and education programmed and set an example for similar areas.

Finally, in war-torn Nicaragua, Miskito Indians took the initiative in the establishment of a huge and biologically-rich coastal protected area. The new protected area will be managed and patrolled by people from the 23 Miskito communities it encompasses, in consultation with an environmental NGO, the Nicaraguan Ministry of Natural Resources and the Environment, the autonomous regional government, and many international organisations.

The term "co-management," which we have used extensively in this brief paper, is likely to suffer the inevitable fate of all those pieces of jargon invented to describe otherwise obvious concepts and situations. Whatever the term, it is hoped that the approach advocated here, and illustrated by the many excellent experiences that will be

shared in the workshop, will be obvious to all of us, and that we will
agree on the philosophical underpinnings of these arguments: that the
challenge before us is the challenge of human development, that parks
and protected areas can play a most critical role in meeting that
challenge, and that the future of parks therefore lies in their ability
to forge constructive relationships with people and their institutions.

PROGRESS IN THE MANAGEMENT OF BUFFER ZONES IN THE AMERICAN TROPICS: PROPOSALS TO INCREASE THE INFLUENCE OF PROTECTED AREAS

(By Alejandro C Imbach and Juan Carlos Godoy,
in PARKS Magazine, V. 3, No 1, 1992)

The role of protected areas in the tropical region is closely
linked to their function for conserving biodiversity, which underlies
the maintenance of essential ecological processes and contributes to the
sustainable development of the region concerned. The Ministration of
protected areas in the American tropics is impeded by a number of
external threats such as insurrection, oil exploitation, road or dam
construction, timber extraction and expansion of agricultural land, as
well as the problems of internal management. Experience with the
productive management of tropical lands has shown that the production
systems designed for temperate and cold areas are not suitable for the
tropics.

The basic attitude of conservationists towards protected areas has
been defensive. Our intuitive reaction, as stunned witnesses of the
devastation of natural areas and decline of wild populations, has been
to protect and save everything that is possible before the situation is
beyond repair. This is undoubtedly the correct attitude, but one which
cannot by itself guarantee a sustainable future for the planet. The time
has come when we have to take a more modern conservationist approach to
managing the vicinity of protected areas, as well as degraded areas, in
order to contribute to their recovery.

It is because of this that buffer zones, or any region influenced
by protected areas, become particularly relevant. These areas have been
traditionally defined as a catchment or barrier protecting the resources
of the protected area, thus preventing the advance of human populations
or of any business interests that might threaten them. A change of
attitude is proposed: buffer zones should be considered as centres for
sustainable development based on the maintenance of essential ecological
processes and biological diversity. They should be viewed as valuable
places where it is possible to extend species and ecosystem
conservation, in a way that is compatible with the development of the
local communities.

The New Buffer Zone Concept

Protected areas are regional reservoirs of wild populations of
native animal and plant species, whose economic and ecological potential
must be incorporated into the surrounding production systems. The new
concept retains the objectives of minimizing the impact on protected
areas and of optimizing the effect of these areas on neighbouring
communities and their development. Buffer zones must not be established
as centres of development or attraction but remain as simple schemes of
rural development.

To achieve this, the global model of land occupation comprising an
extensive carpet of a few crops, with protected areas as islands for the

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conservation of biological diversity and ecosystems, must be replaced by
alternative models supported by ecological criteria that engender
different types of "mosaics". These mosaics should be based on the
utilization of a wide range of species and rotated in various ways
through time. Moreover, the boundaries of the protected areas would
merge with the sustainable activities carried out in the buffer zones.

However, the present use of non-protected land is still far
removed from the above model. In temperate zones it follows a pattern
that is based on structural simplification and intensification of the
energetic cost of production. This results in a large reduction of the
biological diversity in farmed areas, as well as serious disturbances to
the basic functioning of ecosystems, leading to a decrease in the
potential for sustainable development. The greatest challenge in the
near future will be how to reverse this process and one of the questions
to answer is what role protected areas can play as true instruments for
development.

The success of this approach lies in the incorporation of the
existing biological resources in protected areas with the production
systems of neighbouring communities and in this way ensuring that the
communities understand the reason for conserving them and commit
themselves to their defence.

Future Administration of Buffer Zones

To attain the proposed objectives it is necessary to review some
operational aspects of buffer zones, including their legal status (it is
desirable to have a legal basis that facilitates the work within them,
although the legal power to make people modify their consumption or
production patterns will often not be available).

Buffer zones projects should adopt schemes similar to those used
in agricultural or forestry programmes. In these, technical personnel
work with the producers to demonstrate and convince them of the
importance of the relationship between their own activities of
production and the protection of strategic elements. This includes the
need to modify the system of production as a function of balanced
environmental conservation.

The buffer zone must not be defined as a rigid territory extending
from the boundaries of protected areas. In this respect, administrators
of protected areas must try to change attitudes in relation to the
traditional land use in the neighbouring region. This implies that those
institutions which have administered natural spaces under protection
alone must leave the limits of the protected area to work in conjunction
with other development institutions; to do this, it will be necessary to
modify some administrative structures.

The concept which has to be put into practice is that of utilizing
buffer zones as experimental and development sites for new production
systems. These should be structured around non-traditional processes
based on the diversity of species and products. Clearly, the active
participation of local communities is indispensable both for the
identification of the resources to be used as well as for the later
stages of research and incorporation of new technologies.

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HOW TO DO EXTENSION WORK

(Translation from original Spanish: CONAP,
"Manual for Park Wardens", Guatemala)

The park warden should visit the people living near to or within a protected area. The goal of these visits is to inform them as to the importance of and benefits from having a protected area, to develop activities with them so as to gain their confidence, and to change their conduct with respect to natural resource conservation. Also the warden should communicate with visitors so that they become messengers for the conservation of nature.

The success of extension work depends upon the manner in which it is done and upon the continuity given to the various activities.

To have a good extension effort these steps should be followed:

1. Initial study:

An initial study of the area is necessary in order to gain a clear idea of the life of the community and its members. Steps to be taken in conducting such a study include:

a. Visit the community and meet the people. Participate in social events, converse with the people, work with them and listen to their criticisms, suggestions, and hopes.

b. Identify who are the leaders of the community including the political leaders, members of the local committees, and other natural leaders.

c. Learn the customs, traditions, and habits of the people in the community.

d. Find out what resources are available within the community and which are obtained from outside of it.

e. Identify the interests of the different groups within the community.

2. Identification of the needs, interests, and problems of the community:

This serves to define, together with the help of the community, the most urgent needs, interests, or problems to be resolved. To do this it is recommended to:

a. Ask different people in the community what are their needs, interests, and problems.

b. Organize and write down the different opinions found.

c. In a community meeting present the list of needs, interests, and problems that have been identified.

d. Work together with the community to organize this list in order of importance.

e. Together with the community decide which is the most urgent to deal with.

f. Help to organize the group that will attempt to resolve the problem, defining a well programmed plan.

3. **Planning with the group**:

This serves to establish the order of activities to be taken in a project while defining the resources and time needed and the people responsible for the activities. In the process of developing the plan the following questions should be answered:

a. **What** is hoped to be done in the activity or project?

b. **How much** do we hope to complete in the activity or project?

c. **How** will the activity or project be done?

d. **When** will the activity or project be done?

e. **Who** will be responsible for the steps to be taken?

(On the following page an example is given of a plan done by a community group which are neighbors to a protected area.)

After developing the plan, each participant should be encouraged to promote the project among their neighbors who may not know of the project or who may not have yet participated in it.

4. **Execution**:

Once the above steps are completed, the community alone has to do the work according to the plan developed by the group, and possibly with technical assistance from the outside if needed.

In this phase the park warden ought to serve only as a guide and coordinator of the activities. If he is well acquainted with the work being done, and if time permits, he can also participate in the work with the community.

5. Evaluation and follow-up:

The park warden ought to participate in the evaluation of the project both during and after its execution in order to be familiar with the results, to obtain information that can be useful in future projects, and to promote follow-up of the project itself.

The best way to evaluate a project is to ask the participants to give their opinions about it. This allows one to gain the community's own perspectives on the successes and difficulties encountered during the execution of the project. These can then be considered during the follow-up work phase.

The follow-up can be done through frequent visits with the participants to understand their opinions about the work, the benefits, or the difficulties they have met during the evolution of the project.

Some questions that should be asked when evaluating the activity or project include:

1. Have we accomplished what we had hoped? Why?

2. How much have we done of what was planned? Why?

3. Did we have the resources necessary to do the project? Why?

4. Did we finish all of the programmed and assigned tasks? Why?

5. Were we able to finish the tasks in the time programmed? Why?

6. Are we satisfied with what we have done? Why?

7. Could we have done it better? How?

8. What did we learn?

9. What were the greatest difficulties we had in doing the activity or project?

10. What did we most like about the activity or project? Why?

11. What did we least like about the activity or project? Why?

12. Are we able to do another project? What is the most urgent task to be done next?

EXTENSION TECHNIQUES

There are many ways that a park warden can do extension. Among those are the following:

1. Giving Talks:

These can be given in two ways:

A. Informal talks: The park warden can conduct extension at any moment. He can explain the work to people in a store, in the marketplace, when playing football, or when riding in a truck. All these opportunities should be utilized. As they are informal settings, people pay closer attention to the information.

An informal talk can also be planned when making visits to neighbors in their homes, in their store, or in the field with the intention of introducing to them or motivating them about a given theme. Knowing how to give informal presentations is very important as it is the way that first contacts are made with people in the community.

These talks can serve to:

a. Inform the community about the function of the park wardens, especially concerning the activities of management and natural resource conservation.

b. Establish a relationship of trust between the park warden and the members of the community.

c. Understand the language, customs, and way of thinking of the inhabitants of the area.

d. Obtain information about the local climatic conditions such as the timing of the rainy season, the periods for planting and harvest, and information about the flora and fauna of the area.

e. Identify the people who can help the park warden.

Recommendations for giving informal talks:

In order that the talk produce the desired results, the following points are recommended:

a. The talk can be given to one person or to a small group, but never should include more than six people.

b. It ought to be done in a quiet location, without pressure, and with courtesy and humility.

c. Do not take notes when giving a talk. Focus all of your attention on what is being said and take any important notes later.

d. Be a good listener. Let the other person speak with confidence and listen to him with full attention.

e. Before giving a talk to someone, be clear what theme will be covered.

f. Identify the leaders of the community and other persons related to the community, such as government or private agency personnel, and speak with them.

B. <u>Presentations with groups</u>: This technique can be very effective as it can facilitate the creation of a group consciousness which allows for a joint decision-making process to resolve the problem at hand.

HOW TO PREPARE FOR A PRESENTATION

1. Define what is the goal or objective of the talk. For example, is it to increase the people's awareness of the importance of the protected area or is it to interest them in a community development project?

2. Adjust the theme to the type of people who will be present for the talk. Does the group know how to read? Are they children or adults?

   3. Order the steps of your talk in this fashion:

a. Prepare materials which will help in the presentation.

b. Organize notes which will help you to remember the main points of the talk.

c. Stimulate the interest of the people who will hear the talk.

d. Stay with only one principal theme during the talk.

e. In a simple fashion, repeat the main points of the theme that you want the people to remember.

f. Leave ample time at the end of the talk so people can ask questions, express doubts, or share their own experiences.

RULES FOR BEHAVIOR WHEN GIVING A TALK

One's behavior during a talk is the key to its success or failure. The following recommendations should be followed:

- Arrive early to prepare any material to be used and to greet the people as they arrive.
- Ask that someone from the community present you to the group.
- At the beginning, thank the people for having come to the talk and for having invited you.
- Learn the names of the participants and use their names when speaking with them.
- Speak clearly and look at the people when speaking. Never turn your back when speaking. Besides being uncourteous, you can not be heard.
- Do not hide behind a table or other objects. Speak directly to the people with confidence.
- Allow for questions during the talk and be honest in your answers. If you do not know an answer, say so.

Supporting Document D7d

GUIDELINES FOR BUFFER ZONE MANAGEMENT

(Extracted from "Rainforest Buffer Zones", by Sayer, J;
published by IUCN, 1991)

Buffer zones provide gradients between totally protected land and intensively used land. As such they cannot be easily defined or allocated to categories. Every situation is unique. However the following characteristics should apply to all buffer zones:

Biological benefits
- Provide a filter or barrier against human access and illegal use of the strictly protected core zone or conservation area.
- Protect the strictly protected core zone or conservation area from invasion by exotic plant and animal species.
- Provide extra protection against storm damage, drought, erosion and other forms of damage.
- Extend the habitat and thus population size of large, wide-ranging species in the protected area.

Social benefits
- Provide a flexible mechanism for resolving conflicts between the interests of conservation and those of the inhabitants of adjacent lands.
- Compensate people for loss of access to the strictly protected core zone or conservation area.
- Improve the earning potential and quality of the environment of local people.
- Build local and regional support for conservation programmes.
- Safeguard traditional land rights and cultures of local people.
- Provide a reserve of animal and plant species for human use and for restoring species populations and ecological processes in degraded areas.

Guidelines for Buffer Zone Management

1.   Various categories of partial reserves, notably multiple-use management reserves, provide the ideal legal framework for buffer zones. These should be located in zones surrounding totally protected areas. Provision for such reserves should be included in national legislation.

2.   Planning laws and Environmental Impact Assessment laws which require consultation with the protected area authority for any change in land use around parks and reserves could provide valuable tools to strengthen control of buffer zones.

3.   The absence of a defined legal basis for buffer zones need not be an obstacle to their establishment. Much can be achieved through management agreements or informal arrangements with individuals, communities and appropriate government agencies.

4. A sound legal framework for the protection and management of the totally protected area and effective enforcement of this legislation are essential in order to give rationale and credibility to buffer zone programmes.

5. Whereas it is clearly important that the protected area authority has an influence over land use decisions in the buffer zone, it is not essential that this authority should have operational responsibility for managing buffer zone development activities. Management authority will depend upon local circumstances and the specific competence of the agencies involved.

6. A wide variety of institutional mechanisms can be used to manage buffer zones. These can range from the employment of a "Community Relations Officer" by the protected area authority, to total operational control of the land by the private sector, state corporations, sectoral government agencies or the protected area authority itself.

7. Buffer zones can be managed effectively if title to the land is vested in the state. The land can then be placed under a uniform management regime (for forestry, hunting, nontimber products etc). Sustainable extractive use by local communities can be the subject of management agreements.

8. When smallholder farmers are already using land close to protected area boundaries it is usually desirable that they should be given secure title to this land. This will encourage them to invest in agricultural intensification and perennial crops and will make it more difficult for new colonists to move into the area.

9. Land laws should favour the retention of forest on privately held land. They should never make clearance a prerequisite for tenure.

10. A balance has to be sought between ensuring secure access to forest resources for forest-dwelling people and providing control to prevent over-exploitation of these resources. Even within indigenous communities there is some stratification of society and conflicts will occur between the more entrepreneurial individuals and the more conservative. Community tenure of land is difficult to operate in rapidly evolving societies with weak institutions.

11. Preoccupation with buffer zone issues should not divert attention away from the need for effective conservation management of the strictly protected core zone or conservation area and especially for rigorous enforcement of protection laws. But laws must appear useful and rational to local people, otherwise they will be very difficult to enforce.

12. Buffer zone projects should start small and be based upon both knowledge of the resources of the area and of the development needs of the people. Acquisition of this knowledge must continue throughout the life of a project and will be particularly intense during the first years.

13. Buffer zone development projects should not normally be started unless there is a reasonable probability that support will be maintained for ten to fifteen years. Buffer zone problems are rarely amenable to solutions attainable within the three to five year time spans of conventional aid projects.

14. It is neither necessary nor desirable to prepare detailed technical plans for buffer zone projects. It is more important to concentrate on putting into place a mechanism for delivering assistance in ways that are ecologically sensitive and that emerge from a careful appraisal of development possibilities and needs. This appraisal must be based on an intense dialogue with local communities. Blueprint projects, with rigid objectives, will frequently prove to be irrelevant and, by tending to disrupt local institutions and practices, may be counterproductive.

15. The process of managing the dialogue with local people is of fundamental importance and requires technical expertise and resources. It cannot be achieved by visiting experts simply talking to local people. Dialogue is a two-way process and the project must contribute expertise not available to the communities; this must include improved agricultural techniques, knowledge of outside markets and an appreciation of the macro-economic environment.

16. Dialogue must be linked to practical action on the ground. Village meetings will always generate expressions of good intent but unless incentives exist these will not necessarily be translated into changes in farming methods or in attitudes towards community managed resources.

17. Projects should not "by-pass" existing government rural development agencies, even if these appear to be inefficient. By-passing these structures diminishes the sustainability of projects and weakens the efforts of government agencies in other locations.

18. Many buffer zone projects involve paying farmers to undertake development work. They also frequently pay salary supplements to government officers to compensate them for the additional work that the project requires of them. These payments will not be sustained when outside support for the project is eventually withdrawn and they disrupt the normal functioning of government agencies. However, the conservation importance of some areas may be so great, and the probability of continuing outside support so high, that such payments may be justified.

19. Rural development activities in buffer zones should use simple technologies and local materials, and should use local labour intensively. Expensive technologies, or those requiring outside operation or maintenance should be avoided. Even excessive dependence on vehicles may undermine long-term sustainability.

20. The establishment of foundations, trusts or local nongovernmental organizations can be an effective way of attracting and sustaining outside support for buffer zone programmed These should be independent legal entities. They can hire their own staff at

competitive rates, enjoy tax exempt status and have access to international funding support. They may also generate income from protected area entrance and guiding fees, sales of information materials and buffer zone products.

21. Agroforestry and tree crops can be highly appropriate uses of land in buffer zones. Systems using indigenous trees and those that use a large number and varied of trees are particularly good at providing buffer zone functions.

22. Agroforestry and tree crop innovations can be introduced and promoted through standard rural development mechanisms but the same constraints apply to them as to any other form of rural development activity.

23. Systems which produce a variety of products for local use will be more stable than those producing a single crop for distant markets. Excessive dependence on a single cash crop should be viewed with caution.

24. Existing knowledge and use of trees should be fully exploited. Many traditional societies make extensive use of trees in shifting cultivation systems and the full extent of this use may only become apparent to outside advisers after a considerable time.

25. Buffer zones provide an opportunity to preserve traditional landraces of tree crops, fruit trees and multipurpose trees. Wherever possible buffer zone projects should promote the use of these local varieties and avoid introducing exotic species, or even exotic varieties of local species.

26. Governments should retain and consolidate control over state forest lands adjacent to protected areas. This can best be achieved by legally gazetting them as various categories of partial reserves, forest reserves or indigenous peoples' reserves.

27. Forests permanently allocated for sustained yield selective timber extraction can make excellent buffer zones, providing management standards are high.

28. Any alienation of forest land to the private sector must carry a requirement that a prescribed percentage remains under natural forest cover. Any subsequent changes in land use must be approved by appropriate local planning authorities, who must consult the protected area management agency.

29. Forests allocated for the use of indigenous peoples should benefit from some controls on their use. Restrictions should apply to any unsustainable harvesting or hunting techniques and to changes in land use.

30. Indigenous peoples' rights and aspirations must be considered early and throughout the process of establishing new protected areas and buffer zones. Options for achieving conservation objectives through a balance of small total reserves located in larger areas of partial reserves must be thoroughly explored.

31.   Indigenous peoples must participate in the planning and management of the protected area and its buffer zone. The process of dialogue with the communities should be conducted through traditional decision-making processes and institutions.

32.   Traditional rights to use resources in buffer zones should be maintained and may be improved upon; access to these resources by non-local people should be restricted. However, provision must be made to restrict resource use by indigenous peoples if this attains a level where the sustainability of the resource is threatened.

33.   The protected area authority should be associated with measures to improve the quality of life of the indigenous communities in ways which are consistent with the attainment of conservation objectives. Revenues generated by tourism in the protected area should be applied to such programmes. Indigenous communities should be favoured for employment opportunities in the protected area and should be encouraged to offer products and services to visitors.

Supporting Document D7e

RATING THE FORMS OF PUBLIC INVOLVEMENT

(Taken from: PARKS Magazine, Vol. 3, No. 1)

Supporting Document D7f

<u>CONFLICT RESOLUTION</u>

(Taken from: "Parks and Progress", edited by Barzetti, V;
published by IUCN in 1993)

There are few if any places left on earth where humans have not intruded or are not firmly established. Although protected areas tend to be created in areas of large expanses of relatively uninhabited landscapes, inevitably there will be some inhabitants who either live within the area's boundaries or who make their living from its resources. This of course usually leads to conflict between the stakeholders and the protected area managers.

Conflict is universal but the ways to deal with it are culturally rooted. In many cultures, someone who takes a position and strongly defends it may have a hard time backing down from it. Good conflict resolution needs to first distinguish between people's **interests** and their **positions**. An interest is a fundamental need or concern while a position is an idea put forth to further one's interests. For example, a farmer may have an interest in growing food near a park but finds that wildlife from the park are eating his crops. His first position may be to shoot the offending wildlife but alternative positions might be to fence in his crops or to ask for compensation for the damages. Thus his interest is the same but his position may change.

In addition to focusing on each party's interests rather than positions, managers or mediators need to address the issue of power in the conflict. Power can come in many forms, such as personal, political or economic power, or it can be the power of information, legal or military backing or local family power. It is important to be conscious of the real and perceived power of the parties involved in the conflict, as they will act according to their own perceptions of the power balance and hence their chances of "winning" the conflict. Including all the significantly affected stakeholders in the resolution talks, and understanding their cultures, interests and power positions, will go a long way toward helping to resolve the dispute.

Whenever possible, it is best to avoid conflict from the beginning by preparing adequately during the planning phase for potential areas of conflict, consulting with the potentially affected groups and including their active participation in management issues, and being flexible and adaptable to the local circumstances. For example, in the Xingu Park in Brazil, indigenous peoples within the park were subjected to foreign diseases brought in by loggers and miners and were dissatisfied with the government agencies in charge of health care. A meeting among Indian political leaders, NGOs and government agencies led to a discussion about a new initiative to improve health care among the park's indigenous population, thus defusing a potentially volatile situations

In all of Latin America and the Caribbean, perhaps the most conflictive area to date continues to be the Amazon region. Whether through extermination or assimilation, extinction has been the dominant trend in the history of indigenous-Western relations for over 500 years of contact. The source of the ongoing conflict is the fight over who

owns the vast and rich resources of Amazonia and the result has
generally been the extinction of the indigenous cultures and peoples.
One extreme solution is to eliminate all indigenous resistance and give
all the resources to miners, loggers, etc. The other extreme is to
prohibit all foreigners from entering Indian territories and to let them
live as they always have. The realistic compromise position would be to
proportion areas of absolute protection for indigenous peoples and to
relocate miners, loggers and other resource users to buffer zones and
the like. Such a solution would take into account the interests of all
the parties involved in the conflict.

Ecuador has experienced a long standing conflict between the
indigenous peoples of the Amazon region and the government over oil
exploration rights on Indian lands. In one case, where the government
allowed an oil company to drill within an indigenous national park, the
Indians, together with a national NGO, filed a lawsuit against the
government for breaking national laws protecting parks from commercial
exploitation. The government's response was to change the park
boundaries to exclude the area where the oil company operated. Further
lawsuits resulted in the Supreme Court ruling in favor of Ecuador's
national parks laws, but the decision was reversed under pressure from
US oil companies. The indigenous inhabitants continue to seek resolution
to the conflict via legal channels, although they feel that the laws are
not being respected. Here there is clearly a case of the different
interests not wanting to negotiate an equitable solution.

It takes creativity to balance interests, science, politics and
power. An effective conflict management approach fosters creative
thinking and seeks input from many sources. Unless alternative solutions
are clearly understood and openly debated by the affected interest
parties, it will be difficult to find a solution that will be effective,
respected and mutually agreeable.

OPTIONS TO ACHIEVE CONFLICT MANAGEMENT OBJECTIVES

Objective	Options
Obtain Information	Conduct a social impact assessment Draw upon local knowledge Conduct public hearings Conduct research Use questionnaires Conduct personal interviews Conduct an environmental impact assessment
Enhance Conflict Management Skills	Obtain training for park staff
Build Trust and Communication	Develop personal relationships with key stakeholders Hire local people to manage/staff park Involve local people in technical research or social impact analysis Establish a management committee Set up a roundtable or dialogue Appoint a liaison officer to maintain relationships with local people
Build Power	Conduct a media campaign to enlarge and energize a park constituency Develop and disseminate educational materials about the conflict
Create a Standing Conflict Management Process	Establish a management committee, roundtable or dialogue
Develop and Analyze Alternative Solutions	Use a management committee, roundtable or dialogue Draw upon outside technical expertise Conduct a social impact assessment Conduct an environmental impact assessment
Decide on a Solution	Negotiate directly with stakeholders Use third party mediation Use arbitration Pursue a court decision (litigation) Use the legislation process Make a unilateral decision

Lesson 8

TOURISM AND PROTECTED AREAS

OBJECTIVES:

By the end of this lesson, the participants should be able:

1. To describe the general context of tourism and its economic importance in the world.

2. To define the concept of ecotourism, and the benefits and disadvantages that it has for the PA.

3. To explain the concept of carrying capacity and limits of acceptable change.

4. To describe the various mechanisms and practices of tourism management in the PA.

REFERENCES:

Boo E., 1992; Boo E., 1990; PARKS Magazine, Nov. 1991; Whelan, 1991; Ziffer, 1989; PARKS Magazine: V.1, N.4, "Tourism and Conservation ..."; Graefe, Kuss and Graske, 1990; Hammit and Cole, 1987; Lea, 1988; Lindberg and Hawkins, 1993; Lesson B3 and Supporting Documents.

PRESENTATION:

1.1 **Describe how tourism is developing worldwide, particularly in relation to protected areas**. Most of the first protected areas created in the world were national parks, established in large part for their exceptional scenic values, or for the recreational opportunities they offered. With these objectives in mind, many governments constructed access routes, hotels, and other services to encourage tourist use in many of these areas.

At present, there is a tremendous increase in use of all types of PA. They are no longer areas isolated from the population centers of their own country, nor are the developed countries very far away. In summary, the world is much smaller and humanity is exerting greater pressures on the PA. Recreational activities, before only practiced by the elite of society, are now practiced by the middle class and, in some areas, by the poorer segments of society. Ecotourism is in style and a significant segment of international tourism searches for "ecological" experiences in natural areas. Developing countries are attempting to capture the maximum amount possible of this possible source of income.

On the other hand, socio-economic needs of the developing countries have forced the PA to play a more active role in providing tangible benefits at the local, regional, and national levels. Tourism is one way to satisfy in part these societal demands.

1.2 **Tourism is a big business**. According to the World Tourism Organization (WTO) of the United Nations, tourism is the second largest industry in the world, comprising 7% of the world's commerce in goods and services, and producing domestic and international income of approximately 195 billion dollars in 1989. This income was produced by 390 million international tourists

creating 74 million jobs. In developing countries tourism comprises a third of the commerce in goods and services. The WTO estimates that tourism will be the biggest industry in the world in the year 2000. This same organization estimates that adventure tourism (which includes ecotourism by definition) comprises 10% of all tourism (Whelan, 1991). Although it is projected that tourist generated income generally will increase by 8% annually between 1990 and 1995, and that special interest tourism (such as ecotourism) will increase by 10 to 15%, it should be mentioned that the WTO considers any person traveling to another country, for whatever reason, to be a tourist, thus distorting somewhat the true scale of international tourism.

1.3 **Types of tourism**. Tourism can be divided into different categories depending upon the objective of the tourist activity. One useful classification is between massive tourism and special interest tourism. Massive tourism is the tourism normally called "sun and sand", or beach tourism, which is common in the Mediterranean and the Caribbean. These tourists generally aren't very interested in learning new things and generally are accustomed to staying in large hotels. It is an activity oriented towards rest and relaxation, without extending one's mental horizons. Special interest tourism can be divided into subcategories such as: cultural tourism, nature tourism, adventure tourism, and scientific tourism. Among others, these are specialized types of tourism in which the participants have specific goals, usually aimed at improving their personal understanding of the world around them.

1.4 **Economic value**. Although one hears of the economic value of tourism, little concrete information is available to demonstrate its real importance for most countries. Kenya is the country with the most tourism directed at protected areas, with this activity generating between 350 and 400 million dollars annually (Dixon and Sherman, 1990). It has been calculated that an elephant is worth $14,375 per year, or $900,000 over its lifetime in tourist income. It has also been shown that the net income produced by the national parks in Kenya reach $40 a year per hectare, compared with $0.80 a year per hectare if these same lands were dedicated to agricultural production. In Costa Rica 60% of the visitors show an interest in visiting the country's natural areas; the country receives around 260,000 visitors per year, generating an income of 132 million dollars in 1986. Tourism is now (1995) the most important income generating activity in Costa Rica and during the last decade, it has experienced the largest percentage increase in growth of all major income activities.

Nevertheless, tourism in general presents a worldwide panorama of mixed results. Theories exist which describe how the interaction of initially unacquainted people (tourists and local inhabitants) initiates a process of change in their relations in both the short and long term, which affects different aspects of the site of touristic interest.

The analysis is based on the idea that there are three poles of interest that should be considered: the natural resource which is the object of the tourism; the host population which is the local community; and the tourist population (generally considered to be foreigners). (See Figure). The interrelation among these poles is that which determines the success or failure of tourism in a given site. The changes that are produced at each one of these poles

are inevitable and are not always positive.

Generally, the process of tourist use begins with the arrival of a few tourists to some site, sometimes by accident. The tourists find that the site is exceptional for some reason. These first tourists can be called the "adventurers" or sometimes the "heroes". They are well received by the local community and they have little impact on the ecosystem. Nevertheless, these people pass on the word about the uniqueness of the site and more people begin to arrive. This initiates a process of various stages that is characterized by the following:

- The natural resource, from the perspective of tourist use, begins in a relatively intact state and ends being destroyed by the tourist activity;

- Over time the type of tourism changes both in quantity and in type, from few to many, and from "adventurer" to small-scale tourism, to massive organized tourism;

- In moving from one phase to another, the local population loses initial control of the situation to large companies, passing from an independent condition to one of dependence on outside interests;

- Tourism income no longer remains in the local community;

- The tourism in its advanced stages, would not be a profitable business if it were not for government subsidies.

This is a stereotypic view of the evolution of tourism in a hypothetical site, but with some variation it can be found in many parts of the world. The key point is that to avoid unsustainable tourism development, and to reach an optimal ecological and socio-economical situation, **it is necessary to plan ahead**.

Evolutionary Cycle of a Tourist Destination

Stagnation (Resource destroyed)

Development (Resource deteriorating;
dependent local population

Adventurer period (intact resource,independent local
population)

Time

1.5 The **benefits and disadvantages of tourism** are many and merit discussion, in particular in respect to protected areas. With the participants review the Supporting Document D8e, discussing in detail each point and requesting that they offer their experiences from the areas which they represent.

2.1**What is Ecotourism?** Ask the participants to consider all of the good
     and bad aspects in relation to tourism in the PA, and that they
     define the qualities that ideal tourism ought to have in these
     sites. Later compare the results with the concept that has
     recently been developed of ecotourism.

The concept of **ecotourism** is one in the process of definition. It seeks
     to orient tourism in wildlands areas, in particular protected
     areas, in a way that seeks optimal results.

Ziffer differentiates between ecotourism and other names that appear
     synonymous (nature tourism, scientific tourism), emphasizing the
     need for ecotourism, as a concept and as an activity, to maintain
     its own identity, as it is being used to justify many actions with
     different orientations. While there does not yet exist a
     consensus over a precise definition, the concept of ecotourism is
     backed by three premises (Ziffer 1989):

     - Ecotourism can promote and finance conservation;
     - Ecotourism can promote and finance economic development;
     - Ecotourism will not destroy resource that it utilizes.

Ziffer differentiates between "nature tourism" and ecotourism pointing
     out that nature tourism is not necessarily done in a sustainable
     fashion, and that it is more of a description of the interest and
     motivation of the tourist. Ecotourism as a concept is used to
     describe an integral, comprehensive strategy based on a planning
     process done by a country or a region with the intent of meeting
     social objectives which go beyond tourism. The following
     definition is offered:

" *Ecotourism: A type of tourism inspired primarily by the natural
     history of an area, including its indigenous cultures. The
     ecotourist visits relatively undeveloped areas in the spirit of
     appreciation, participation and sensitivity. The ecotourist
     practices a non-consumptive use of wildlife and other natural
     resources, and he contributes to the visited area with his work or
     via some economic mechanism directed toward improving the
     conservation of the site and the economic condition of the local
     inhabitants. The visit should strengthen the ecotourist's
     appreciation and dedication to conservation issues in general and
     to the specific needs of the locale. Ecotourism also implies a
     managed approach by the host country or region which commits a
     itself to establish and maintain these sites with the
     participation of local residents, marketing them appropriately,
     enforcing regulations, and using the proceeds of the enterprise to
     fund the area's land management as well as community development."
     (Adapted from Ziffer, 1989)*

Implicit in the definition is the concept of "sustainability". The
     activity should be done in a manner that is sustainable in the
     long-run, and ought to contribute to an equally sustainable
     development of neighboring inhabited sites. This is a difficult
     but necessary task to pursue in order to avoid the errors of the
     past. While one can not affirm that at present there are
     activities that strictly meet the stated definition of ecotourism,
     there do exist small-scale efforts in this direction.

Ask the participants to describe to what point the tourism in their PA
     adapts to the concept of ecotourism.

3.1 **Planning**: If one accepts that tourism and recreation in general have an important role to play in the PA, it must also be accepted that they be done under the condition of **sustainability**. This implies a well planned and oriented management of the area to maximize positive impacts and minimize negative ones. In the planning context it is important to determine, with some precision, the boundary between public use and resource protection. That is, to define to what extent the recreational/tourist use can affect the environment without becoming a negative factor in the management of the PA. The impact ought to be the minimum necessary to insure the continuity of the activity while maintaining the natural resource which is the object of the activity. The type of area, or management category, and the fragility of the resource involved influences this decision.

3.2 To succeed in the type of ecotourism development defined above, planning requires an effort on the part of both the PA administrators as well as of all the actors in the activity:

   a. Government officials.
   b. Local communities.
   c. Tourism industry (operators, guides etc)
   d. Non-government organizations.
   e. Personnel of the protected area.

Planning must be carried out in a coordinated and integral fashion in order to obtain optimum results. For this it is recommended that an "Ecotourism Strategy" be developed for a determined locality or region of the country which includes the PA as the principal attraction (see Supporting document D8b). This is a lengthy process, yet a necessary one to coordinate all of the interests and to arrive at a consensus concerning the future of tourism in the region.

3.3 At the PA level, the Management Plan should deal with tourism and public use of the PA. There are various aspects to consider in this planning:

- During the **analysis phase**, the planners must evaluate the tourist potential of the area and its situation with regard to the regional context (see Supporting Document D8c). If tourism already exists in the area, this should be analyzed to determine what type of tourist is arriving, what he does, and what impacts he is having, in order to evaluate if these tourists should be encouraged to visit the PA.

- The **management category** determined by the PA's planning process, will have a great impact on the type of tourist/recreational activity that will be permitted, and under what conditions.

- The **management objectives** determined for the area also will strongly influence the level of implementation of recreational/tourist activities that will be permitted.

- The **zoning** of the area will determine the sectors where tourist activities will be permitted and at what intensity. It is typical to plan for an intensive use zone where the majority of tourism is concentrated and the necessary support infrastructure is developed. Also extensive use zones with little support infrastructure are planned where limited tourist use is permitted: i.e. backpacking, mountain climbing, and primitive camping.

- In the Public Use Program, or its equivalent, the **programs and specific activities** needed for tourist management are defined, both for the tourist as well as for the operator. This includes the provision of infrastructure, paths, guided tours, publications, signs, and specific regulations that govern public use.

- In other programs the quantity of personnel needed and the required training are determined. Also the specific sites where tourist activities are to be conducted, the use limitations for those sites (number of tourists per day, necessary permits, etc.) along with the type of interpretation that will be necessary are defined.

After a management plan is developed, other levels of planning generally include the design for infrastructure distribution within the development site (site plan); the architectural plans for buildings, paths, etc., and the detailed plans for signs, exhibits, and other aspects of the education and interpretation programs.

Planning of a public use area should be guided by two important antecedents: the General Plan for the National System of Protected Areas, and any pertinent legislation, specially that which establishes general **policies and use regulations** for the system. Legislation should include guidelines concerning the role of the private sector in providing services to the public (i.e. possibility of concessions or other similar mechanisms); types of services to be offered by PA administrations; functions and qualifications of tour guides; limits on the carrying capacity and the need for monitoring impacts; and the need to bring benefits to local communities.

Personnel and Training: This aspect of PA management is perhaps the most important. Planning has no value if there are not sufficient, trained personnel to carry out their functions and to implement the plan. As for training, tourism management requires that PA personnel have a clear understanding of the importance both of tourism and of protecting the area, so that in their daily work they can balance these objectives, specially that of respecting the carrying capacity of the area. They should understand the expectations of tourists and know how to satisfy them without compromising the ecological integrity of the area. The personnel should be trained in human and public relations so that they can relate well with the public and be able to present information clearly and concisely.   At the same time, they need to understand the operation of tourism companies in order to optimize the relationship of the PA with them. Also they must know the rules and laws concerning public use in the area.

3.4 One concept that has been used to guide tourist use in PA is that of **carrying capacity.** Traditionally this has been the fundamental concept in the management of various renewable natural resources, in particular the management of range and forest. The carrying capacity is determined by the size of a population (trees, cattle, fish, etc) that a natural environment or ecosystem can sustain indefinitely without resulting in a deterioration of the resource base (i.e. grass, soil, water, etc.).

In the last 25 years this concept has been successfully adapted to

situations related to recreation in PA. It is important to know how many people can participate in certain activities in a given site without causing negative and irreversible impacts on the environment, or in the recreational experience of the user. Until now this concept has mostly been applied in developed countries where there exist greater recreational pressures on the PA. Nevertheless, recreational/tourism activities are increasing world-wide in the PA, causing problems of environmental deterioration and/ or reduction in the quality of the visitor's experience in those sites with concentrated use.

While the concept has been of great use, particularly in the USA, it is still in a state of evolution in its application in PA. This is because it is determined not only by biological and physical parameters, as in the case of the carrying capacity of natural resources, but also by human perceptions of things such as beauty, welfare, comfort, and quality of experience, which by their nature are subjective and difficult to qualify and measure. There are a series of factors that need to be considered in determining the carrying capacity of a PA. These can be summarized in four groups:

1. Biophysical factors: ecological and/or physical deterioration of the site;

2. Institutional factors: management categories, management plan, and institutional capacity to manage the area;

3. Aesthetic/social factors: quality of visitor experience, and visitor expectations;

4. Socio-economic factors: infrastructure capacity (roads, water supply etc) and the capacity of human support from outside of the PA (guides, hotels, etc.) to sustain the foreseen use.

To determine the carrying capacity for a PA or a site within a PA is a difficult task. See the Supporting Documents B3a and B3b for further information on this theme.

4.1 **Mechanisms for Controlling Use**: Within the PA there are various possible mechanisms for controlling tourism activity. The situation of each area is different, depending upon its geographic location, ease of access, distance from population centers, and the established policies of the central PA system and/or of the management plan. Visitors arrive as individuals, or in groups organized by tourism operators located in large cities or close to the area. The organized groups can be large or small. In some areas it may be necessary to regulate the number of groups permitted to arrive in order to avoid negative impacts, whether they be aesthetic/social or physical in nature. In other cases it may be advisable to prohibit unorganized groups, or at least to require that each group have an authorized guide.

Tour guides can be used as a valuable tool for managing tourism. The Galápagos National Park (Ecuador, South America) initiated an obligatory system of guides for tour groups in 1975. Since then the administration of the park, in cooperation with the Charles Darwin Scientific Station, has held annual training courses for the guides in which lessons are given covering natural and cultural history of the islands, rules for tourist use of the park, techniques of environmental interpretation and of how to

deal with the tourist.   The guides have the responsibility of insuring that the tourists in their group respect the park rules. This system has been adapted at the national level for all the PA in Ecuador.

An operation permit or commercial use fee is another mechanism that helps control use by tourism operators. It is simply a permit sold for a set time period, normally for one year, which allows the operator to bring tour groups to the PA. The tourist entry fees are paid in addition. Via the permit system the administration can insure that the operators obey the established rules for PA use: if they do not, the permit can be canceled. Also the permit allows for organizing the visits if the operators with permits are required to program their visits ahead of time. Finally, the permit system brings an additional source of income to the PA.

Concessions are employed when the use of the area will be over the medium or long term, involving the construction of support infrastructure such as hotels, restaurants, wharves, warehouses, etc. This mechanism requires much study given that the concession contracts last for many years. The objective of a tourism concession should be to facilitate a pleasant and enjoyable stay for the visitor, under conditions that minimize the impact on the resources of the area. Generally the location of significant infrastructure (hotels and restaurants) are avoided within the PA as the negative impacts often outweigh the benefits. Also when similar infrastructure exists within a short distance of the area, in many cases construction within the PA cannot be justified. It is important that the PA system clearly define which activities will be managed by concessions and which will be administered directly by the PA. At present the tendency is to give to the private sector those tourism activities that require considerable investment and/or constant administration and maintenance, given the budgetary and personnel limitations of most PA.

Given the seriousness of a tourism concession, the terms of the agreement must be well thought out to insure that the concession meets the objectives of the area. Lesson E11 presents further information over the management of concessions.

A technique for controlling individual tourist use is the **permit**. If deemed necessary to limit or supervise the use of a site (campground, primitive area, fragile area, etc), it is possible to require that each user obtain a permit from the administration. This system has several characteristics:

- it tends to diminish use as many people do not want to invest the time to obtain a permit;
- it allows for an optimal ordering of use in an area;
- it facilitates the collection of specific data about the users as well as about the type and intensity of use in the given area;
- it increases the contact between the users and the PA staff;
- it requires supervision and patrolling to insure that the users respect the rules and obtain the permits;

Another technique utilized to the use of a site or zone is temporary or permanent **closure**. This is used when a determined site requires time to recuperate after being overly impacted by public use, or when a species of wildlife needs to be left alone for a critical period in its life cycle, such as during its reproduction phase.

Another mechanism employed in order to limit the use of a site, or a PA in general, is the establishment of **visiting hours**. The reasons for establishing visiting hours are multiple. Normally they have to do with the limitations of personnel in an area: that is when there are not enough employees to attend to visitors during 24 hours a day. They also can help to protect certain species of flora and fauna. For example, in the Galapagos National Park, visits are prohibited after sundown so as to avoid that visitors in the dark step on sea lions or the other tame species that inhabit the park.

The **location and design of infrastructure** is another useful technique for achieving optimal management of public use. Humans generally tend to do what they are induced to do, especially when in an unfamiliar environment. The location and layout of access routes is extremely important in this respect. If visitors are not desired in a certain sector, open roads and paths should not be located in the area. Also maintaining a road in an unimproved condition effectively limits access to the area. On the other hand, the best way to get maximum public use on an interpretive trail is to pave it and make sure that it is not very long or steep.

The **information** provided to the visitor is of great importance for orienting visitor activities. This is done by pamphlets, exhibits, signs, and directly by area personnel. Probably the two key media in this sense are maps or area plans and the verbal information given by the area personnel. Most people pay most attention to what the park warden says; the contact made with another person is much more effective then any other means of providing information. For this reason staff should be well trained in this respect, in particular those who will have most contact with the public. The entry point to the PA is where this opportunity should be most utilized, given that it is the visitor's first contact point with the PA and where he will receive his initial orientation, and his first impression of the PA.

Interpretation methods are another means for orienting visitor activity in a way that helps meet the objectives of the PA.

ACTIVITIES:

1. Take the participants to a PA where there is significant amount of tourism, and have them spend 2 or 3 days analyzing the visitor management situation in all of its facets:

- recommendations of the Management Plan and achievement of them;
- training of personnel;
- coordination of the planning and management of tourism activity with other interested parties;
- application of the "ecotourism" concept;
- visitor use management mechanisms that are employed.

At the end, they can prepare a report including their evaluation and recommendations.

Supporting Document D8a

PLANNING FOR TOURISM IN PROTECTED AREAS

by: Alan Moore

While ecotourism has become an increasingly popular topic of conversation in the conservation world as a means for achieving greater financial viability as well as protection for some of the world's national parks, reserves and other protected areas, most of the rhetoric has been directed towards such topics as marketing, logistical problems, the disappearing resource base, the success of private protected areas and frustration with national protected area systems. In fact, many tour operators have contented themselves with buying up tracts of forest where they can build a lodge, locate a few jungle trails, hire a few locals and then claim that they are doing their share to save the rain forest and, of course, to raise the standard of living of the frequently impoverished (economically) local people by incorporating them into the economically, if not spiritually, uplifting activity called tourism. Better still if the tourists are able to see trees and monkeys, because then it can be called ecotourism.

Most privately protected lands are much too small in area, and/or are found in locations where their long term viability for conservation purposes is nil. This author's viewpoint is that the only long-term hope for protecting sufficient habitat for long-term conservation purposes, and thus for ecotourism, is in the government owned and protected parks and reserves comprising a national system of protected areas. At this point in time, almost every country has one, although they may vary in their degree of development. Ecotourism can be play a significant role in facilitating their future protection and management. It can also play a primary role in their degradation if not carried out appropriately.

If ecotourism is to contribute favorably to conservation in general, and protected areas in particular, there must be a much greater emphasis on managing the natural resource which is the basis for it, to assure that ecotourism's impacts are positive in nature. To accomplish this goal, adequate planning must be carried out.

PROTECTED AREAS AND ECOTOURISM IN A REGIONAL CONTEXT

Traditionally, protected areas have been managed as if they were islands of ecological righteousness among a vast sea of human corruption. This rather shortsighted management style, while still dominant in many sectors, is being rapidly replaced by a more integrated approach. Managers are becoming increasingly aware of the limitations of managing their areas in isolation from the surrounding environment. Human activities on the edges of their areas which impact the natural resources within the park or reserve and migration of animals between protected and unprotected areas are only two of the more obvious reasons

for abandoning the isolationist viewpoint.

Increasingly, protected areas are seen as an integral part of the socio-economic fabric of the region in which they are located. This is particularly true in terms of the benefits that they can provide for the local inhabitants, and on the other hand, how local people and governments can contribute to the success of the protected area. All protected areas should planned in such a way that their management objectives are in accord with both national and regional development and conservation programs, and that they fit into the regional context in a meaningful, productive manner. They must avoid at all cost the image of an untouchable reserve, where only scientists and a few rich tourists may enter.

Ecotourism is one activity for which most protected areas are suitable, and which can contribute to a large extent to the local economy, if properly organized. Proper planning must be done if ecotourism is to have a significant positive impact on the local and regional economy. To achieve this, it is not sufficient for the protected area to have an adequate management plan; planning in the surrounding region must also be carried out to insure that tourism infrastructure e.g. roads, lodging, are sufficient and appropriate. Issues of social equity, i.e. who will benefit and to what degree, must also be addressed.

As one considers the complexity of ecotourism planning, it becomes obvious that appropriate planning for this activity must involve the tourism operators, local authorities and community leaders, as well as the managers of the protected area.

ECOTOURISM AND PROTECTED AREA POLICY

While ecotourism is a relatively new term, the activity as such in protected areas is not. Tourism has long been an activity in many protected areas for several decades. Nevertheless, with the exception of countries such as Chile and Argentina where tourism has been a dominant activity in several of their national parks for many years, in most other developing countries, tourism has not played an organized or important role in the protected areas until the last decade or so. For this reason, protected area systems do not have policies specifically directed at ecotourism. Since many believe that ecotourism can help protect parks and reserves, as well as make them financially more viable, it would seem that this policy omission is a serious one. This is compounded by the fact that ecotourism incorrectly managed can have the opposite effect.

At the policy level, several themes must be addressed, in particular, the role of tourism within the protected areas, the role of the private sector in providing tourism services, and the role of the protected areas in promoting regional development.

There is an ever increasing pressure on the protected areas to show direct economic benefits in order to justify their existence. Although most conservationists resist this pressure, asserting that most protected area benefits are difficult or impossible to quantify, in countries with very limited economic resources, and very significant social problems, the pressure on protected areas to produce economic benefits is great. Ecotourism is an obvious means for accomplishing this goal. Ecotourism can represent a significant source of hard currency, and in some cases can even cover all of the costs of an area's operations. The budget of Ecuador's Galapagos National Park is more than covered by the more than 5 million dollars generated by entrance fees and concession payments. In fact, this sum contributes significantly to the budgets of Ecuador's other protected areas. This case is an exceptional one, but it does demonstrate what can be achieved under certain circumstances. Protected area policy at the central level should state to what degree it is desired that tourism contribute to the financial well-being of the system, and to the country as a whole. It should be based upon a reasonable assessment of the areas' possibilities for providing for ecotourism activities, and the system's capability of managing and regulating them.

The role of the private sector also needs to be addressed at the policy level. The protected area system administrators must decide what sorts of ecotourism and recreation activities may be dealt with by private operators, concessioners, tour guides and others, and on the other hand, which activities can be executed by the area's staff. Decisions must be made concerning permissible activities and the types of infrastructure needed to carry them out. Obvious considerations are financial, political, social and management capability. It is essential that the process by which private sector involvement in the protected areas is selected be well-defined in order to avoid misunderstandings and conflict.

In conjunction with ecotourism policy, administrators must decide what the system's role is in achieving social equity, i.e. to what degree should management decisions be considered in terms of their possible impact upon income distribution and job opportunities in the region surrounding the protected areas. This is a complicated problem, and demonstrates once again the need for protected area management to be dealt with in a regional context.

Of obvious importance in the policy making process is the concept that the protected areas' principal objective should be the effective conservation of the natural resource base,upon which all other objectives including ecotourism are derived, and are secondary It is therefore important that such concepts as carrying capacity, environmental impact assessment and monitoring, and detailed management planning be addressed at the policy level.

MANAGEMENT PLANS AND ECOTOURISM

In recent years, management plans have been prepared for many

protected areas. These are documents which analyze all factors related
to the future management of the area: natural, cultural, social,
economic and political, and then present a management scheme for
appropriately managing the area. Management objectives are determined
first, then a zoning system which breaks the area down into different
zones based upon principal management objectives and the resources to be
found within them. Then a series of management programs and activities
are described, designed to carry out the objectives defined at the
beginning of the section.

     Management plans are typically prepared by an interdisciplinary,
interinstitutional team, in order to properly reflect the varying
viewpoints involved in managing the area. The plan is a long term one,
usually for 7 to 10 years. The level of detail will vary according to
amount of information available to the planners, the amount of time they
have to prepare the document, and funding. Usually, management plans are
fairly conceptual and descriptive in nature, and do not go into great
detail. The operational aspects are left to more detailed plans called
operational plans, which are prepared yearly, based upon the management
plan. Nevertheless the management plan provides the necessary
guidelines to manage a protected area.

     With regard to ecotourism, a management plan should focus on
several aspects.
                              Zoning

     A zoning scheme will usually contain one or more zones whose
primary use will be tourism or recreation related. It is within these
zones that all tourism/recreation infrastructure, and most activities
will take place. Frequently, two types of activity are distinguished:
intensive and extensive. Intensive use zones are those where
concentrations of visitors are to be centered; they usually coincide
with the area's more outstanding scenic or other attractions. This is
also where most infrastructure such as lodges, visitor centers,
interpretive trails and camping areas are located. Intensive use zones
are generally small in area relative to the size of the protected area.
Extensive use zones typically permit only dispersed, low impact
recreational activities, such as hiking, photography, and general nature
observation. Only trails and rustic shelters are usually permitted in
these zones. Descriptions, locations, and rules and regulations
applicable to each zone are given.

                        Public Use Programs

     In this section, the planners must describe exactly what type of
public use will be permitted in the protected area. These uses are
usually divided among tourism, recreation and education. It will define
the infrastructure required, and the management necessary to assure that
the prescribed uses will fulfill the objectives previously determined
for the area. It is here where decisions concerning tourism activities
and the role of the private sector will be made.

These decisions will be based upon three major considerations: public policy as enunciated by the managing agency, the management objectives defined in the management plan, and the ability of the resource to withstand the possible activities. The plan should make definitive recommendations concerning the role of the private sector and to what degree local inhabitants should be involved in the prescribed activities. It should also indicate specific sites where the infrastructure will be located and where activities will take place. Even further, the planning team should make preliminary decisions concerning carrying capacity.

Carrying Capacity

Recreational carrying capacity is a concept borrowed from rangeland management, where it is used to determine the optimum number of grazing animals that a given area of pastureland can support on a sustainable basis. As applied to tourism or recreation, the concept is similar: the number of users that a given site can tolerate within a given time frame, without causing deterioration of the natural resource base, or of the quality of the visitor's experience.

Determining carrying capacity is a complicated process in which several factors must be considered:

- ecological: potential impact on the fauna and flora.
- physical: potential impact on soils and trail surfaces.
- social: impact on the visitors' experience if too many people, or users with different expectations are found in the same site, thus creating an unpleasant situation for some.
- socio-economic: impact on the development of the surrounding region.
- management capacity: perhaps the most important consideration. If the managing agency does not have the economic resources, trained personnel or the authority to properly regulate the activities, then this is a severe limitation to carrying capacity.

In practice it has been found nearly impossible to come up with a definitive number for carrying capacity, due both to the number of variables involved, and to the large number of value judgments that must be made. It is probably best to set fairly low numbers to begin with, and at the same time set in motion two different management activities:

- a set of mechanisms to control visitor use, as appropriate; among these management techniques are: rules and regulations, permits, fee structures, educational programs, fences and other people control mechanisms, and well-built and maintained trails.

- a system for monitoring visitor impact. Monitoring impact is essential for any kind of tourism management system, yet it is also usually ignored.

The concept of "limits of acceptable change" is useful for determining when impact has been excessive. This involves defining

parameters for different environmental factors, beyond which further change is unacceptable, and remedial action must be taken. Some examples of this might be: the width of a trail, numbers of a given species of animal in a particular site, levels of contaminants in stream or river, noise levels, or questionnaires completed by visitors periodically to record the level of satisfaction with their visit.

EDUCATION

One of ecotourism's major goals, and of protected areas as well, is to raise the environmental awareness level of the activity's participants, and/or visitors to the protected area. Both managers and tourism operators must play key roles in this regard. Nevertheless, although there are exceptions, this constitutes one of the major failures of ecotourism to date. Practically no-one is making a serious effort to fulfill this objective, especially with regard to national/local tourists. In developing countries these visitors are generally not money-makers for a tour operator, and are considered as problematic by park and reserve managers. Yet these are the people who will eventually decide the fate of their country's natural areas. A management plan must arrive at serious solutions to this problem.

PARTICIPATORY PLANNING

It has become evident to most planners that for a planning effort to be successful, all of the people who will be affected by the plan should be made a part of the planning process. In this way if people feel that their viewpoints have been reflected in the plan, they will feel some responsibility for its implementation. This of course makes the process longer, more costly, and considerably more difficult to arrive at definitive decisions. The benefits outweigh the costs, in most cases.

RECOMMENDATIONS

1. Protected area managers and administrators usually see the tourism potential for parks and reserves very differently than does the average tourism professional. These widely differing perspectives reflect different backgrounds and experiences, and a lack of understanding of the other's goals and objectives. This frequently leads to misunderstandings and sometimes antagonistic behavior. Many of these problems could be resolved via a truly participatory planning process in which tourism professionals: operators, concessioners, guides and others, are involved in the decision-making process at all levels, from policy determinations to carrying capacity numbers.

2. In order to facilitate appropriate planning for ecotourism in protected areas, every protected area system should insure that at least one of its professionals has received training in the various aspects ecotourism planning: carrying capacity, tourism management techniques and mechanisms, concession management, and environmental impact assessment.

Supporting Document D8b

DEVELOPING AN ECOTOURISM STRATEGY

(Adapted from: Boo, E. 1992. THE ECOTOURISM BOOM:
PLANNING FOR DEVELOPMENT AND MANAGEMENT)

In response to rising ecotourism trends, protected area managers need to evaluate what level of tourism is best for each area and then devise an Ecotourism Strategy to achieve that level. The Strategy will guide the development and management of ecotourism to 1) ensure that the protected area is not overrun and damaged by tourists; 2) establish mechanisms to generate employment and revenue for the protected area and surrounding communities; and 3) create opportunities for environmental education visitors. The Ecotourism Strategy will allow protected areas managers to either encourage or discourage ecotourism as appropriate. The following guidelines are designed as a tool to assist park managers in the process of creating this Strategy. With a strategy in place and proper enforcement, parks and reserves can minimize the costs of ecotourism and maximize its benefits.

METHODOLOGY

This diagnostic is divided into a four-phase process. The amount of time needed to complete each phase will vary greatly according to the complexity of each case. Following are the four phases of the diagnostic:

Phase 1: Assess the current tourism situation.

What is the status of the natural resources? What is the level of tourism demand? What is the level of tourism infrastructure development? Who are the beneficiaries of the tourism? What are its costs? This phase is made up of a series of questions that are guidelines to write a background report about the current tourism situation. Information for this report can be obtained through original research, interviews, and collecting data from secondary sources. Potential sources of information include park officials and personnel, government officials and records, local communities, private sector and tourism sector representatives, and conservation organizations. Hiring an independent researcher to write this report may be useful.

Phase 2: Determine a desirable tourism situation for the area.

Decide what is the best level of tourism for the area. The decision should reflect a balance among the needs of visitors, natural resources, surrounding communities and host countries. The desirable level of tourism for the area will be based on the biological and social carrying capacity of the area.

Phase 2 is designed as a group process and may be conducted as a workshop or a series of workshops. Workshops participants will representatives of all relevant stakeholders groups. The goal is to exchange ideas about ecotourism, understand each others' objectives in promoting or limiting ecotourism growth, and reach consensus about what would be a desirable tourism scenario to pursue. A facilitator may be useful for this phase.

Phase 3: Strategize about how to reach the desirable tourism situation.

Evaluate what needs to be done to achieve a desirable tourism level/situation. This includes identifying tasks, skills required for each task, who will do each one, how long it will take, and how it will be financed. All activities will be prioritized. This list of activities will be the core of the Ecotourism Strategy.

A group process is also needed for this phase. This will take a series of meetings or workshops and may be done in coordination with Phase 2. Participants will likely be the same that convened in Phase 2 and must clearly represent all stakeholders. A facilitator may be useful.

Phase 4: Write a formal ecotourism strategy document.

Document the ecotourism strategy, publish it, and circulate it to potential sources of financial and technical assistance, and other interested parties. Based on all the group discussions, one person or a small team can complete Phase Four of this process. The final document must be reviewed by all Workshop participants.

At the end of the diagnostic and planning process, the Ecotourism Strategy will be in place. However, this is only the beginning of making ecotourism a sustainable industry. The next steps will be to actualize the activities as outlined by the strategy. This will require a great deal of work in most cases.

In addition to actually carrying out the strategy, a monitoring system for the strategy must be established. There must be some procedure for soliciting feedback on the activities of the Strategy, evaluating its impacts, and modifying and adjusting it as necessary. A strategy is a dynamic process.

In order to be totally successful, a Tourism Strategy must eventually involve not only the protected area, but also the entire region within which it is located and with which it maintains economic and social relationships and interactions.

SAMPLE AGENDA FOR THE WORKSHOPS

1. Day One (or Workshop One)
   Introductions and Expectations
   Review and discuss phase 1 document.

2. Day Two
   Overview of conservation and development issues in ecotourism.

3. Day Three
   Discuss objectives of ecotourism in the park.

4. Day Four
   Present possible scenarios for ecotourism development.

5. Day Five
   Field trip to the Park

6. Day Six
   Discuss scenario options

7. Day Seven
   Reach a consensus on scenario to be pursued.
   Form an ecotourism committee.

This sample agenda is intended to illustrate the flow of activities for the workshop. These topics may be discussed in more or less time than indicated.

Supporting Document D8c

SELECTING PROTECTED AREAS FOR TOURISM PURPOSES

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J;
published by IUCN, 1986)

In many countries, tourism plays a major role in the establishment of protected areas and an area's "tourist potential" is an important factor in the selection process. Some of the factors which make an area attractive to visitors are indicated in the checklist provided in Example 3.8. Growing numbers of vacationers seek recreation in a warm tropical country; they want to see something different, something new, something spectacular, something to photograph; they want to travel in comfort, with minimal effort; and they want to mix their "adventure" with leisure activities such as sunbathing, swimming and shopping.

Consequently, the most successful tourist packages combine a number of different interests -- sport, wildlife, local customs, historical sites, spectacular scenes, food and dancing and, most of all, water. The sea, lakes, rivers, swimming pools and waterfalls all have high recreation value.

Tourist potential in protected areas drops off fast, however, as the expense, time and discomfort of travel increases or when danger is involved in access to the tourist destination. Nairobi National Park receives more visitors than any other park in Kenya because it is the park closest to the capital and easiest for visitors to reach. The variety and close proximity of natural habitats protected by Costa Rica's Park System have made that country extremely popular for nature tourism groups. Wildlife tourism in Zimbabwe has declined since the well-publicised shooting of visitors by terrorists.

This latter incident highlights the fickleness of the tourist industry. A tourism boom may grow out of fashion and value for money but a switch in airline routes and prices, a change in exchange rates, the hint of political trouble or some other country making a better tourism offer can all reduce the tourist trade and leave the hotels empty.

Wildlife as a large-scale tourist attraction in Africa and parts of Asia is also a delicate matter. Certain animals such as lions, leopards, tigers, elephants, rhino and gorillas have big visitor appeal but other wildlife, just as fascinating to the scientist, seems to have lower "star" quality. Reliability of sighting is also necessary. It is not enough to know you have a chance to see a tiger -- visitors want to have a guarantee that they will see a tiger before they come in any substantial numbers.

Moreover, visitors may be "spoiled" by the quality of wildlife television films and the quality of viewing in the really top parks and tend not to be satisfied with less spectacular reserves. One solution is, of course, to employ good knowledgeable guides to make wildlife viewing as interesting and rewarding as possible but even so certain habitats are easier of access and more open for viewing game. Tropical rain forests are particularly unappealing to most visitors, though they can be made more interesting with imaginative presentation: aerial walkways, board walks, indigenous people as guides, river-running (e.g. in Borneo), hides for wildlife viewing. Even so they cannot compete with African savannas in terms of interesting wildlife and are unlikely to attract such large numbers of overseas or domestic visitors.

RES MAN D8c-2

Example 3.8: Checklist on tourist potential Protected areas

A   Is the protected area
-    close to an international airport or major tourist centre?
-    moderately close?
-    remote?

B   Is the journey to the area
-    easy and comfortable?
-    a bit of an effort?
-    arduous or dangerous?

C   Does the area offer
-    "star" species attractions?
-    other interesting wildlife?
-    representative wildlife? distinctive wildlife viewing, e.g. on
                foot, by boat, from hides?

D   Is successful wildlife viewing
-    guaranteed?
-    usual?
-    with luck or highly seasonal?

E   Does the area offer
-    several distinct features of interest?
-    more than one feature of interest?
-    one main feature of interest?

F   Does the area have additional
-    high cultural interest?
-    some cultural attractions?
-    few cultural attractions?

G   Is the area
-    unique in its appeals?
-    a little bit different?
-    similar to other visitor reserves?

H   Does the area have
-    a beach or lakeside recreation facilities?
-    river, falls or swimming pools?
-    no other recreation?

I   Is the area close enough to other sites of tourist interest to be
     part of a tourist circuit?
                -    outstanding potential, other attractive
                site
          -    moderate potential
          -    low or no such potential

J   Is the surrounding area
-    of high scenic beauty or intrinsic interest?
-    quite attractive?
-    rather ordinary?

Supporting Document D8d

GENERATING GUIDELINES FOR ECOTOURISM MANAGEMENT

(Taken from "Developing and implementing ecotourism guidelines
for wildlands and neighboring communities" by
Blangy, S. and Epler, M; in: ECOTOURISM: A GUIDE FOR
PLANNERS AND MANAGERS, 1993)

Guidelines are the most basic component of a complete, ecotourism management scheme. They should systematically appear in every highly visited site and accompany other visitor management policies, such as ongoing surveys of visitor traffic, nature interpretation, licensed guide services, zoning, and ranger patrols.

Because improving visitor behavior is so vital to meeting ecotourism objectives, public, private, nonprofit entities, associations, and local communities are all beginning to set their own standards. Setting professional standards and seeking the best ways to improve visitor behavior are excellent building blocks for the establishment of an ecotourism program.

It is important that local, national, and international organizations communicate and work together to establish guidelines. They should develop a base set of guidelines that is widely accepted for a diversity of sites and activities. These guidelines should apply to visitor behavior in a wide variety of circumstances. Once a master set of guidelines is complete, new, more specific guidelines can still be formulated by participating resource groups.

Over-regulating tourist behavior should be avoided, but there are many ways to make guidelines more effective without spoiling the spirit of the visitor's holiday.

- Encourage pledges of cooperation, using guidelines as a "moral contract."

- Encourage resource-user associations (e.g., hiking or diving clubs) to adopt guidelines to help upgrade membership ethics and promote commitment to conservation.

- Use guidelines as part of environmental awareness campaigns to build more widespread comprehension of environmental travel and conservation ethics.

- Use guidelines as part of a curriculum for guide training programs.

- Use guidelines to help tourists evaluate the performance of their tour operator.

Creating guidelines for travelers is a fundamental building block of an ecotourism program. It is a positive and efficient way to encourage individuals to pay attention to their own behavior and

contribute to conservation and sustainable tourism development worldwide.

PROCESS AND PARTNERS IN DEVELOPING GUIDELINES

Protected area managers seeking to attract tourists should consider *guidelines one of the most cost-effective visitor management tools available*. Providing guidelines is a genuine service for visitors who need and usually appreciate tips and information on how to behave. Much of the environmental and cultural damage caused by tourists is due to a lack of information and understanding. Simple and inexpensive information and outreach techniques can prevent irreversible damage to the region.

All the entities affected by visitors should be involved in the generation of guidelines. This can eliminate overlap and help make guidelines more comprehensive. It is best to survey what guidelines already exist and work with the organizations that generated them. For protected area managers, making guidelines part of a community involvement program is an effective way to ensure that local people are involved in and committed to their implementation. It also helps to prepare the community for the full range of tourist behaviors they are likely to encounter. There are several phases in the development of good visitor management guidelines. The nature and stage of development of the guidelines will help identify the appropriate partners to involve.

The first phase is the one in which principles must be established to lay the foundation for the formation of the guidelines. These principles provide the groundwork and help determine the objectives for the guidelines. For example, is the area a recreational area first, where resource protection is secondary or vice versa?

In the second phase, guidelines are developed after basic principles are agreed upon. Guidelines suggest appropriate behavior of visitors in a series of commonly occurring circumstances, such as the storage of food in campgrounds and how to dispose of all waste. "Pack out what is packed in" is a classic guideline. As guidelines develop they will become increasingly site-specific. Ultimately they will become the basis for regulations.

And in a final phase regulations can be developed from guidelines. However, they require adequate enforcement personnel and researchers that can make recommendations backed by field data on specific visitor impacts on soils, water, endangered species, and classes of habitat. The following organizations all have a role to play in the creation of an effective system of guidelines.

Communities seeking to inform visitors of local customs can be most helpful with principles and guidelines relating to social morays and customs.

Private enterprises—outbound and inbound operators, private reserves, lodges, airlines, and equipment supply vendors—are all seeking to inform their customers. They often work well in partnership with not-for-profit environmental organizations to develop guidelines. These guidelines can be informative and useful to visitors in advance of their travels. The preparation of site-specific guidelines is best handled by

protected area management in cooperation with tour operators. The input of tour operators can be very useful in sections outlining recommended procedures for controlling visitor group behavior in various habitats.

Not-for-profit environmental organizations may take the initiative and write guidelines if there are none available for fragile natural areas, as was done by Association Tsuli/Audubon of Costa Rica. Or they can bring their expertise to bear by working cooperatively with both tour operators and protected area managers to develop a coordinated set of guidelines.

Tour guides and other interpretive workers may want to work together to set ecotourism standards, such as the code of conduct prepared by commercial operators and guides in the Queen Charlotte Islands in British Columbia, Canada. Guidelines generated by tour guides can be quite site-specific and provide useful background information on danger zones or sites where special care should be taken for the protection of endangered species. Tour guides who actually handle visitors on a day-to-day basis can be the most informed source of information for all phases of guideline development.

Many of the existing guidelines collected for this paper were created by state and national agencies in the United States. In addition, private tour operators are increasingly generating their own guidelines because of the lack of guidelines generated by developing countries. As tourism to developing countries continues to grow rapidly, responsible tour operators seem to be taking the lead. But they cannot do a sufficient job on their own.

Tour operators surveyed for this paper expressed great interest in guidelines generated by local land managers, regional agencies, nongovernmental organizations, and communities in developing countries. These entities are in a position to generate the most accurate set of standards for visitor behavior in their area. Regulations with enforcement would be even more useful, but guidelines can be an important first step in lieu of regulations. Visitors need to be informed of the fragile habitats and species that call for particular caution in every natural area.

TECHNIQUES FOR GENERATING GUIDELINES

Here are some of the key points to consider when beginning to compile a set of guidelines.

- Decide who is the primary audience for the guidelines (e.g., general visitors, tour operators, user groups).

- Identify the theme or key thrust of the guidelines (e.g., environmental protection or increased cultural awareness).

- Consult with guides who lead tourists into target areas.

- Get technical assistance from scientists who have studied tourism's impact.

- Gather all the partners concerned around the table. Form a committee which may include residents, resource managers, guides, commercial operators, lodge owners, service personnel, and local vendors.

- Use guidelines from other areas as a model.

- Set objectives and formulate a way to evaluate whether the objectives have been met. (e.g., a decreased level of animal harassment or trail erosion).

- Work up the document and send it back and forth between the committee and technical specialists for review and criticism.

- Create a distribution plan for the guidelines document.

Style Tips

Guidelines are written to solicit cooperation. They must be written with skill and insight into how the reader will interpret and use them. Write in a style that is friendly in tone. Avoid technical language that the reader may have to struggle to understand. If the guidelines are easy to read and written in a style that predisposes the traveler to cooperate, the time put into their preparation will pay for itself many times over The following style tips are recommended.

- Be self-explanatory: explain why, use examples that illustrate consequences.

- Be positive - avoid language that prohibits actions. Encourage responsible behavior.

- Use figures and drawings to help explain consequences.

- Translate guidelines into as many tourist languages as possible.

- Print on recycled paper where feasible.

- Guidelines should be supplemented by tips on where and how to best view wildlife, safety recommendations, and a directory of contacts for more information. Requests for donations are also appropriate.

- The name, address, and phone number of the organization that prepared the guidelines should be clearly marked.

- A questionnaire for visitors on the effectiveness of guidelines should be considered.

Points for Guidelines Review

Take into consideration the points (ecologic, social, and economic) listed below when drafting guidelines.

Ecologic guidelines are the backbone of a guidelines program, often designed by natural resource specialists experienced in the impacts of tourism on local ecosystems.

Garbage disposal	Feeding or touching animals
Human-waste treatment	Pet care
Firewood collection and fuel self-sufficiency	Protection of clean water supply
Campfire placement	Noise levels of campers, vehicles, radios
Campsite placement	Visual impact of visitors on other visitors
Trail, driving, or boating behavior	Group size
Endangered species protection	Collecting natural souvenirs
Suitable distances for wildlife	Purchasing natural souvenirs
Viewing and photography	International trade laws

Social guidelines are best generated by local communities. Failing that, the entity generating guidelines should seek extensive input from local leaders.

Local customs and traditions	Use and abuse of technical gadgetry
Religious beliefs	Bartering and bargaining
Permission for photographs and other social favors	Indigenous rights
Dress	Local officials
Language	Off-limits areas

Invasion of privacy	Alcoholic beverages
Response to begging	Smoking
Keeping promises	Tipping

Economic guidelines are an important component of social issues. As the field of ecotourism develops, ecotourists are being asked to recognize not only their impact on environments and culture but also on foreign economies. It is therefore important to consider integrating suggestions on the selection of goods and services that tourists purchase. In every instance the objective will be to reduce the leakage of revenue from tourism out of the region and provide for maximum revenues to local communities and protected areas. Because economic guidelines are a new concept, it may be necessary to explain in the guidelines how tourism revenues can provide a sustainable economic alternative to local people who might otherwise need to engage in sustainable resource use to survive. Guidelines relating to the local economy include:

Purchasing local products	Using locally-owned restaurants and lodging
Paying user and entry fees	Appropriate tipping procedures
Making donations to local nonprofits	

IMPLEMENTING GUIDELINES

Guidelines for tourists are needed at a variety of different times during a vacation. Specific guidelines are the most appropriate when made available on-site. If the tourist can new the impact of tourism or see the fragility of the natural area being protected after reading the guidelines, it will make all the dos and don'ts more clear.

It is particularly effective to back up printed guidelines with a briefing. The time to offer the briefing is right before departing for the day's field trip. Naturalist guides should be knowledgeable about tourism's impact. They should explain the guidelines, give examples of impacts they have observed, and ask for questions. During the field trip the guides should know when to say "no." In protected areas a policy banning payment to guides to get closer to wildlife should be established. A special fund for guides or guide training can be created by protected area management to relieve visitors of the pressure to give big tips to individual guides. A policy that offers tourists a way to give something extra to guides, without paying for bad behavior, is the model.

Much of tourism's impact can be caused by overchallenging visitors. For example, inexperienced swimmers, snorkeling for the first time, will stand on coral heads to adjust their masks or catch their breath. The consequences of inadvertent contact with fragile resources should be made known to visitors before they sign up for a trip. Areas that are not fragile should be reserved for visitors who need to learn

how to avoid damaging the resource.

Supporting Document D8e

BENEFITS AND ADVANTAGES OF TOURISM

POTENTIAL BENEFITS

1. **Income produced by a PA** through entrance fees, concession and special commercial use fees, and the sale of souvenirs, can be significant. Carefully managed, some PAs that have important tourism resources, can be financed principally with tourism funds.

2. Through tourism and other recreational activities, it is possible to **educate PA users** with the purpose of giving them greater knowledge and awareness of the role of the country's PAs, and of conservation in general. In this way it is hoped to increase the support that PAs receive from the general public.

3. **Stimulating the economic development** of the region within which the PA exists, and in particular of the human population living near the PA, is another benefit of tourism. Tourism has demonstrated that it can be an important factor in generating employment and in improving the standard of living in many regions around the world.

4. The **presence of tourism** within a PA helps to eliminate illegal activities such as poaching. In addition, responsible visitors and guides can aid in PA management by reporting upon their observations of fauna and flora, as well as illegal activities.

5. Tourism helps to **justify the existence of the PA**, by producing income for the government treasury. It is a way to implement sustainable development in different regions of a country involving the PAs. If carefully planned and executed, tourism does not have significant negative environmental impacts.

COSTS

The costs and disadvantages of PAs are many, if PA administration is not prepared for tourism activity. For each benefit there is a potentially negative side.

1. The **income directly produced by a PA** generally is not reinvested in that PA; instead it usually goes to the government treasury where it is spent on other priorities. On the other hand, what is charged for admission to many PAs is insignificant in comparison to the value of the resource and the facilities offered.

2. The possibility of **educating visitors** to a PA is seldom taken advantage of, generally because of lack of qualified personnel, required infrastructure, and perhaps more importantly, lack of assigning it the required priority.

3. Tourism as a factor in the **economic development** of a region or local population can have many negative consequences, as well as the positive ones. Tourism development, almost always, brings with it two negative socio-economic impacts:

1) Tourism development unequally affects different socio-economic groups; it increases the cost of living in comparison with the rest of the country, and only some segments of the population are benefitted by the activity. This situation means that for certain social groups, tourism represents a problem, not a benefit, since everything costs more and they do not participate in the increased income levels which compensate the favored sectors for increased prices. Additionally, one of the strongest criticisms of tourism is that many of its economic benefits do not remain in the area or region, but instead stay in the capital city or a foreign country.

2) Tourism development also tends to provoke an uncontrolled burst of infrastructure in areas adjacent to PAs: hotels, restaurants, more housing, and other support facilities. It can also promote migration from other less advantaged regions to the area around the PA, with consequent social and infrastructure problems. Uncontrolled development of urban and semi-urban areas near PAs is, in the long-term, the most important negative tourism impact. It can become the factor which kills the goose that lays the golden eggs. It is another reason for justifying the increased involvement of PA administrators with local and regional authorities to ensure that development occurs in a reasonable, sustainable manner.

4. The **presence of tourism** in a protected area can constitute a two-edged sword, if not properly managed. Uncontrolled tourism can have many negative environmental impacts. In order for tourism to be properly managed, a PA must invest a large amount of money in infrastructure, personnel, and training.

5. **Acculturation** is another possible negative impact of tourism, especially in rural areas and with indigenous groups. The cultural impact caused by visitors from a foreign land who visit a local culture almost always sets in motion a complex set of processes which causes alteration of local traditions and customs which seem inevitable and irreversible. Although in theory tourism should be sustainable, it sometimes provokes the loss of many traditional and sustainable practices which are then replaced with unsustainable activities.

6. Tourism is an activity subject to **political, economic and social fluctuations**, both within and outside the country where it is focussed. Monetary exchange rates, social unrest, and political calamities almost always cause a reduction of tourist numbers to the affected country. Therefore, tourism cannot be called a stable industry; the PA that depends heavily upon tourism income for its administration will eventually have difficulties; even more so will a local community or region.

Lesson 9

MANAGEMENT OF DEGRADED ENVIRONMENTS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Define the reasons for restoring degraded environments.

2.Describe at least 4 types of restoration activities that could be done
      in their PA.

3.Describe at least 3 methods used to control erosion.

4.Define the terms: native and exotic species; introduction and
      reintroduction; and how these apply to the management of PA.

REFERENCES:

Mackinnon et al, 1986; Berger, 1990; D5a; Lamb, 1992 (D9a); Maunder,
1992 (D4c); FAO: 1984, 1983, 1981.

PRESENTATION:

1.1Begin the session by presenting a worldwide perspective of the
      problem of environmental restoration. Destruction of the
      environment is widespread around the world with the alteration of
      complete ecosystems and bioregions. This has important
      implications for the future of the planet's lifeforms, both human
      and others, as the earth's ecological carrying capacity is being
      reduced. In response to this problem, efforts are being made to
      reverse this trend, such as the following:

- large scale projects to reverse the process of desertification in the
      African SAHEL;
- efforts to return large rivers to their original riverbeds after
      having been channelized in the past (USA);
- regional projects to control erosion and of reforestation;
- restoration of tropical dry forests in Costa Rica;
- restoration of mining sites;
- creation and restoration of wetlands, both to serve as wildlife
      habitat as well as natural water filters (USA and Europe).

1.2Ask that the participants present cases of environmental degradation
      that they are aware of. Analyze the common elements among them
      such as the causes, types of degradation, scale of the problem,
      actions needed to slow or reverse the problem.

1.3Environmental degradation occurs at large and small scales; in this
      lesson the focus will be mostly on smaller scale problems, or
      those that principally affect the PA.

1.4   Before proceeding, the goals of restoration should be clarified.
       These will be different for different situations. For a farmer,
       the goal might be to return an eroded hillside to a productive
       state. For a forester it could be to manage a degraded forest so
       that it will again produce timber. For a PA administrator, the
       goal in many cases would be to return a site or large area to a
       natural or pristine state which could signify the re-creation of
       an entire ecosystem including species of fauna and flora. On the
       other hand it could be easier to define the goal as to simply
       allow the principal elements of the ecosystem (large mammals,
       clean water, etc.) to be restored and maintained in the PA. In
       general the goal is that a given site return to a state in which
       it can produce environmental services to the human population in a
       sustainable fashion.

1.5   The first step in any restoration activity is to eliminate the causes
       of the degradation. The following are four general types of
       restoration that might be contemplated; each one is applicable in
       different situations:

- allow for a period of rest and natural regeneration;
- actively manage the resources to facilitate the regeneration (as in
       reforestation);
- in severe situations, implement drastic action: i.e. engineering works
       to control erosion, removal of toxic waste, reintroduction of
       species that were extinguished in their natural range.
- in some cases (such as the Galapagos Islands or Hawaii) remove exotic
       species of vegetation and animals.

2.1   For the PA, restoration activities generally involve the following
       types of activities:

- erosion control;
- eradication of exotic species;
- reintroduction of species extinct in the area;
- restoring habitat of endangered species or of species that are
       especially important as genetic material;
- maintenance of heavily used public sites (i.e. planting of grass or
       other vegetation cover);
- extension work in buffer zones in order to minimize problems that
       affect the PA.
- restoration of previously inhabited zones within the PA.

       Present examples of these activities.

2.2   The types and extent of restoration activities that should be
       implemented in a given PA depends, in the first place, upon the
       management category and of the **management objectives**. Obviously
       the degraded zones in a national park would receive a different
       treatment than the degraded zones in a national forest or

recreation area. Discuss with the participants how this is
manifested in the areas which they represent. In Biosphere
Reserves it is common to find a type of zoning which sets aside
degraded areas as special sites for conducting studies and
projects designed to resolve restoration problems. Later results
are disseminated to the general public.

2.3 Other factors which also can affect the degree of implementation of
these activities include:

- the cost;
- the level of scientific knowledge;
- the availability of the appropriate technology.

Ecological restoration, with few exceptions, is expensive and
constitutes a relatively new activity for the PA. In many cases
the experiences are experimental and innovative. Generally they
require a good number of well-trained personnel.

3.1Describe the different types of erosion and how they affect the PA:

- agricultural lands, inside and outside of the PA;
- cattle grazing lands, inside and outside of the PA;
- lands being logged, inside and outside of the PA;
- landslide areas;
- areas with roads or building construction;
- footpaths;
- areas with natural erosion.

3.2   What are the impacts of erosion in the PA?

- aesthetic;
- ecological (loss of soil, sedimentation of rivers, destruction of
aquatic habitat);
- maintenance problems: potable water systems, dams, roads and paths;
- protection, if the lands surrounding the PA become impoverished, the
local community will want to use the lands of the PA for
agriculture;

3.3   Indicate the known methods of prevention and control.

- planting of grass and shrubs in areas disturbed by construction;
- application of mulch or wire mesh on unstable soils until
vegetative regeneration occurs;
- controlling the causes of erosion, whether they be from cultivation,
cattle, or some other type of human activity;
- provide information to the responsible individuals;
- use of simple engineering works in critical areas, such as erosion
control structures in gullies or on footpaths.

Slides should be shown of these problems and solutions.

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3.4 It should be pointed out that natural erosion problems will receive different treatments depending upon the management category of the PA. For example, if the process is natural, nothing will be done to control it in a national park unless it is threatening park infrastructure or presents a danger for visitors. In other categories, it is possible that something would be done to control natural erosion depending upon the management objectives.

4.1 The concepts of exotic (or introduced) species vs. native species, introductions vs. reintroductions and repopulation should be discussed (see Supporting Documents D9d and D1a).

The use of these mechanisms will depend upon the management category of the PA and upon the specific situation of the area. Generally exotic species are avoided in the PA, and native or endemic species are encouraged. However, the rules may be more flexible in special cases where control requirements demand the use of exotic species: such as the case of fast-growing plants to cover eroded areas. Nevertheless, the potential of introduced species to be overly aggressive in its dispersal and become a noxious weed in the PA and its surroundings should be studied before introduction.

ACTIVITIES

1. Using a PA as a case study, take the participants to see one or more situations of degraded environments of different types and ask that in small groups they analyze the problem of each one, following this outline:

a. Description of the problem: extent of problem; characterization of the seriousness of the problem; species involved; causes; impacts; PA type and objectives; efforts done to date to resolve the problem.

b. Action plan: General description of the situation; goal to accomplish (degree of restoration, both in terms of size of the area as well as degree of "naturalness" to be restored); species involved; actions to be taken; implementation period; necessary technology; necessary personnel from the PA and others; equipment; and cost.

Supporting Document D9a

**RESTORATION FOR NATURE CONSERVATION: WHEN TO DO IT,
HOW TO DO IT AND WHAT ARE OUR CHANCES OF SUCCESS?**

(By David Lamb, Botany Department,The University of Queensland
Queensland 4072, Australia. Presented at the IV World Congress
on National Parks, 1992)

1. INTRODUCTION

The degradation of the world's landscapes has received increasing
attention over the last few decades although the problem is hardly new.
There are well documented accounts of degradation in the Mediterranean
basin dating back thousands of years. There is even evidence that
deforestation of some of the remote islands of the Pacific occurred in
the earlier parts of the current millennium. Despite this long history
and the mounting concern over the problem it is hard to be precise over
the magnitude of degradation or even the current rate. The reason is
that the word "degradation" means different things to different people.
So, a farmer might regard his land as highly productive but a bird
enthusiast might see it as a biological desert. The problem is that
"degradation" is keyed to human expectations of what an appropriate use
should be for a particular area of land.

In the present context the issue is simplified because we are concerned
with the maintenance of biological diversity. So, a working definition
of degradation might be any reduction in biological diversity and
productivity caused by human activity.

There are several approaches to dealing with degradation. One might be
to reclaim the land, meaning to revegetate the area with whatever
species seem appropriate, including exotic species. Alternatively, one
might rehabilitate the area using a mixture of native and exotic species
to carry out the task. But for species preservation the only real
solution is restoration meaning to re-establish at the site the original
complement of plants and animals in more-or-less the same populations as
before.

All natural ecosystems are subject to disturbances of various kinds
(i.e. at different intensities, frequencies and scales). Indeed there is
good evidence that certain disturbances are necessary to maintain the
biological diversity of ecosystems. In most situations these ecosystems
recover from such disturbances. When recovery occurs it is usually slow
and the rate depends on the extent to which some of the original biota
remain at the site or the distances over which these must disperse to
recolonise the site. The rate also depends on the soil fertility. If
topsoil has been lost during the disturbance the recovery process is
usually slower than if it has been retained.

But sometimes recovery does not occur and the plant and animal
communities once present at the site are changed. This failure to
recover occurs most commonly when the site is subjected to frequent
disturbances different in nature (size or intensity) to those
experienced in the past. Recovery may also be extremely slow if there
are no remnants of the original vegetation present, where pests or weeds
invade, or where topsoil is lost. That is, there is a threshold
condition below which recovery will not occur although it is usually

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difficult to define this condition beforehand with any precision.

2. <u>WHEN SHOULD RESTORATION BE ATTEMPTED?</u>

All of this raises the question of when and under what circumstances
should restoration be attempted? If recovery may take place unaided, why
intervene? The answer is that intervention may be necessary in those
situations where the normal recovery process will be too slow or
unlikely because some ecological threshold has been passed. For example:

(a)   where protection from recurrent disturbances is needed (eg
             wildfires)
(b)   where few remnants of the original communities remain and the
             dispersal distances are large (eg on islands)
(c)   where the dispersal rate of the main plant or animal species is
             slow
(d)   where certain key species will not recolonise without assistance
             (eg rare or endangered species, functionally keystone
             species etc)
(e)   where weeds or pest species are present in excessively   large
             numbers.

The converse of this question is the issue of when restoration should
not be attempted. The answer to this is that restoration is probably
unnecessary in most cases when the severely degraded areas involved are
too small (because in most such cases natural recover is likely) or
where the areas involved are too large (because large degraded areas are
unpromising landscapes for nature conservation). The issues of what are
"too small" or "too large" are ones I hope we will have time to discuss
further at this meeting.

3. <u>HOW SHOULD RESTORATION BE CARRIED?</u>

Supposing restoration is deemed to be worthwhile, how should it be done?
There seem to be three broad approaches.

Approach 1:remove the disturbing agent(s) and protect the site from
             further disturbances.

Approach 2:remove the disturbing agent(s), re-introduce certain key
             biota and protect the site from further disturbances.

Approach 3:remove the disturbing agent(s), carry out any necessary
             ameliorative treatments (eg soil preparation, weed control,
             fertilising etc), re-introduce as many of the original biota
             as possible and protect the site from further disturbances.

In all cases the objective is to facilitate the recovery process and
accelerate the normal pattern of ecological succession. The more
resources and effort applied, the faster the recovery process and vice
versa. This means that Approach 3 is usually preferable to Approach 1
but the costs are likely to be such that it is only possible to do it in
a few specialised situations. The more common methods are, therefore,
Approach 1 or Approach 2.

On the assumption that we will hear further details of actual methods in
some of the other papers in this Workshop let me turn to what I believe
may be a number of common outstanding problems for those interested in

restoration ecology.

Problem 1: Restoration is slow.

Irrespective of whether Approach 1 or Approach 2 is used the recolonization process is usually slow. In some cases early colonists inhibit the colonization of more slowly dispersed species.

Problem 2: Balancing the need for protection against the need for a "normal" disturbance regime.

A key feature of all approaches to restoration is the need to protect the site to prevent further degradation. This is often more easily said than done. But at some point "normal" disturbances are needed again to permit the normal processes of extinction and colonisation that are part of the successional development. Such "normal" disturbances are one of the means by which Problem 1 may be overcome. The question is, how to manage the transition?

Problem 3: Weeds and pest species

Weeds & pests may be part of the reason a site is degraded. Or they may enter a site during the recovery process. If the populations are low they may be a tolerable problem that disappears over time. But population densities above a certain level may divert the recovery process. A manager can rarely treat every weed or pest. How does one judge the time for action? On the basis of the characteristics (if known) of the species involved? Or when the populations reach a certain size?

Problem 4: Rare or endangered species

Rare or endangered species are of particular concern for conservation biologists for obvious reasons. The difficulty with such species is that in many cases little is known of their autecology so that it is hard to know how to introduce them into the successional sequence. There is a further issue as well and that is of deciding whether the objective of restoration is for certain rare species in particular or for the ecosystem as a whole should endangered species take precedence over less threatened species. If so, should endangered animals take precedence over the protection of endangered plants? Should threatened species that occur naturally in the region take precedence over threatened species from elsewhere?

Problem 5: Restoration of large areas

The scale of degradation is large and resources are usually limited. Are there methods or shortcuts that are cheap to apply and which are applicable on a large scale? Are there, for example, certain species that have a disproportionate influence in facilitating successions? Are there common principles involved or does it depend, for example, on the proportions of wind dispersal or animal dispersed species at particular sites?

Problem 6:   Socioeconomic factors

Socioeconomic factors are usually amongst the prime causes
of land degradation and for this reason are commonly
involved in any attempt at restoration. There are various
ways in which this might occur. At one level it might simply
mean educating park visitors about processes underway to
enrich their experience while at a park. At another level it
might involve gaining the approval and support of the
societies living on the park boundaries to ensure their
collaboration or cooperation with restoration managers (eg
to limit wildfires moving across park boundaries). The
reason why these socioeconomic matters are a problem is that
societies are usually heterogenous with different opinions
and objectives and that natural scientists usually in charge
of restoration programmes are rarely equipped,
professionally, to deal with the issues involved.

Problem 7:   Restoration of the original condition may be impossible

In some situations it may be impossible to restore the
original ecosystem. This may be because there is no way of
knowing just what this ecosystem had been like. Or it may be
that certain species have become locally extinct while
others - exotic plants or animals - have become naturalised
over the years since degradation first occurred. Sometimes
complete restoration may be impossible because the new
disturbance regime is too difficult to change (eg the
current fire regime or grazing pattern). Where complete
restoration is impossible a compromise will have to be
decided upon.

4. <u>HOW CAN WE TELL IF RESTORATION IS LIKELY TO SUCCEED?</u>

Restoration is a long term process. Is there some way of assessing
whether success is likely if the current conditions are maintained or
whether some kind of further intervention is necessary? One approach
might be to establish a set of indices to evaluate current trends.
Different biomes will require different indices and it is possible that
each site will have a unique set. Further, the indices may be indicative
of potential success or likely failure. Possible indices might include

-     stable topsoil;
-     adequate plant cover;
-     vigorous plant growth;
-     "adequate" plant & animal richness;
-     absence of weeds and pests;
-     indicator species present, target species (eg rare or -
      endangered) present;
-     site able to tolerate wildfire.

Precisely what are the most appropriate indices and how they might be
used in any monitoring programme is a topic I hope we will be able to
address further in the Workshop.

5. <u>CONCLUSION</u>

Restoration of degraded ecosystems for nature conservation is obviously
less desirable than being able to protect our biological diversity in

pristine conditions. It is expensive and it is a long term solution. But
there are success stories beginning to emerge and I trust we will hear
more about some of these in our Workshop. Further, I think it is wrong
to regard pristine areas as being the only sites where the preservation
of biological diversity is possible; even degraded lands have a role to
play. I've sought in this overview to briefly highlight some of the
issues I think face those attempting ecological restoration for nature
conservation, whether this is within or outside the boundaries of a
National Park. There are sure to be others.

Supporting Document D9b

FIRE AS A MANAGEMENT TOOL

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

Natural fires, due to lightning, spontaneous combustion, volcanism etc., and fires set by man have had a prolonged and marked influence on the vegetation in many parts of the tropics.

Many of the spectacular wildlife vistas and large densities of ungulates seen in tropical savannas are a consequence of fire. Fire prevents forest regeneration and maintains open grassland, and the ungulates feed on the fresh grass. Fires arising from natural causes are generally rare and irregular in occurrence. Many habitats that show the effects of regular burning are, or have been in the past, largely affected by man. For instance, the savannas of Southeast Asia are man-created. These fire climax vegetations and fire-shaped mosaics are of great biological interest, but maintaining them requires regular burning.

Fire may sometimes be used deliberately within a protected area to maintain some artificial grazing areas in otherwise forested regions; such grazing grounds support a slightly higher density of ungulates and are more accessible for wildlife viewing. Fire has many uses:

*   It is a fast way of clearing scrub vegetation before replanting: early season burning of grassland is a standard way of reducing the risk of more dangerous and destructive fires later in the season.

*   Burned strips act as firebreaks to reduce the potential spread of wild fires.

Fire is a powerful management tool but a very dangerous one. It must be used with great care and expertise. Too-frequent burning, especially at the wrong time of year in areas of low rainfall and poor soils, can have the opposite effect to that desired by suppressing perennial grasses and favouring bush encroachment and thicket formation. The relative effects of fire vary with climate, soil fertility and moisture, other local characteristics, the season in which burns take place, their frequency, and the weather conditions during the burns, including ambient temperature and wind velocity. Too-frequent burning may lead to less suitable grass species dominating the flora such as the coarse *Imperata cylindrica* grass of tropical Asia, which is now a major problem. A burning regime which in one part of a country can lead to the elimination of woody vegetation in favour of perennial grassland, elsewhere in the same country may suppress the grasses in favour of woody plants, scrub encroachment and accelerated soil erosion.

Careful observation of the effects of fires under known conditions and following known burning practices will provide information on the general effects of different burning strategies in various habitat types. Example 8.9 lists some of the possible effects of burning on ecological processes. Some general guidelines on the use of fire as a management tool in a protected area are:

*   Do not burn in periods of extreme drought.
*   Do not burn in very windy conditions when fire can get out of hand or spread to unscheduled habitat .

- Ensure wildlife will not be trapped by fires.
- Burn small areas at a time - do not start longer firelines than you can control.
- Cut, rather than burn, wherever feasible.
- Know the fire ecology and fire history of the area and monitor and record all burns.

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Supporting Document D9c

<u>GRAZING BY DOMESTIC ANIMALS AS A MANAGEMENT TOOL</u>

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

Grazing of domestic stock is generally incompatible with the aims of a protected area. In most cases to allow it would be to condone the introduction of an exotic or exotics which have not evolved with the natural environment. For example, in many parts of Africa, like the arid regions of Botswana, native species are either solitary and sedentary or gregarious and highly mobile. The introduction of cattle under most management regimes has resulted in a sedentary gregarious species that has a marked influence on the local habitats and competes seriously with wild herbivores.

Sometimes grazing by domestic stock may be permitted in a protected area as a temporary expedient in times of natural catastrophe such as a drought. This can have two serious consequences. It encourages pastoralist with access to such "emergency" grazing to overstock the range; and it accentuates the stresses on wild browsing and grazing animals, which are also likely to be short of resources because of the drought. This, in turn, compounds the pressures on the habitat. Example 8.10 lists some of the effects of grazing by domestic stock on ecological processes.

Under certain circumstances, grazing or browsing by domestic stock may be permitted in certain categories of protected areas but this should be carefully controlled in terms of well-defined management objectives.

• Grazing may be useful for maintaining a desirable level of ecological succession. Grazing by domestic animals can help maintain open grassland to attract and encourage wild ungulates. This is less laborious than cutting and less dangerous than burning, but also harder to control and may lead to elimination of the desired species of grasses.
• There may sometimes be strong socio-economic reasons for allowing some grazing rights inside some categories of protected area.
• Grazing by domestic livestock may help to preserve a specific flora and associated fauna that is limited to heavily-grazed pasture. In Great Britain, several rare plants, butterflies and other species are confined to grazed chalk downs. Originally these communities evolved when deer and hares were the main grazing agents but now the pastures are maintained by sheep grazing. Remove the sheep to form a nature reserve and the species that managers are trying to save will be lost.
• Grazing domestic stock, which are dipped to kill ticks, can be used to curb unnaturally high tick populations in parks.

If grazing is considered in a protected area, the principal points to be kept in mind are:

• The manager must maintain absolute control over grazing rights. As soon as the desired level is reached, the manager must have the authority to stop the practice. No sense of traditional grazing rights must be allowed to develop. Mkomazi Game Reserve in Tanzania, for example, has been overrun by pastoralist after they had been allowed an initial "foot in the door".
• There may be dangers of spreading disease and parasites from domestic stock to wild populations. Ungulate diseases and parasites are

generally rather broad in their specificity.
- Grazing should not be permitted if the domestic stock actually disturb or displace wild ungulates.
- No such grazing should be permitted if the activities of stockherders cannot also be controlled; such herdsmen should not be allowed to hunt, light fires, burn land to improve the short-term grazing, or to be accompanied by dogs.
- The effects of grazing by domestic livestock should be carefully monitored to ensure that the protected area does not lose any of its original values due to the presence of the stock.

GRAPHIC

Supporting Document D9d

<u>INTRODUCTIONS, REINTRODUCTIONS AND TRANSLOCATIONS</u>

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

Translocations can be classified into two categories:
introductions into areas outside the historical distribution of the
species, when the species would be considered an exotic; and
reintroductions within the species' distribution range either as
reintroductions to areas where the species has died out, or
translocations to boost falling populations .

Translocation

Translocation is considered in three main circumstances: first,
where land development is about to destroy wildlife habitat and
translocation is seen as a possible way to prevent the wastage of
valuable wildlife resources; secondly, where a wild population is not
faring well and the manager wishes to boost its numbers and thirdly,
when a manager decides to split a population to reduce the risk of
losing the entire population.

As a general rule, if a management decision has been made to
augment a population of animals, rather than release animals that have
been held for a long time in captivity, it is better to capture wild
animals and transfer them to new homes. Such operations from habitats
that are about to be destroyed can save significant numbers of animals
and the captives are released before they become fixated on their
captors or pick up human diseases. They are already wise in the ways of
their environment and need little rehabilitation before release. If a
whole social unit can be caught and transferred together, this causes
less social disruption.

Care should, of course, be taken to choose a suitable release
point, preferably one where the resident population is low and needs
boosting or has died out but conditions are now favourable for
reintroductions. Translocation operations of this kind include the
well-known Operation Noah's Ark to rescue a wide range of wildlife when
the Kariba Dam was built (Child, 1968); the elephant operation in Sri
Lanka where a herd was moved to Wilpattu National Park; and the even
larger "Operation Ganesha" in Sumatra, Indonesia, where over 230 wild
elephants were herded 40 km to a new reserve. Natal, Namibia and
Zimbabwe have considerable experience in translocation operations and
each year move thousands of head of large mammals, including buffalo and
several species of antelope.

***Example 8.7: Guidelines for the introduction and translocation of
animals***

The following recommendations concerning introduction, reintroduction,

translocation and rehabilitation were devised for primate species in South America but are applicable to other animal groups elsewhere.

- Introduction projects should be avoided wherever possible because they may have deleterious effects on the local ecology, and suitability of habitat for the introduced animals is difficult to evaluate. As a conservation tool, introduction should be considered only as a last resort, if at all.

- Translocation and reintroduction projects should be considered only where the habitat at the release sites is intact, where adequate protective measures are in effect, and where the species in question has disappeared locally for reasons unrelated to habitat suitability (e.g. overhunting).
- Wherever possible, only intact social groups should be used for translocation and reintroduction projects. Otherwise efforts should be made to establish cohesive groupings prior to release.
- In all cases of translocation and reintroduction, animals should be provisioned in their new habitat for as long as necessary to supplement natural foods. Provision of shelters may also be desirable.
- Where reintroduction has been deemed appropriate, translocation of recently-caught wild animals is preferable to the use of animals born and/or reared in captivity.
- In cases where the survival of wild populations seems unlikely, it is important that captive breeding colonies are established to ensure that at least some representatives of the species survive. Institutions involved should realise that, in many cases, maintenance of captive colonies may become an end in itself, with reintroduction no longer a viable alternative. Nevertheless, in the event that reintroduction does become possible at some future date, captive colonies should be provided with as diverse an environment as possible so that a maximum of behavioural variability can be maintained and rehabilitation facilitated.

Example 8.8: A successful reintroduction: golden lion tamarins in the Poco das Antas Reserve, Brazil

The golden lion tamarin *Leontopithecus rosalia* is regarded as a critically endangered species with no more than 400 individuals now left in the wild. This monkey has always been restricted to the coastal lowlands of the state of Rio de Janeiro where forest destruction has resulted in the almost total disappearance of the animal's natural habitat. Although a wild population estimated at 75-100 animals exists in the Poco das Antas Biological Reserve, much of the area is not suitable habitat for the lion tamarin, which depends on mature trees for holes in which to shelter at night. Other threats to the reserve monkeys include poaching, disturbance from a road and a railroad cut through the reserve, and a new dam which will flood part of the area.
        To increase the chances of survival of the golden lion tamarin in

the wild, World Wildlife Fund is working with the Brazilian Forestry Department and the Rio de Janeiro Primate Centre to reintroduce individuals from captive colonies in the USA. Fifteen captive-bred animals were released into the Poco das Antas Reserve at a site where there were no resident wild tamarins. Of these releases, five animals have disappeared or died (one due to snakebite) but the remaining ten captive-born animals have settled in well and an infant has been born to one of the released females.

In another trial, a family group of six wild golden lion tamarins were translocated successfully to the reserve from a patch of forest that was being destroyed. The success of this venture is important because future conservation efforts outside the reserve may require moving animals from forests scheduled for felling to protected areas. Moving individual animals may also be desirable to facilitate genetic exchange between small populations.

Work to improve the 5018 ha reserve for tamarins includes planting seedlings of native trees and liming to correct soil acidity in degraded areas. Other management measures include increasing the number of guards, fencing the reserve and the development of firebreaks to prevent the spread of wildfires.

Introductions

Introductions may be particularly useful in stocking new or artificially altered habitats; for example where dams or irrigation projects have created new lakes and swamps, or where reforestation projects have created new but faunally-impoverished habitats.

Many of the constraints described for releasing rehabilitant animals in wild populations also apply to translocating and reintroducing species.

Exotics

Exotic plants and animals are unwelcome and dangerous additions in protected natural areas. There are endless examples of exotic species becoming terrible pests in their new homes and often outcompeting and replacing native species as well. Much of the original fauna and flora of Hawaii has been lost as a result of ill-considered releases. The disastrous introductions of rabbits and prickly pears into Australia are other well-documented cases. The message is clear: exotic species should not be introduced into new habitats unless under exceptional circumstances. However, in some categories of multiple-use protected areas, or in special circumstances in other protected areas, exotics may sometimes play an important and useful role (e.g., species introduced into multiple-use areas for economic or utilisation purposes; stabilization of erosion-prone areas, biological control of other exotic or pest species).
If for any reason the introduction of an exotic is contemplated the following points should be kept in mind:

• Do not introduce species which are potential pests, e.g. known to feed

on domestic stock or crops, known carriers of dangerous diseases,
species with a high capacity to disperse and reproduce, or close
ecological equivalents of local species.

- Avoid introduction of an exotic species if a local species will do
just as well, e.g. for shade trees. Similarly, do not use exotic
flowering or ornamental plants in flower beds around park buildings.
- Take care that the exotic can be controlled or exterminated if
necessary.
- Make trial introductions in small isolated areas where the species can
be exterminated if the trials are unsatisfactory.
- Essential exotics, e.g. vegetables grown for staff consumption,
draught and pack animals for management purposes, should be as few as
possible and located outside the protected area or limited to
development areas wherever practicable.
- Avoid introducing any secondary species or diseases with the exotic.

Lesson 10

MANAGEMENT OF CULTURAL RESOURCES

OBJECTIVES:

By the end of this lesson the participants should be able to:

1. Explain the basic concepts that define culture; cultural resources; and their management in the PA.

2. Identify the principal types of cultural resources, their characteristics, and implications with respect to an effective management of a PA.

3. Describe in general terms the main cultural resource management techniques in the PA.

4. Describe the appropriate procedure to follow upon discovering an archeological find in the PA.

REFERENCES:

Supporting documents for this lesson; Goodland, 1982; Clay, 1988; Renard and Hudson, 1992; Kemf, 1993.

PRESENTATION:

1.1 Explain in detail the concept of **culture** and **cultures**, from an anthropological perspective and emphasize the distinction with the popular concept of culture. Enumerate and explain the roles and functions that culture and Cultural Heritage fulfill in a society (examples: national identity, social cohesion, lifestyle, maintenance of customs and traditions, interrelation and contact of humans with natural resources and their environment).

1.2 Briefly review the national legislation in force concerning the protection and conservation of cultural resources (CR). Point out the socio-economic functions that culture fulfills and relate them to the concept of cultural elements as **resources**, that is, as useful elements that can produce tangible economic benefits to society. (Compare with a definition of natural resources.)

1.3 Finally, give examples as to how cultural resources, located and managed in PA of diverse countries, produce benefits. (Examples: Cambodia, Perú, United States, etc.)

2.1 Amplify the definition of CR including the three principal types under which they can be classified: Archeological Resources, Historical Resources, and Ethnological Resources. By giving examples, describe each of these types and point out their

differences in terms of:

- possibility for management
- capability for participation
- precariousness vs. renewability

2.2 Explain the need for PA administrators to become involved in the management of ethnological resources given the growing tendency to integrate the conservation of CR with the legitimate effort of society to arrive at sustainable development.

3.1 Clearly and explicitly make the participants understand that the management of CR requires the participation, guidance, help, and advice of specialists (reference pertinent parts of the laws and rules in force in your country concerning this point). Explain that the three different types of CR require three different types of specialists, rarely interchangeable or replaceable. The PA administrator, traditionally trained to deal with the management of natural resources, should understand that he needs help and advice in the management of CR. Normally this can be found in museums and universities. In most countries, the control and management of cultural resources, in particular the archeological resources, is under the jurisdiction of a different institution than that which administers the PA. In this case agreements must be prepared to assign responsibilities.

3.2 Also emphasize the unquestionable need to conduct scientific research in order to gain a solid understanding about the cultural resources one hopes to manage. Illustrate this point with examples: one can not restore nor reconstruct an archeological monument if the original techniques of construction are not known. One can not explain the historical or cultural significance of an archeological artifact if it is not yet scientifically understood.

3.3 Using examples, describe the most commonly applied techniques for the management of each of the three types of CR. Emphasize the most common objectives that motivate the management activities and the techniques that are utilized.

4.1 Initiate a discussion over the significance and implications of the presence of cultural remnants in a PA, emphasizing that the presence of such artifacts nullifies the idea that the area is pristine, from the perspective of having no human disturbance. The cultural evidence implies the past use of the natural resources of the area by man. At some point in prehistoric time, all ecosystems were "natural", yet when human population was incorporated it was transformed into a socio-cultural ecosystem.

4.2 Both the presence of cultural artifacts in the PA and the certainty that we are dealing with ecosystems that were transformed in the past by human intervention, justify an integrated management of natural and cultural resources as components of the same

ecosystem. Explain that this certainty also justifies the growing
tendency in the science of conservation to integrate the
legitimate needs of society for sustainable development.

4.3 The integration of natural and cultural resources also should occur
in the routine management programs of the PA. For example,
environmental interpretation should incorporate elements of
history, archeology, and ethnology along with interpretation of
natural resources in order to enrich and make more relevant the
explanations given to the public. Also the protection of the PA
should include patrols and protection of the cultural resources as
well as of the natural resources.

4.4 Explain the novel and innovative concept of integrating the
management of natural and cultural resources in the PA, as opposed
to the traditional tendency of treating them separately, to the
detriment of one or both. Give examples of a PA created based on
criteria exclusively related with the CR, without apparent
consideration of the natural resources -and vice versa.
Illustrate the negative consequences of such activities with
respect to one or another type of resource.

5.1 Planning and management of CR in a PA require collaboration with
specialists and a positive and informed attitude on the part of
the PA personnel. There are two general actions necessary to
consider: (Supporting Document D10a and D10c)

- Diminish the inevitable loss of integrity of the objects, structures,
sites, and cultural landscapes to the impacts of natural forces;

- Determine the best use of the cultural resource, and how to minimize
the loss of integrity that would come from such use.

5.2 In the majority of PA there exists neither the consciousness nor the
understanding among the personnel of the treatment that should be
given to CR that are found. Together with the participants review
the Supporting Document D10c.

ACTIVITIES

1. Dedicate an entire day of field work in a PA selected for its variety
and richness of natural and cultural resources, both within its
boundaries and in the general vicinity. Depending upon the number of
participants, form groups to cover different zones or predetermined
transects where they can conduct inventories of the CR. Ask them: 1) to
classify the types of CR identified, describing their characteristics;
and 2) propose management prescriptions to insure their conservation and
protection, as well as to evaluate their potential for sustainable use.

At the end of the day organize a meeting for presenting the results by
workgroup. Stimulate a discussion over the conclusions concerning how
to integrally manage the identified CR together with the natural

RES MAN D10-4

resources of the PA.

Supporting Document D10a

CULTURAL RESOURCES MANAGEMENT

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Latin American nations are increasingly recognizing the importance of preserving, protecting, and interpreting the cultural resources that form important parts of their cultural patrimony. People are naturally curious about who they are and what makes them unique as a culture. These questions can best be answered if there is a systematic program in place to conserve the evidence of their ancestors. In many countries, these stewardship responsibilities are entrusted to entities other than the National Park Service. Yet, in most countries, it is in the parks that the finest examples of cultural resources are best preserved because of the protection that the parks have been historically afforded. The national park services of most countries, then, have the obligation to protect these resources, even if they are not responsible for their management. That means that park managers and their staffs must be familiar with the basic concepts of cultural resource preservation and management. The following information is condensed from the United States National Park Service Cultural Resources Management Guideline, NPS 28. Participants in this training course may request a copy of NPS 28 if they wish more detailed information regarding any of the basic concepts listed below.

People live in a cultural environment - a world both natural and social. On the one hand, there are physical, chemical and biological attributes. On the other hand, there are ideas, events and relationships. This duality is evident in something as small as a coin and as large as a statue of Simon Bolivar. Fashioned from metal, both share common material properties. Shaped into symbols - one of economic value, the other of an expression of a fundamental human desire for self-determination, both transcend their inherent attributes. The coin and the statue exemplify the cultural environment: at one and the same time, they are tangible things and expressions of ideas.

The cultural environment is a composite of the rich and diverse forms we have given to the basic elements of nature. It is the streets of our cities and the trails of our parks; it is our barrios and city halls, our corn fields and art museums; it is schools and irrigation systems and churches. These places remind us of our common need for shelter and social organization, for nourishment and artistic expression. They also remind us of our fundamental dependence on natural systems - earth, air, fire, and water - the primary source and ultimate end of all things humanmade.

The cultural environment is the nursery in which each generation is nurtured and socialized; it is the workshop in which each generation

elaborates on its received tradition; and in the end, it is the legacy
that each generation passes on to its descendants. To be truly human,
each individual must become part of a group tradition, each must accept
the burdens of social responsibility, and each must act in concert with
basic concepts of right and wrong. As we learn about these traditions,
we are shaped by them; as we live these traditions, we give them
expression.

Cultural resources are among the most important of these expressions of
social tradition. Each is a representation of something noteworthy, made
up of pieces from the thing itself. Cultural resources make tradition
accessible through contact with their physical qualities. Most cultural
resources are not religious relics, but they do possess the power to
touch our spirits and to fire our imaginations. Through them, we can
discover our own humanity: the magic of birth, the mystery of death, and
all the wonder of living that lies between.

Most cultural resources specialists recognize five broad categories of
cultural resources: archeological resources, cultural landscapes,
structures, museum objects, and ethnographic resources.

Archeological resources are like crime scenes: they contain clues to the
mystery of past events. They may be as large and dramatic as Mesa Verde
or Machu Picchu or as small and common as a cache of rusty nails. They
may be ten thousand years old, or a hundred and ten years old. What
matters about an archeological resource is its potential to describe and
explain human behavior. Archeological resources have shed light on how
families were organized and how people fed themselves, how ideas spread
from one group to another, and how groups settled across the land.

Cultural landscapes are settings we have created in the natural world.
They reveal fundamental ties between people and the land - connections
based on our need to grow food and the forms of our settlements, on our
requirements for recreation and the places we bury our dead. Landscapes
are intertwined patterns of things both natural and human-made: they
consist of plants and fences, water courses and buildings. They may be
as carefully designed as a formal garden or as improvised as a cattle
ranch. They are special places, expressions of human manipulation and
adaption of and to the land.

Structures allow people to transcend their natural limitations. Without
them, we are restricted to temperate climates, the distances we can
walk, and the loads we can carry. With them, we can live where we
choose, span the continent in hours, and hurl spacecraft at the moon.
Structures are buildings that keep us warm in winter's worst blizzard
and bridges that keep us safe as we cross raging rivers; they are
locomotives that carry us over vast savannahs and monuments to mark our
passing. They are cliff dwellings and ocean liners, auto factories and
bronze statues, elaborations of our construction ability and artistic
sensitivity.

Museum objects are some of the nation's moveable treasures. They are

evidence of technical development and scientific interests, of personal expression and curiosity about the past, of common enterprise and daily habits. Museum objects range from inkstands used in signing independence declarations from Spain to the remains of a prehistoric pot. They include the walking cane of a president, blacksmith's tools, and the field notes of Charles Darwin. They encompass oil paintings and business journals, household furnishings and love letters bound with a faded ribbon. They are an invaluable collection - samples and fragments of dreams and reality.

Ethnographic resources are the foundation of traditional societies and the basis for cultural continuity. Culture encompasses both the tangible and the intangible. It includes traditional arts and native languages, spiritual concepts and subsistence activities. Some of these traditions are supported by ethnographic resources: special places in the natural world, structures with historic associations, and natural materials. An ethnographic resource might be a riverbank used as ceremonial site, a schoolhouse associated with Indian education, or sea grass needed for basket making. Ethnographic resources acknowledge that we live in a pluralistic society and that different groups may have different ways of defining cultural resources.

The idea common to all cultural resources is the concept of significance. Significance grows out of the dual nature of cultural things. To be significant, a cultural resource must be something physical from the past and it must be associated with something important in the past.

We usually know something is from the past because of its physical characteristics - a rich patina, worn surface, antiquated style, or obsolete method of fabrication. While age is thus obvious, historical associations must be discovered and verified. This social dimension of significance is called association; the physical dimension is called integrity. A cultural resource is not significant if it does not possess integrity relative to specific, noteworthy associations.

This dual nature of cultural resources, an inseparable union of social and physical qualities, leads directly to the central issues of their management. We must try to discover the meaning of each significant resource and slow the rate at which its material essence is lost. We must seek to understand how cultural values are expressed in physical form and learn to analyze how we directly and indirectly affect the condition of these expressions. Finally, we must protect our cultural resources while sharing them with others. For those of us involved in preserving and interpreting them, this means we must organize our activities into three functions: research, planning, and stewardship.

Research begins by locating and evaluating cultural resources. It entails documentation and detailed physical examination. Research identifies places within park boundaries having spiritual significance for indigenous people. It works through layers of debris in a coastal village site, discovering how people once lived from the proximity of

fish bones and shell beads. Research turns back the clock on a farm valley, noting changes in the style of fences, the layout of fields, and the choice of trees used to blunt winter storms. Research establishes the construction sequence of a building and the origin of a historical document.

Planning addresses the basic question, "How can we best take care of our resources?" Typically, there are two parts to this question. The first asks, "What can be done to slow the loss of resource integrity from natural forces?" The second, "What is the best use of this resource, and what can be done to minimize the loss of integrity from that use?"

Planning seeks to identify and assess the likely effects of an action before that action is taken. Putting a 19th century gaucho saddle blanket on display may help tell a story about Argentine craft traditions, but it may also increase the possibility of the blanket being soiled, mutilated, or stolen. Planning weighs the trade offs between preservation and practicality in finding uses that best fit the resources.

Stewardship is the bottom line, where research and planning bear fruit. It requires interaction with both the resource and its environment. It seeks to limit the loss of historic materials and to maintain historic character.

Stewardship entails expertise and equipment; it is a matter of matching ability with the task at hand. Watering a lawn, dusting furniture, and oiling door hinges are common acts of stewardship. So too are pruning a tree and replacing a worn stair tread, although this work requires a higher level of knowledge and ability. Even more skill is needed to repair fragile materials like frescos in a Spanish Colonial church, to propagate historic plant material like a rare fruit tree cultivar, or to recover data from a prehistoric hunting camp.

Most of the threats to cultural resources come from their surroundings. Theft, uncontrolled humidity, and careless handling endanger museum objects. Looting, soil erosion, and rodents eat away at archeological resources. Acid rain, fire, and remodeling pose serious threats to historic structures. Wildland fires, highway improvements, and plant diseases wreak havoc with cultural landscapes. Fencing pollution, and insensitive use can desecrate an ethnographic resource.

Responses to these threats are many and varied. They range from ranger stakeouts to improved record-keeping, from installation of smoke alarms to structural monitoring gauges. But the most important and effective protective measure is one that cannot be seen. It is a positive attitude among park employees toward cultural resources. Such an attitude is fostered by employee training, public education, and interpretation. Coupled with knowledge, a positive attitude prepares us to confront threats to any resource, regardless of their origins or magnitude. It allows us to transform thoughtful concerns into effective action.

Supporting Document D10b

**INTEGRATED MANAGEMENT OF NATURAL AND CULTURAL PATRIMONY:
SOME THEORETICAL AND METHODOLOGICAL CONTRIBUTIONS**

By: Luis Hurtado Mendoza

(Original translated from a paper presented at the Workshop
on Integrated Management of Natural and Cultural Patrimony and
Ecodevelopment. National Commission on the Environment,
Guatemala City, Guatemala. 1988)

INTRODUCTION

Within the Central American regional context, the natural and
cultural patrimony of Guatemala is exceptionally rich and diverse. The
natural resource base, upon which the life and progress of the
population depends, extends along an altitudinal gradient from the
Pacific Ocean, to the tops of volcanos at 4000 meters above sea level,
and down to the Caribbean lowlands and the plains of the Petén. This
territory has been populated by humans for the last 10,000 years, which
means that by the end of this century the 500th generation of
Guatemalans will be born.

The cultural manifestations of these 500 generations are dispersed
throughout the national territory and are partially known thanks to the
work of archaeologists, historians, and other social scientists. Just
as the country's natural resources are diverse, depending to a great
extent upon their geographic location, so are the cultural
manifestations diverse, depending more upon their location in time.
They vary from simple hidden camps of unknown hunters of the Archaic
Period to the magnificent cities, built by the Mayas in the Classical
Period, built by the Spanish in the Colonial Period, and built by the
Guatemalans in the 20th century. Today they vary also by the language
and lifestyles of the different ethnic groups which compose our national
society.

The perception of natural elements as resources is such a given that
it requires no discussion; but the same can not be said for cultural
elements. An unquestioned importance is assigned to natural resources
since it is recognized that the productive process of the society is
based upon them. However, it is seldom recognized that all use of
natural resources for production is done via the use of cultural
resources.

Cultural resources are the tools, acumen, and skills which allow for
productive activities to occur. From this perspective it is difficult
to imagine any human activity which doesn't imply the use of cultural
resources. Yet usually the living culture found in the daily life of
people is not considered a resource. The term cultural resource is
reserved only for religious monuments while in actuality these, plus the
past and present living cultures, are a part of our "cultural
patrimony".

Cultural resources demand an adequate management which assures their
conservation, so as to not risk their disappearance. Cultural resources

are not renewable. Their management can not be done unilaterally nor in
isolation given that they are intimately associated with natural
resources. In Guatemala this association is evident in the National
System of Protected Areas, within which the management for the
conservation of cultural resources is a critical aspect. While there is
not a protected area in the system that does not contain both types of
resources, many areas were created with only natural or cultural
resources in mind. Consequently, their management frequently focuses
only on one type of resource or the other, often without considering the
unrecognized or unfavored resource.

   Is it permissible to destroy a considerable area of forest in order
to build a highway or an airstrip to facilitate visitor access to an
archeological site? In order to preserve the forest and its fauna is it
possible to prevent archeological excavations or the construction of
infrastructure to provide services for tourists? Where are the limits
to be drawn between the rules of management of the national institutions
in charge of one or another type of resource? The only adequate answer
is that natural and cultural resources ought to be jointly managed in an
integrated fashion. For this it is necessary to articulate a
theoretical justification which helps to systematize our understanding
of the problem and to develop a management methodology appropriate for
the complexity of the problem.

   In this paper an initial contribution in that direction is presented.
 The theoretical base has been extracted from anthropology and ecology,
while the methodological framework was influenced by environmental
planning within the science of conservation. While the theme will be
developed from a perspective of protected areas (national parks,
biological reserves, national monuments, archeological reserves, etc.),
these are not considered as isolated entities but rather as components
of a wider regional system which includes peripheral areas under
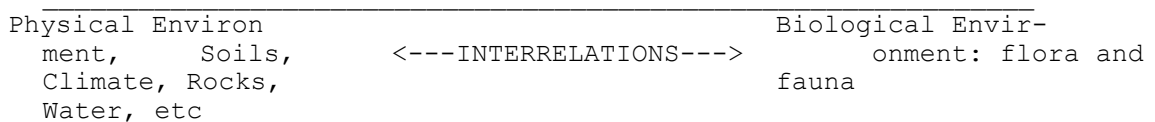productive uses.

THEORY

   Ecological science has developed the concept of the Ecosystem which
constitutes an adequate model for the structure and function of nature.
 The natural ecosystem has a wide diversity of components which can be
classified into two principal categories: 1) the physical environment;
and 2) the biological environment. The first includes those nonliving
resources which make up the substrate that living things require; and
the second is composed of the plants and animals. The soil, while
considered part of the physical environment, is the component which most
ties life together. This ecosystem (figure 1) is that which prevailed
on Earth for millions of years before the arrival of the human species.

Figure 1:
                  THE NATURAL ECOSYSTEM
_____
Physical Environ   Biological Envir-
   ment,   Soils,   <---INTERRELATIONS--->   onment: flora and
   Climate, Rocks,   fauna
   Water, etc

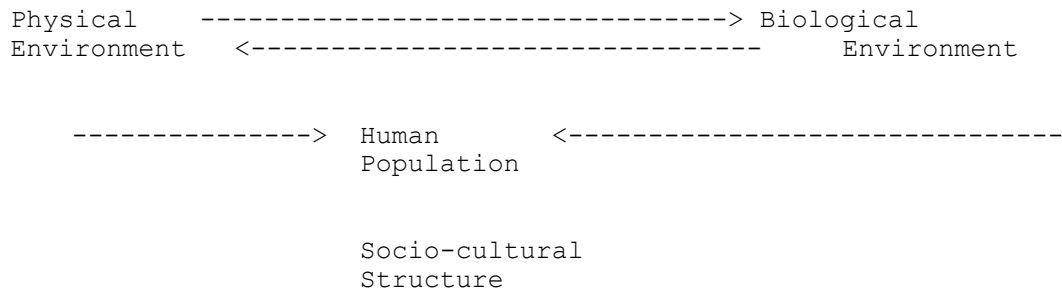
   In Guatemala, the arrival of human population and its cultural
baggage has been relatively recent, when one considers the geological
time scale. According to the best archeological evidence this would
have occurred some 10,000 years ago. Around this time, then, began the
drastic change in the form of the Natural Ecosystem, converting it to a
Sociocultural Ecosystem.

Figure 2:
            THE SOCIO-CULTURAL ECOSYSTEM

   _____

   Physical   --------------------------------> Biological
   Environment   <-------------------------------   Environment

       --------------->   Human   <-------------------------------
                          Population

                          Socio-cultural
                          Structure

   The manner in which the human population interrelates with the
regional environmental components differs qualitatively from that of
other living things due to its peculiar social and cultural
organization. This adaptive mechanism is so important in the model that
it is included as one of the four fundamental components of the
Ecosystem, giving it the title Socio-cultural.

   The four components of the Sociocultural Ecosystem interrelate both
in a harmonious and a nonharmonious fashion through a constant process
of effects and counter-effects in such a way that an action on the part
of one component results in a reaction on the part of the other three
components. The net result in time and space is a constant change such
that the system is never the same. Nevertheless, the quickness by which
change is produced differs among the components, with the physical
environment being the most stable and the sociocultural component being
the most susceptible to change. This difference is very useful for the
human population in adaptive terms, but it can also be harmful in terms
of the effect that the human activity can have over the environment.
Nevertheless, according to the principles which guide the system, each
excessive action on the part of the human component must provoke
inevitable corrective reactions which tend to preserve the entire
system.

   The unitary character of the functioning of the Sociocultural
Ecosystem serves as the theoretical foundation for the necessity of
integrated management of the natural and cultural resources. The
habitual attempt to separately manage the components of the system makes
no sense. Indeed this can only cause harmful effects to the rest of the
system, sometimes inconsequential, but at other times irreparable and
possibly leading to unimaginable consequences.

METHODOLOGY

   The integrated management of natural and cultural resources has no
established methodology. This is a line of action that only recently
has begun, and because of this it requires the development of its own
methodology. In this document it is impossible to elaborate in any
detail, so only a series of general guidelines are presented which help
to address the complexity of the problem at hand. The uniting element
for the methodology ought to be the need to develop in a holistic
fashion.

   There are at least three general rules which need be remembered: 1) A
regional perspective; 2) An interdisciplinary treatment of the problem,
given its complexity; and 3) Long range planning and execution of
integrated management projects of the natural and cultural patrimony.

   The regional perspective implies a geographic area that transcends
the limits of a particular protected area. For methodological
convenience one could consider a watershed as the minimum area for
analysis, although this does not eliminate the possibility of dealing
with a part of a watershed or with an area much larger than a watershed.

   The interdisciplinary treatment of the problem responds to the
diversity of elements which constitute the Sociocultural Ecosystem. No
one specialist in the natural or social sciences could adequately
embrace all of the possible lines of information, nor does it imply a
number of technicians working in isolation. Teamwork is necessary in
which all of the specialists constantly share and discuss their
information and experiences. This work model will eventually allow for
the integration of information allowing for a better understanding of
how the components of the ecosystem interrelate, facilitating the best
decision-making for resource management.

   Finally the need to work over the long-term responds to the fact
that whatever measure is taken will have inevitable consequences. While
there will be results that we can predict, there will also be others
that are totally unpredictable. They all are important experiences
which should be learned from in order to refine successive actions. All
management actions should be the result of a planning process which
should not cease after the initial stage, but rather be continually
revised. This also fits with the pattern of the constant, natural
change of the Sociocultural Ecosystem.

   These rules should guide all integrated management projects of
natural and cultural resources. Indeed these are the projects that
constitute specific opportunities for promoting sustainable development.
 These projects ought to have alternating stages of planning and
execution including both protected areas and adjacent areas under
production. Nevertheless, protected areas together with their areas of
influence and buffer zones are extremely important given that they offer
ideal conditions for the development of pilot demonstration projects
under a level of control which is not possible on private lands under
production.

   The planning stage cannot last for too long a time as there always
exists the urgency of action, both for resource conservation as well as
for development. Nor can the stage be too short. Experience indicates

that 18 to 20 months seems to be the minimum time needed for a planning team to do its job effectively, assuming they have the economic resources necessary.

   Planning normally begins with a diagnosis of the situation which should be done based upon the information available concerning the components of the Sociocultural Ecosystem and how they are functioning. An integrated analysis is then required in order to identify those critical problems requiring attention. The detection of the causes of the problems is necessary in order to elaborate a management program. Such a program should specify the actions to be taken, the conditions needed for their execution and success, and the rules under which they should be carried out.

   The stage concerned with carrying out activities requires that one entity be responsible for coordinating actions and that it be clearly defined who is responsible for each specific activity. Given that Guatemala has a system of Development Councils, these may be the best organisms to coordinate and promote integrated management projects of natural and cultural patrimony; while other public and private institutions can be in charge of carrying out specific activities.

Supporting Document D10c

**RULES TO FOLLOW WHEN FINDING AN ARCHEOLOGICAL DISCOVERY
INSTRUCTIONS FOR NATIONAL PARK PERSONNEL**

(Document developed by the National Park Administration
of Argentina, 1992. Translated from the original Spanish document)

WHAT IS AN ARCHEOLOGICAL DISCOVERY?

It is the finding, on land or in water, of any material from the past
which is the product of human action: instruments made of stone, wood,
horn, ceramics, metal, leather, animal or vegetable fiber, glass, or any
other material; prehistoric art (sculptured or painted); tombs;
settlement sites (caves, stopping places, workshops, quarries,
buildings, etc.) of indigenous or colonial origin.

BASIC RECOMMENDATIONS

**1. Upon making a discovery of any of the above mentioned sites or
artifacts one should not excavate under any circumstance.**

The past is a "book" that is difficult to read. The different layers of
earth that cover or lie below an archeological object are the "pages" of
the book; they contain information about the age, origin, and function
of the object. An excavation done by a nonexpert damages these "pages".
 At worst the object itself may be destroyed, and at a minimum the
complementary analysis of the sediments (extraction of samples for
pollen analysis, studies of food remains, etc.) will be compromised,
denying us a clearer picture of the past. The archeologist himself,
when excavating, destroys these sheets in order to access those that lie
below. Thus there exists a serious responsibility to know how to "read"
each of them in as detailed a fashion as possible.

**2. The respective supervisor should be immediately informed of the
discovery.**

**3. When dealing with information of a discovery, each supervisor should
adopt the necessary precautions to protect the site until such time that
the corresponding studies can be carried out.**

In the report of a discovery the following information should be
included:

  A) Site of the discovery
  B) Name of the site
  C) Characteristics of the discovery

A) LOCATION OF THE DISCOVERY

Clearly express:

- The geographic location of the discovery, citing permanent reference
  points, beginning from the most general to the most detailed (for
  example): National Park (Province), nearest town, property or sector

on which the discovery is found.

- Closest highway, road, or trail.

- Names of the closest natural features (river, stream, valley, or mountain).

- Residence of a local inhabitant.

- Map showing the site.

- Complete name of informant.

- Names of other informants or guides who can find the site.

The information ought to be complete enough as to allow the reader to find the location.

B) NAME OF THE SITE

The site of the discovery should be "baptized" with a local name: one of a local inhabitant, nearby farm, or geographic feature. For example: White Valley Cave, Ortega Site, or The Condor Farm Site.

If there are several sites, for example various accumulations of artifacts separated by areas with no archeological material, each site should be named in the following fashion: Morales Site I, Morales Site II, Morales Site III, etc.

C) CHARACTERISTICS OF THE DISCOVERY

Assign one of seven codes to the discovery - Type C.1, C.2, C.3, C.4, C.5, C.6, or C.7 - according to the following descriptions:

C.1 - ISOLATED DISCOVERY

  Discovery is a man-made artefact, found in isolation of other archeological material. For example, an arrowhead, a broken piece of earthenware, a ceramic bowl, a piece of ceramics, etc.

  Action: Collect the object and send it to the area supervisor, along with the information described in sections A and B above. The supervisor's office should then advise the technical division of the national park administration responsible for archeological finds. The supervisor will keep the material in storage until the technical division gives the pertinent recommendations as to what should be done with the material.

C.2 - OPEN AIR SITES

  Discovery on the ground surface of a group of man-made (or man-utilized) instruments that are found together in a small area.

  Action:

  * Determine the approximate surface area over which the artifacts are found.

* Map the site.
* Describe the site.
* Make a sketch of the pieces which are considered most
pertinent of the site.
* If a camera is available, take photographs of the site and of the
materials.
* Immediately inform the area supervisor of the discovery.

DO NOT REMOVE ANY PIECES FOUND ON THE SOIL SURFACE.

DO NOT EXCAVATE WHERE PIECES APPEAR ON THE SOIL SURFACE.

C.3 – CAVES, CAVERNS, OR ROCK OVERHANGS

Assign the information indicated in A and B above adding the cardinal
  (or compass) direction in which the opening of the site faces. For
  example: Traful Cave. General location: Nahuel Huapi National Park,
  Neuquén Province. Detailed location: one km. from the point where
  the River Traful joins the Black River, follow the trail that follows
  the right bank of the Traful River heading up river. At the foot of
  Goat Mountain, around 100 meters above the elevation of the river,
  there exists a triangular chasm which opens to the northeast.

Add the approximate dimensions of the cave: maximum width, maximum
  height, and depth.

  Map of the area: on the map indicate with crosses the discovery site.

  Action:

* Determine the approximate area over which the artifacts are found.
  * Map the site.
  * Describe the site.
  * Sketch those pieces that are considered most pertinent of the site.
  * If a camera is available, take photographs of the site and of the
  materials.
  * Indicate in the map if possible, which parts of the site are
covered with fill dirt and which are covered with rock.
  * Immediately inform the area supervisor.

C.4 – SITES WITH PREHISTORIC ART

  These refer to caves, overhangs, rock walls, or large stones where
man painted or sculptured in stone symbols, most of which are unknown to
us today.

  - Assign the information described in parts A and B above.
  - Describe if the artwork was done on the interior or the exterior of
  the caves, overhangs, etc.
  - Describe the technique used: paint or sculpture.
  - Describe the colors of the paintings.
  - Generally describe the designs: geometric, anthropomorphic,
  zoomorphic, animal prints, etc.

  Action: Photographic evidence of the site should be collected,
preferably using slide film. The photographs should be taken in series
showing the relationship of each painting or sculpture to the other. On

one side of the photograph use a ruler, scale, or some other recognizable object (such as a key, pocketknife, etc.) which serves as a reference of the dimensions of the figures.

   It is recommended that pictures be taken from left to right and from top to bottom. If a camera is not available, the following information should be taken:
   - Number of paintings or sculptures.
   - Description from left to right and from top to bottom. Include a rough sketch indicating its relative scale to the actual artwork.
   - The color(s) used in each figure.
   - The approximate width of the design.
   - In the case of sculptures, the approximate width and depth.

IMMEDIATELY INFORM the area supervisor, who will be responsible for passing the information on to the appropriate technical division.

   DO NOT TRY TO EXTRACT STONES WITH PAINTINGS OR SCULPTURES.

   DO NOT TOUCH THE MOTIFS, SPECIALLY IF THEY ARE PAINTINGS.

   AVOID FIRES IN THE AREA.

   AVOID THE PRESENCE OF CATTLE WHICH CAN DAMAGE THE PAINTINGS BY RUBBING AGAINST THEM.

   C.5 - BURIAL SITES

   It is recommended to leave them intact, making the appropriate report of the find without touching anything.

   Action: If possible help preserve the site by covering with some material (wood, branches etc.) in a way that doesn't damage the grave in any fashion.

   C.6 - ARCHEOLOGICAL SITE IN STATE OF IMMINENT DANGER

   Situations in which an archeological object is in imminent danger of destruction.

   For example in an open air site:

   a) Danger of destruction of pieces due to cattle traffic.
   b) Danger due to seasonal flooding.

   Action: It is recommended to:

   - Collect all the artifacts that are on the soil surface.
   - Make a map of the site, sketching each sector.
   - Place in a labeled bag or box those items which are found in close proximity with each other.

   With the exception of these cases REMEMBER TO NOT REMOVE ARCHEOLOGICAL MATERIAL FROM THE SITE IN WHICH IT HAS BEEN PRESERVED IN THE PAST. For example: upon finding an object being exposed on the ground surface which apparently will be covered by the next flood of a

river, one should:

   - IMMEDIATELY INFORM THE AREA SUPERVISOR
- DO NOT TRY TO REMOVE THE OBJECT FROM THE GROUND as one can cause more
  damage to the object by trying to remove it then the damage that
  would be done by allowing it to be buried by a flood.

C.7 – UNDERWATER DISCOVERIES

Archeological and historical materials at the bottom of rivers or
lakes.

Action:

  * Do not remove the objects.
  * Immediately inform the area supervisor of the discovery.

**These instructions will contribute to the preservation of the
cultural and historical patrimony of the National Parks, so that they
can be studied in the future by specialists offering knowledge to the
present and future generations.**

Lesson 11

**THE NATURAL AND CULTURAL RESOURCE MANAGEMENT SITUATION
IN A GIVEN COUNTRY**

OBJECTIVE:

By the end of this lesson, the participants should be able to:

1.Display an understanding of the cultural and natural resource
    situation in the PA of their country and of the techniques used in
    their management.

REFERENCES:

Will vary by each country.

PRESENTATION:

1.1Make a presentation about the cultural and natural resource situation
    in the PA of your country, focusing on:

  - the most abundant resources
  - those resources in danger of extinction
  - threatened resources
  - important genetic resources
  - the key resources for the PA and/or the country
  - the resources that receive the most attention
  - unknown resources
  - those resources located outside of the PA that require protection
- principal indigenous groups and cultures, including property rights
  and relationships with PA's.

1.2Explain the management given to these resources, focusing on:

  - project and program planning
  - techniques utilized
  - number and qualifications of personnel
  - budget
  - relationships with universities and other institutions, NGO's etc.
  - process for public participation in decision making
  - results obtained
  - evaluations done

1.3What are the prospects for the future?

  - equipment
  - personnel and training
  - financing
  - focus of the program

Lesson 12

FUTURISTIC PROTECTED AREA MANAGEMENT

OBJECTIVES

By the end of this lesson, the participants should be able to:

1.Explain the future trends and tendencies regarding PA management.

2.Initiate steps to implement some of the relevant trends in their PAs.

REFERENCES

Mackinnon et al, 1986; Sayer, 1991; Bennet, 1995?; Berger, 1990; Lewis, 1995?; IUCN/UNEP/WWF, 1991; Lamb, 1992; Norris, 1995?; PARKS magazine: V.3, N.1, 1978, and V.10, N.1, 1987, Participatory planning; V.6, N.3; Special Issue on "Parks and Information Technology", V. 5, N.1, 1995. "Remote sensing ..."; Renard and Hudson, 1992; Wells and Brandon, 1992.

PRESENTATION

1.1 Begin this topic by explaining that we live in a world of constant and increasingly rapid change. New ideas and technology are constantly arising and influencing the way we live and work. Many of these ideas have influenced the protected area field, although we have been rather slow to adopt many technologies, either because of the expense involved, or the slowness of bureaucracies to adapt to change. Much of the new technology and ways of viewing our work can be usefully applied to many of the long-standing problems that PAs have encountered over the years, as well as to address newer problems brought about by demographic pressures upon the PAs and the increasing demand for the PAs to produce income or tangible economic benefits.

1.2 Perhaps the most overarching and important concept to affect conservation in the last 25 years is that of **sustainable development.** Protected areas have begun to take on increasingly important roles in the achievement of sustainable development. They are no longer considered as just isolated playgrounds for the elite, or reserves for endangered species. The World Conservation Strategy and Caring for the Earth (IUCN/UNEP/WWF, 1980 and 1991) are considered to be key documents in this regard. Also refer to D1a and D1c, as well as D12a.

2.1 **Computers.** The use of computers in almost all aspects of our lives is more and more common, even in some of the more remote parts of the world. In the PAs, while their use is becoming more frequent, economic and logistical limitations have hindered their application in most situations. Computers can be a great help in:

- maintaining files of staff records: who is employed, their current status, personal data, training received, etc.

- maintaining financial records: accounting, budget, etc.

- maintaining files concerning PA users: permits, # of daily visitors,

research records, etc.

- systematically organizing files concerning staff and other
observations of flora and fauna, weather, etc.

- preparing pamphlets, newsletters and other small publications using
special software designed for that purpose.

In spite of their obvious utility, however, computers require a certain
amount of care, clean and relatively dry environments, and trained
operators. It is easy to get carried away with the idea that
merely having a computer will solve all your problems. They can
also create problems for the unprepared.

2.2 Computers are also being used increasingly for more complex tasks
such as GIS (Geographic Information Systems), i.e. the processing
of data concerning the location and abundance of an area's flora
and fauna, and other natural resources, and then being able to map
it. This can be an immensely valuable tool for PA management, IF
there is enough available information. A useful rule of thumb for
computer programs such as GIS is: garbage in, garbage out, i.e. if
the information you put into the computer for evaluation is
limited or incorrect, the results will be equally inadequate.
Unfortunately, people tend to regard computer-generated
information or maps as infallible. The use of computers at the PA
level for this purpose is still very limited, although they are
being used in many countries at the national or regional level for
GIS purposes.

2.3 Other types of new technology are also becoming integrated into PA
management. The use of portable, although still fairly expensive,
video cameras is perhaps the most notable. Video cameras do not
require a high level of operator training, and can be extremely
useful in PAs for: preparing a PA orientation video for the
public, filming specific problems and then presenting them to
television stations, for training purposes, for wildlife
observation purposes, for documenting periodic monitoring of
tourism impacts, for documenting changes over time of vegetation
plots, etc.

3.1 **Remote sensing.** The use of satellite and radar imagery is being used
a great deal, primarily in planning and in monitoring of PAs.
Landsat, SPOT and other satellite imagery is extremely useful for
identifying vegetation associations and communities, geologic and
geomorphological features, and various other factors which will
help determine a PAs zoning and boundaries. They are especially
useful, when used over a period of time, in showing land use
changes. Monitoring of PAs is a topic of considerable discussion.
Are PAs achieving their objectives? Are they really conserving
vegetative or other communities? Satellite imagery can be
important in determining the answers to these long-term problems.
The main limitation to remote sensing techniques is its cost, as
well as the expertise needed to interpret the images.

4.1 **Regional planning.** Due to the increased interest in achieving
integrated management of natural resources, regional planning is
also taking on greater importance. At the same time, we have come

to the inevitable conclusion that PAs cannot be managed in isolation from their regional context, and that a PA planning process must somehow incorporate any regional planning efforts that have been, or are being, carried out. The PA must be considered by both PA managers and regional authorities as a key element in the region's future development. This implies that PA managers must acquire the skills and knowledge (political, technical and information) needed to integrate themselves and the PA into the regional context. **Buffer zones** and other mechanisms such as **biological corridors** for widening the conservation impact of PAs are concepts closely associated with regional planning. In order for them to be successful, regional plans must take them into account. Due to the limitations of size and limited genetic pools associated with individual PAs, they are increasingly being regarded as core areas in a matrix of other degrees of land use management and conservation, including private reserves, conservation easements, and regional and municipal protected areas. Review D7,7, 7b and 7d regarding buffer zones and Bennet, 1995? concerning biological corridors.

4.2 **Public Participation.** Experience in many countries has shown that participation by those sectors that are affected by and that affect PAs in all aspects of PA management and planning is key to improving management success. Nevertheless, public participation is a process that requires a great deal of preparation and control in order to avoid non-productive or even negative experiences. It also requires specific people management skills that most PA managers do not presently have. Improving upon the mechanisms for involving the public in PA decision-making is an evolving experience, and is unique to each country and region, since cultural circumstances greatly affect how this participation should best occur. Review D7a and D7e.

The need for both greater funding and support for PAs and and a tendency for government support to be inadequate, plus the need to achieve higher levels of public participation in PA management has recently led to the evolution of a wide variety of PA administrative and management regimes, all with the intent of improving PA fulfillment of their objectives. Review D12b for a detailed analysis of the benefits and difficulties which this has produced.

4.3 **Conflict resolution.** In the process of managing a PA, managers must constantly confront problems which involve people, either PA staff, visitors, or especially local communities. Until recently, managers either did not resolve these problems, or they resolved them in their own way, sometimes causing even more problems in the process. The art of conflict resolution has been slowly evolving in other fields, and has only recently been applied to PA management. It will probably become much more common as people put increasing pressure upon PAs. The main problems with conflict resolution is that it requires a certain amount of basic training in order to use it properly (usually a facilitator is required), and those PA representatives involved in a conflict resolution process must be very knowledgeable and clear about what their bottom line is with regard to an outcome (i.e. compliance with the

PA's objectives) or they may unwittingly give up too much in the end. Review Lewis, 1995? and D7f.

5.1 **Active Management**. As mentioned previously, the size of most PAs precludes their being able to conserve most animal and plant populations at sustainable population levels in the long-term. The long-term conservation of many of these species will involve active management, i.e. manipulation of these populations in order to achieve their long-term survival. This may involve the transport of individuals between different PAs to improve gene pools, or active manipulation of specific genes. It may also involve habitat manipulation in order to favor a specific species. While all of this is happening to one degree or another in some places, this type of management will become increasingly common.

Another aspect of active management is related to visitor use. Traditionally, visitors have been allowed to utilize backcountry or primitve zones without much control or guidance. As visitor use of these areas increases, managers are finding that the resulting impact is causing both environmental (ecological) and social problems. In many PAs, visitors are required to obtain special permits in order to use primitive areas, and are told to comply with certain requirements dealing with "light impact" behavior: e.g. do not bury your trash, bring it out; do not camp within 100 meters of watercourses; do not make campfires, but instead use a small camp stove.

6.1 **Recycling**. In a world in which natural resources are rapidly diminishing, society is becoming more conscious of the need to more wisely use them. Recycling is one of the most obvious procedures for accomplishing this goal. PAs in many countries are being used as showcases to demonstrate to the public that recycling is a positive, necessary activity. This is one example of how PAs can, and should be, used to advance and promote wise conservation practices and activities to the general public.

6.2 **Alternative sources of energy**. In the same way that recycling is carried out in PAs, the use of alternative sources of energy, particularly solar energy, is also becoming common. They are particularly apt locations for this, since they are frequently distant from normal electrical lines, and diesel and gasoline generators require considerable maintenance and logistical support, in addition to being noisy and intrusive. The use of solar, wind, hydro or biogas power is and should continue to be promoted in the PAs where practical. Their cost can be considerable in the short term, but considerable savings can be made in the long-term.

Supporting Document D12a

THE WORLD CONSERVATION STRATEGY AND ITS SUCCESSORS

(Taken from "Caring for the Earth" published by
IUCN, UNEP and WWF in 1991)

   This strategy is founded on the conviction that people can alter
their behaviour when they see that it will make things better, and can
work together when they need to. It is aimed at change because values,
economies and societies different from most that prevail today are
needed if we are to care for the Earth and build a better quality of
life for all.
   Over a decade ago our organizations published the World Conservation
Strategy. It stated a new message: that conservation is not the opposite
of development. It emphasized that conservation includes both protection
and the rational use of natural resources, and is essential if people
are to achieve a life of dignity and if the welfare of present and
future generations is to be assured. It drew attention to the almost
limitless capacity of people both to build and destroy. It called for
globally coordinated efforts to increase human well-being and halt the
destruction of Earth's capacity to support life.
   In the decade since 1980 the complexity of the problems we face has
become clearer, and the need to act has become more pressing. In this
new document we set out the broad principles, and an array of consequent
actions, upon which we believe the future of our societies depends.
   We accept that the actions called for in this Strategy will not be
taken easily. Inertia is strong within human societies. Governments have
to balance the gains of change against the inevitable costs of upheaval,
and tend to develop policies through a succession of cautious steps.
People cling to what they have, especially if they perceive that change
threatens their personal power and wealth. It will be difficult for many
communities to switch resources from war to peace, national to global
advantage, or immediate gain to future welfare. But the conflicts,
famine and strife that persist in an over-stressed world show how
essential it is to seek a new approach. This reinforces our conviction
that this Strategy must go ahead.
   Caring for the Earth has been prepared through a wider process of
consultation than was possible when we wrote the World Conservation
Strategy a decade ago. It is intended to re-state current thinking about
conservation and development in a way that will inform and encourage
those who believe that people and nature are worth caring about and that
their futures are intertwined. It is also intended to persuade people at
all levels that they can do something, or help cause something to be
done, that will lead to better care for the Earth.
   The actions of our organizations and others will have to be reshaped
if we are to ensure speedy and efficient implementation of this
Strategy. We urge all governments, intergovernmental organizations,
non-governmental groups, and individuals to help achieve that essential
goal.

The World Conservation Strategy and Its Successors

   The World Conservation Strategy was published in 1980. It emphasized
that humanity, which exists as a part of nature, has no future unless
nature and natural resources are conserved. It asserted that

conservation cannot be achieved without development to alleviate the poverty and misery of hundreds of millions of people. Stressing the interdependence of conservation and development, the WCS first gave currency to the term "sustainable development".

Sustainable development depends on caring for the Earth. Unless the fertility and productivity of the planet are safeguarded, the human future is at risk. The World Conservation Strategy therefore emphasized three objectives:

- essential ecological processes and life-support systems must be maintained;

- genetic diversity must be preserved;

- any use of species or ecosystems must be sustainable.

Since 1980, the World Conservation Strategy has been tested by the preparation of national and subnational conservation strategies in over 50 countries. In 1987, in its report Our Common Future, the World Commission on Environment and Development advanced our understanding of global interdependence and the relationship between economics and the environment. It contributed significantly to the growing recognition of the need for sustainable development and international equity. Also in 1987, governments adopted an Environmental Perspective to the Year 2000 and Beyond, which defined a broad framework to guide national action and international cooperation for environmentally sound development. (In June 1992 most governments, international organizations and many NGOs met in Rio de Janeiro and agreed on an agenda for environment and development in the 21st Century - Agenda 21 - and on a Climate Change Convention and a Biodiversity Convention. **CARING FOR THE EARTH** can be seen as a useful partner to Agenda 21, which is largely seen as a political document, not a technical one.)

Supporting Document D12b

INSTITUTIONAL OPTIONS FOR MANAGING PROTECTED AREAS

(Taken from a paper written by James R. Barborak, presented at the
IV World Congress on National Parks, 1992)

A Taxonomy of Institutional Options for Managing Protected Areas

   Protected areas vary considerably in their size, diversity, relative
local, regional, national, and global significance, and in their
objectives and types of permitted uses and management interventions
allowed. Based on these factors, plus the legal and administrative
framework for protected areas management within a given jurisdiction and
land tenure, they also vary radically in regards to the institutional
framework for their management.

   A taxonomy of protected areas institutional arrangements is not as
simple as a dichotomous key. This is because increasingly, a
partnership involving a number of different public and private
institutions is usually involved in the management of any protected
area. However, we can attempt to loosely classify protected areas by
answering some of the following questions:

   - Who owns the land?
   - What is the local, regional, national, and international legal
framework for its management?
   - Who is responsible for overall management?
   - What other players have responsibility for implementing specific
management programs or activities?
   - Who participates in decision making?
   - Who has oversight responsibility to make sure the management agency
or landowner manages an area according to agreed on principles?

   After such an analysis, most protected areas can be seen as fitting
into one of the following general array of institutional options for
management:

   - Owned by and at least partially managed by a national government
central bureaucracy. These areas vary widely in the degree of autonomy
of the central bureaucracy, in the extent to which certain park services
are entrusted to contractors or concessionaires, or, in the case of
research, run by universities and research centers. Individual parks
within such a system often also vary in regards to management style,
degree of privatization of services, and the role of local communities
in management, for historical or legal reasons.

   - Owned and managed by parastatal conservation trusts. This quasi-
governmental model is particularly common in the Caribbean, and
incorporates the comparative benefits of both public sector oversight
and autonomous, private-like administration.

   - Owned and managed by regional authorities such as states and
provinces. These systems are at times truly of global significance, but
as of yet are not given the respect they deserve. Particularly in large
countries with federal systems of government, state parks are often big,

diverse, and in some cases, as well or better managed than national
parks and reserves. In Argentina, for example, the provincial park
system includes 165 areas covering km2; the national park system
includes just 23 areas covering 25,800 km2. In Brazil, the U.S., and
Canada, provincial and state park systems, while often focusing on
providing recreational services, often include sites of international
significance and take pressure off fragile national parks; in Australia,
the national park system is really a state run system.

   - Owned and/or managed by local governments such as counties and
municipalities. With a trend toward greater autonomy and power for
local governments occurring in many countries, the role of such agencies
is bound to grown in protected area management. The role of
municipalities is usually limited to managing small areas of local
importance for recreation, watershed protection, and similar services,
but sometimes because of strong local interest municipalities establish
protected areas of wider importance, or because government land tenure
is at least partially vested at the local level. The municipality of
Morales, Guatemala, owns one of the most biologically diverse small
pieces of lowland rain forest in northern Central America; when the
national government didn't act to protect the most important reef for
international tourism in Honduras' Bay Islands, the local municipality
established the Sandy Bay Marine Reserve.

   Owned by tribal peoples. The growing awareness of the role of tribal
peoples in wildlands management is subject of a special workshop at this
congress. While some tribally controlled lands are quite degraded, many
tribes control important forest, wetland and coastal areas which if
managed as limited access extractive reserves should definitely be
considered part of the global protected areas estate.

   Run by NGOs. Increasingly, local, regional and national NGOs are
being entrusted with overall management of protected areas, or at least
responsibility for some management programs for government parks. Other
NGOs are actually buying land and managing it as private reserves. Most
private reserves, like Maquipucuna in Ecuador, are small; some are quite
large, such as some of the Nature Conservancy's reserves in the U.S.,
and Rio Bravo in Belize, which are tens of thousands of hectares in
size.

   Owned by private individuals or corporations. Increasingly, large
landholders are setting aside all or part of their properties for
conservation purposes, including as private game reserves, for
sustainable forestry, and for establishing ecotourism lodges. Large
corporations in some countries control hundreds of thousands of hectares
of forested land, many times which is better managed than similar areas
in government hands. As part of category V IUCN areas, such as European
protected landscapes, land use restrictions, easements, and other
mechanisms may be used to restrict development options over large areas
of predominantly private land which maintains important conservation
values.

   Owned/run by universities. While it is more common for universities
to take responsibility for operating research stations or programs at
parks and reserves owned and managed overall by governmental entities,
many universities and research institutions own and mange their own
individual reserves or reserve systems, which often adjoin much larger

government run reserves. Examples include the University of California
reserve system, the Guatemalan biotope system run by the University of
San Carlos, and world renowned research stations including La Selva
Biological Station in Costa Rica, run by an international university
consortium called the Organization for Tropical Studies, and Barro
Colorado Island National Monument in Panama, run by the Smithsonian.

   With trends toward bioregional thinking, it is increasingly common to
find complexes involving large areas of contiguous land, owned by a
range of government, NGO, and private concerns, whose management
involves an even greater number of cooperating institutions, and where
growing public involvement in the decision making process makes reaching
overall consensus among diverse institutions and individuals quite
complicated. One of the greatest challenges of the future for
protected area systems will no doubt be how to resolve
interinstitutional conflict over management of large bioregions. Such
scenarios often involve shared managerial responsibility among a host of
agencies with different mandates who must also be open to considerable
public input and political scrutiny over the decision-making process.

Trends in Institutional Arrangements for Managing Protected Areas

   If one reads the regional overview papers of the status of protected
areas, and follows trends in how they are managed around the globe, a
number of widespread trends in institutional arrangements for protected
area management can be identified:

   1) Greater diversity of institutional arrangements in many nations,
at a national level and for individual parks and reserves.

   2) More involvement by individuals living in and around protected
areas in their planning and management.

   3) Greater role for non-governmental conservation organizations and
the private sector in general in running protected areas or some aspects
of their management, in partnership with national or subnational
governments.

   4) More administrative and financial autonomy for individual
protected areas, and more regionalization and decentralization in
protected area system management.

   5) Larger roles for local and regional governments in protected area
management.

   The institutional hierarchy involved in protected areas management is
definitely becoming ever more of a tangled web of institutional
responsibilities in many countries. This responsibility even transcends
national limits to involve international organizations through global or
regional treaties, conventions, and cooperative programs. In this
framework, I would argue that World Heritage and Ramsar Sites and
Biosphere Reserves are the true crown jewels of the global system--areas
so important that they have received global recognition of their value.
While the institutions involved in supervision of such programs rarely
play a day to day role in management, their timely intervention can play
a major role in strengthening the hand of often weak national
conservation agencies when protected areas are threatened. A good

example is the intervention of IUCN and Unesco in Panama recently, to remind the government of its obligations under the World Heritage Convention, after it had authorized petroleum exploration by Texaco within the La Amistad World Heritage Site. Texaco has since withdrawn its plan.

   But internationally recognized sites and national parks and equivalent reserves--which can be seen to be the crown jewels of each nation's protected area system--are really just the pinnacle of a global network of tens of thousands of protected areas, from the neighborhood pocket park to the largest transfrontier biosphere reserve. In addition, protected areas can be seen to be an extension of the increasingly common practice of urban and rural land use zoning.

   I would argue that one of the reasons national parks and equivalent reserves have been so successful in developed countries is that they truly exist as the most restrictive form of land use regulation. They form part of a web of different types of protected areas at local, regional, and national levels, each of which provides a wide range of complementary societal services. I would also argue that many of the problems national parks face in developing countries is that the national park concept has been sold to developing countries as a free-standing one. Planners have lost sight of the fact that the success of first world national parks is due at least in part to the existence of a whole range of other techniques for managing natural areas on public and private land to provide goods and services for societies, relieving national parks of that responsibility. However, many developing countries are highly centralized and lack effective regional and local governments, lack political space for the work of conservation NGOs, or fail to provide incentives for production of environmental goods like timber, fuelwood, fish, and other forest, rangeland and marine products on private lands. In such countries, too much of a burden is placed on national parks and equivalent reserves for products and services that should be produced in other types of protected areas and through the efforts of private landowners, tribal groups and through management of limited access resources by traditional users.

Major Concerns and Issues for Debate

   I would like to point out what I see as some of the biggest potential dangers of the above mentioned trends. Most have to do with a wider concern of excessive pendulum shifts--shifts toward abrogation of government responsibility for protected areas management; towards excessive privatization, regionalization and decentralization; towards abandonment of core areas in the false hope that buffer zone management and attention to local development will reduce threats to strictly protected parks and preserves; and towards giving perhaps too much power to local communities over resources of national significance and ownership.

   1) The first is the danger that central governments will, by their own decision or under pressure from donors, particularly the IMF and major multilateral and bilateral aid agencies, abandon their role in protected area management under the privatization banner. While restructuring bloated bureaucracies and passing non-vital services to the private sector is now government policy throughout the developing world and in eastern Europe, and thought of total abandonment by

governments of their role in managing parks and reserves of national and international importance gives nightmares of this observer. There is a legitimate role for central governments in protected area management even in the most privatized of economies. The setting of policy and standards for park and reserve management, ultimate approval of management plans, the watchdog role over performance of private contractors and NGOs entrusted to run parks on a day to day basis, and the ultimate use of police power and the judicial system in case of blatant threats to protected areas are examples of this role. When governments openly abdicate their role in regulating the actions of the private sector, even in the developed work, bedlam can result. An excellent example from my own country is the hundreds of billions of dollars U.S. taxpayers will eventually have to pay to cover the costs of the savings and loan scandals in the U.S. during the last administration--enough money to endow every park on earth!

  2) Excessive regionalization. When protected areas management agencies are part of larger agriculture or forestry ministries, regionalization can lead to bedlam when responsibility for parks is taken out of the hands of able protected area technicians in central offices and given to individuals more interested in basic grain production or timber harvest as part of regional offices with wide-ranging responsibilities. In this case, protected areas often get little attention. This has happened in a number of Latin American countries.

  3) Excessive decentralization. Far too often, park directors have too little say in decision making and often suffer under oppressive bureaucratic constraints. But dramatic pendulum shifts to the other extreme can be even more dangerous, when adequate checks and balances on the actions of local administrators do not exist, and when one person, dominated by local concerns, makes decisions based on political expediency or the urge to make funds quickly off a resource base.

  4) excessive local control over nationally or internationally important resources. The proposal by David Munro, that all protected areas name a local council to involve local communities in protected area management is very good. The conflict comes when such councils are given ultimate authority or veto power over management decisions for protected areas of national or global significance and on national lands. For example, should a local council have the right to permit forest cutting to improve the local tax base if this will affect water flows to downstream hydropower or potable water projects benefitting an entire country or even region? A good example of this situation occurs with grazing permits on Bureau of Land Management Lands in the western U.S.

  5) Losing site of one's mission. One of my biggest concerns is that with all the talk about buffer zones. extractive reserves, sustainable development and the need to improve the lot of local peoples in regions surrounding parks and reserves, that all institutions involved in their management lose sight of their core missions, which in the case of strictly protected ares is to protect resources for the long term and produce a sustainable flow of wildland services for a nation. Out of a do-gooder urge, I am truly concerned that parks agencies are jumping on the sustainable development bandwagon and diverting scarce human and financial resources to tackle problems they can never hope to resolve.

Many such problems are really the responsibility of other agencies,and
this diversion of interest is occurring at a moment when most parks
agencies are suffering cutbacks or frozen budgets and staff levels in an
era of growing responsibilities. What good is a buffer zone if the core
is destroyed?

  6) The pressure of aid agencies to downsize government and its impact
on protected areas. The IMF, IDB, AID, and other donors are rightfully
insisting on fiscal and bureaucratic reforms as conditions for helping
countries make the transition to open economies fully inserted in the
world system. Their efforts to insist on reducing fat in government,
holding back government spending, and reducing payrolls are good in
general. However their unbridled enthusiasm about the ability of the
private sector to work more efficiently than government, and their
obvious trend toward funding private initiatives over public ones, is no
secret and is of concern. Unfortunately, their policies have hit weak
conservation agencies particularly hard in a decade in which the number
of national parks and reserves has risen dramatically. While
privatizing some park services and giving more responsibility to NGOs
and local communities for protected area management can take some of the
pressure off central governments, the truth is that economic
restructuring agreements have devastated many park systems.
Particularly tragic has been the loss of many gifted civil servants,
from rangers to park system directors, who due to poor working
conditions and often lured by incentive packages now being given to
voluntarily leave government, have jumped to the private sector. These
donors have to learn that progress in parks is not to be gained by
robbing Peter to pay Paul, but rather by strengthening both public and
private sector institutions, and better defining the appropriate niches
for a whole range of institutions in protected area management. This
should be done without losing site of the legitimate role of government
in areas such as defining management norms and regulations, setting
overall policy, playing a watchdog role over NGOs entrusted with
management of public lands, and the legal and police functions. I
remain convinced that government parks agencies, given sufficient
financial and administrative autonomy and freedom from gross political
intervention in day to day management, can and do function quite
efficiently.

  To sum up, an increasingly diverse and complex array of institutional
arrangements is being used to manage protected areas in many nation,
with greater involvement of local peoples, NGOs, private landowners and
corporations, subnational governments, and universities. Many such
parks and reserves managed by subnational governments, tribal peoples or
private entities protect resources of national or global importance and
as such should be considered as part of the global parks network. As
mentioned by one speaker yesterday, in our analysis of the size and
strength of the protected areas system worldwide, we need to do much
more to chart the number, size, and resources of these protected areas,
particularly through the World Conservation Monitoring Center and
national conservation data centers. There is no doubt that stronger
roles for all the above mentioned actors, and development of protected
areas systems where national parks are truly crown jewels and the
pinnacle of protection in complex park and reserve systems, will lead to
strengthened national and global protected area networks, capable of
providing a much wider and more sustainable flow of environmental goods
and services to society.

Thematic Units –
Unit E: Administration in Protected Areas

Training Manual for Protected Area Personnel

Lesson 1

BASIC PRINCIPLES OF ADMINISTRATION

OBJECTIVES:

By the end of this lesson the participants should be able to:

1.   Define administration as applied to protected areas (PA).

2. Define planning, organization, supervision and control as applied to
       administration.

3.   List the five components of the planning phase.

4.   Describe the four components of an organization.

5.   Enumerate the seven components of supervision.

6.   Describe the three types of control.

7. Describe seven characteristics of good supervision.

8. Explain the characteristics and the main steps in the process of decision
       making.

9. Name six principles of an organization.

REFERENCES:

Van Dersal, W. 1974; Blake and Mouton 1980; McGregor 1967; Moore, A. 1984
(Chap. XIX); Montana and Charnov, 1993; Weiss, 1985; Lesson E6.

PRESENTATION:

1.1 The word management comes from the Latin (mano) and means to direct or to
       govern a house, money, etc.

The word administration is defined as the planning, organization, management,
       and control of an institution's activity in order to efficiently reach
       its objectives.

Differentiating between administration and management has been viewed in
       different ways; the following comments may help to differentiate them:

1) While management is considered specific and administration general, these
       two words are often used interchangeably. In general one can say that
       administrative activities are those necessary to ensure that the human,
       financial, and other resources of an organization are used effectively
       and efficiently to obtain desired results/objectives. These activities
       include such bureaucratic procedures as budgets, reports, and personnel
       assignments.

In our everyday work we actually assume functions that are both administrative
       and managerial at the same time. In general as one goes down an
       organization's hierarchy, personnel tend to have more specific
       responsibilities that correspond more to management than to

administration.

2) On the other hand, most experts consider management to be one of the many
   activities falling under the overall administration of a business or, in
   this case, a PA, involving a more hands-on involvement in achieving an
   organization's objectives. It has been defined as "work with and through
   people to accomplish the objectives of both the organization and its
   members".

2.0 There are four phases in the administrative process: planning,
    organization, supervision (sometimes called management), and control
    (sometimes called monitoring).

2.1 Planning:

What do you do when you prepare for a trip? You make decisions about the
   reason and destination of the trip. You decide what luggage to take and
   who else will accompany you. You estimate the length and the cost.
   When you make these decisions, you are planning.

Planning is a phase in the administrative process which consists of
   formulating objectives and then determining strategies and activities to
   reach them.

   This phase is made up of five components:

- Policy: a series of guidelines which defines the general goals and
   parameters within which administrative actions will be carried out.

- Objective: an expression of what is sought, or of the point to which one
   hopes to arrive.

- Strategies: Means, processes and procedures by which the objective is
   attained.

- Activity: Describes the direct action of a plan. It answers the question,
   what exactly must be done to implement strategies and achieve
   objectives.?

- Programming: Is the design and organization of related activities contained
   in the plan, in order to best achieve objectives.

The plan is necessary because events do not occur spontaneously. The sequence
   of events which lead one to a desired end must be logically and
   consciously thought out. A plan is required to guide one's activities
   and to organize the path by which to arrive at the goal.

The plan is a working tool for distributing personnel, equipment, and funds.
   It can be useful for the obtaining of funds (loans, donations etc), for
   public relations, to gain collaboration, etc. The plan gives
   consistency and continuity to the management of an institution.

There exist different levels of plans: from national development plans to
   operational and specific plans. In each case a plan has requirements of
   personnel, funds, equipment, and materials that must be considered by
   the administrative structure. In a National System of PA, one finds

management plans for a PA, operational plans, and specific plans (wildlife management plan, for example). The plans can be for the short term (1 to 2 years), or for much longer terms (5 to 10 years, or more).

An essential part of an adequate plan is that it answers questions such as the following:

1. When will the work be done?
2. Where will the work be done?
3. Who will do the work?
4. How will the work be done?
5. How much will the work cost?
6. With what will the work be done?
7. Why will the work be done?

Simply having a plan does not guarantee that there will be success. Even with very good plans, it is possible to not reach the desired objectives. Among the reasons why plans fail are:

1. Unforeseen circumstances.
2. Uncontrollable circumstances.
3. Lack of information or understanding while preparing the plan.
4. Not making appropriate decisions on time.
5. Pressure from outside of the organization to change direction.

2.2 Organization:

The organization is a system of relationships among functions, personnel, and physical factors which orders and guides the efforts toward the objectives of the institution. It is the entity that makes it possible for a group or team to work together more effectively than they might work alone, in order to achieve goals. There are three essential elements of an organization: Objectives, Personnel, and Structure or hierarchy.

2.2.1 OBJECTIVES

Objectives are what gives an organization a purpose. Each administrative organization has two types of objectives: the production of something and the welfare of its employees. The latter type of objective is a relatively new one, since the traditional approach to administration and management has been to deal only with production. Experience has shown that without attention being paid to worker's needs and objectives, production can not reach optimal levels.

The objectives of an organization are interrelated and it is the job of the supervisor to prioritize and to promote a harmonic interaction among them so that the objectives can be reached efficiently.

To obtain the best relationship between the management of the PA and the needs of the personnel, the supervisor should:

a) define what is expected of each person.
b) allow the personnel to have the maximum liberty possible to develop their own initiative and creativity. The personnel must be allowed to commit certain mistakes in the process, as this is a part of what must be learned in order to get results.

c)develop a sense of work responsibility on the part of each individual.
   d)incorporate the needs and interests of the individual in the organization.
   e)give frequent praise and criticism, thus allowing the employee to know that his supervisors are concerned with him and his work.

2.2.2 <u>EMPLOYEES</u>

Employees can be divided into three different groups based on their attitude about their work:

a)Ambitious individuals are those who want to triumph and to gain higher positions in the organization. These employees identify with the organization to such a degree that they seem to adopt it. They believe that they should grow with the organization and as such hope to receive greater responsibilities and a better position. They are often offended if the organization, or anything related to it, is criticized. These individuals feel the need to get ahead and are very easy to supervise; they generally do whatever the supervisor requests and they like knowing how to improve their work. They seek work promotions, better pay, greater prestige, and to have a higher position so as to be able to have control over other employees. Because of their attitude sometimes they can have problems with their work colleagues but seldom with their superiors.

b)Other individuals have no special desire to be successful in their work, but rather see it merely as a means of subsistence and as a social activity. They have the need to be socially accepted by their work colleagues, and as such they display the need to be recognized by their companions. They are more concerned with the opinions of their colleagues than of their supervisors. While these individuals do not dislike their work, they do not have the ambition to do a good job nor to get ahead for fear that they might damage the relationship with their work companions.

Due to their work attitude, these employees rarely identify with the PA, and they have no desire to become supervisors. At times they think that their PA is not necessarily the best, and sometimes they are even embarrassed to say that they work there. These individuals rarely receive promotions, which suits them fine. Basically this group of employees tries to avoid any involvement with the PA or with their superiors. Their relationship with the PA is limited to the work that they do: guard, electrician, mechanic, etc. They see the supervisor as an insensitive person who is thirsty for power. Often they refuse to do anything extra in their job. They only do what they are asked and nothing more. At times they have problems with the supervisor over issues of attitude, punctuality, and assistance.

c)Those people who are satisfied with their job but who are not motivated to gain either economically or in authority. This group shares some of the characteristics of each of the above mentioned groups. They believe that they deserve attention for their talent, and they resent it if others do not appreciate their work. They generally are very intelligent, and they feel that their contribution to the organization is great. They present

problems for their supervisors in that they believe that they
simply need to show up at work while not necessarily accomplishing
anything.

2.2.3 <u>STRUCTURE or HIERARCHY</u>

Each supervisor with a group of people or employees is part of an
organization. An organization is a group of people who work together in
order to achieve a goal or an objective.

Organizations can be small, with only a few employees, or large, with
thousands of employees. They can be religious, businesses,
governmental, medical, industrial, educational, etc. Yet independent of
size or type, the organization is the "house", the environment, the
social system, and the atmosphere in which the workers feel comfortable.
For this reason it is essential that a supervisor understand something
about organizations in general and that they know a lot about their own
organization in particular.

An organization needs a framework or structure which allows each employee to
recognize his place and role within that organization. This allows for a
more efficient functioning of the organization.

The employees fulfill the purpose of the organization. Each person within the
organization has a part to play and each part is important to the whole.
The head of the organization must clearly understand who is responsible
for what, in order to see: a) that the objective or purpose is reached,
b) that each person fulfills his responsibility, and c) that the
operation is well managed.

In a small organization such as a PA, it is possible that one person will be
responsible for several different jobs. In a large organization one
task often must be divided among various individuals.

There are many ways to organize people in relation to the work to be done.
The most common system is that of the military which consists of one
boss, and a uni-directional line of command which originates in the boss
and goes down to the workers. In this system there also is an
intermediate rank with the function of advising and collaborating with
the boss while having no authority over the workers.

Nevertheless, specialists in administration have found that this system does
not function well in companies nor in public administration as it does
not permit the employee to have initiative, to share his opinions and
experiences, nor to participate in decision-making. As such it is
considered best for the administrative organization to be bi-directional
with the boss always maintaining the power of decision. This allows for
all staff to participate in the decision-making process.

2.3   PRINCIPLES OF ORGANIZATION

1.The lines of authority within the organization should be clear.

2.No one should have more than one supervisor.

3.The responsibilities and the authority of each supervisor should be

understood by each employee.

4. The number of people who report to a supervisor should not be greater than the number which he can effectively coordinate and lead.

5. Authority should be delegated as much as possible to the units of individuals who are closest to the point in which the action occurs.

6. Each function necessary to reach the organization's purpose should be assigned to a unit of the organization.

7. The organization should be as simple as possible.

8. An organization should be flexible, but any necessary changes should be made gradually, except under very special circumstances.

2.4 Supervision

This is the phase of the administrative process that defines the authority and the responsibility of coordinating individual and group activities, orienting them in an efficient manner toward the achievement of the organization's objectives.

The components of management include:

- Authority
- Responsibility
- Delegation of functions
- Decision making
- Leadership
- Motivation
- Communication

2.4.1 Authority

The power to make decisions and to have them carried out. Henry Fayol (1841-1925), father of administrative theory, defined authority as the right to command and the power to have instructions obeyed.

There exist different forms of authority, determined by the particular situation: conditions of property, by law or possession, by consent, by emergency, or by technical competence.

To exercise authority involves the act of commanding. This is understood to be the act of integrating the efforts of the group members in such a way that upon finishing the assigned tasks, the individual and group objectives have been met.

2.4.2 Responsibility

This is the obligation of the individual to complete in the best way possible the tasks that have been assigned, both worker and supervisor.

Responsibility is an inseparable component of authority. Authority can not

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exist without responsibility and accountability.

2.4.3 Delegation of functions

The assigning by the administrator of functions and responsibilities to other
people.

In any organization, no matter how small, it is difficult for an administrator
to personally remain in charge of each task. This requires the
delegation of authority to other individuals in order to complete the
specific tasks at hand.

The worker to whom responsibility has been delegated has the power to make
decisions over aspects related to the specific task and assumes the
corresponding responsibility for the successful completion of that task.

The delegating administrator, nevertheless, reserves the authority and final
responsibility over the delegated task or responsibility.

Some administrators resist delegating and try to do everything personally,
thus weakening the organization.

A prerequisite for delegating is to divide the overall problems into parts.

The administrator should trust that the delegation of authority will bring
benefits, it will help to develop an efficient group effort, it will
help multiply his own efforts, it will benefit the subordinates, and it
will add to his capacity.

- Decide what type of decision to delegate.

It is possible to prepare a list of those decisions to be delegated. This
ties the delegation with the planning process and makes it part of the
administrative model followed.

- Carefully select the delegate (worker to whom responsibility is delegated).

The task should be proportional to the individual's ability, that is, someone
considered capable of having success. Give opportunity to those persons
who are not utilizing all of their potential.

- Help the delegate.

Help him without telling him what to do. As a general rule, if the delegate
asks for help, give it to him. However, to give him the answers negates
the benefits of delegating. The delegate should explore and discover on
his own the possible solutions to the problem.

- Establish an information system with the delegation.

Workers need to be kept informed, if only to understand what is happening and
to be in a position to take corrective action if necessary. This
information can be made available through reports, audits, or periodic
meetings.

2.4.4 Decision making

This consists of selecting an alternative which defines the action to be taken. The administrator is responsible for personnel, money, machines, and methods under his command. These are all resources that he uses to reach his objectives. In order to determine how to use the resources at his disposal, he must constantly make decisions.

A decision always must be taken among various alternatives. To make a decision always carries some risk, which is why many people find it difficult to make a decision. The fear of making a bad decision is quite common, and it results in people often avoiding the step of making a decision.

Principal steps in the process of decision making:

a)   Adequately analyze and diagnose the problem.
b)   Conceive one or more solutions.
c) Look ahead and compare the consequences of the alternative solutions.
d) Evaluate the different sets of consequences and select a course of action.

One should not confuse the symptoms with the true causes of the problem. When selecting the most appropriate solution, one should think about any limiting factors: time available, funds, objectives, and established policies of the organization, etc.

2.4.5 Leadership

A role model who is able to integrate the worker's interests along with the personal and organizational efforts in order to reach the objective.

"The leader needs people with whom to work and for whom to serve. If some do not recognize the mutual need for love and respect, some will lose."
Lao Tse

The leader is a person who has the ability to get others to work responsibly on tasks he leads. He must have:

- an attractive personality.

- an ability to communicate and convince.

- a worthy cause.

This shows that leadership is a complex relationship which involves:

- The leader

- The subordinates

- The situations created by the institution, social values, economic and political conditions.

(See Supporting Document E3c)

2.4.6 Motivation

This is the process by which each person accomplishes his work with
     enthusiasm, because he wants to.

One sees in this definition that motivation depends upon the behavior of the
     people.

It involves an interior, emotional force of the human being. In order to
     motivate others, an administrator needs to be motivated as to the
     progress and success of his work. He needs to know those who work with
     him, their needs, their personal desires, and the roots of their
     behavior.

The objective of motivation consists in stimulating the desire to work, in
     such a way that the task is done to satisfy both the workers' need for
     accomplishment and the goals of the institution.

Some of the ways to motivate are discussed below:

Expand duties

One important way to motivate workers is to increase their duties. To
     deliberately give greater responsibility to an individual frequently has
     the effect of motivating that person.

Rotation of duties

This motivational method is gaining in popularity. To periodically move an
     individual from one activity to another helps to reduce boredom and
     indifference with the work. When defining a work assignment, the tasks
     should be mixed so as to allow for development of the worker and for
     satisfaction of his personal needs as much as possible.

Administration using personally defined objectives

An important way to motivate workers is to allow them to participate both in
     setting their own personal objectives as well as determining how to
     carry them out (with final approval from the supervisor). This
     encourages the worker to focus his efforts on the outcomes rather than
     on the activities and to be an intelligent planner rather than just an
     improvisor.

Participation

The best way to get a worker to contribute to the institution's objectives is
     to allow him to participate in their formulation. It is important for
     the individual to know that his ideas contribute to the final decisions
     and that his input is effective. When there is true participation the
     individual's desire to feel useful is recognized by his superiors.

The best results are gained when the worker: a) is aware of the objectives
     being sought, b) possesses adequate knowledge to manage the problem
     before him, and c) agrees with the time defined as needed to analyze the
     problem in all of its aspects.

Recognition

In general people need to be accepted as members of a group. People aspire to have their actions, contributions, and presence recognized as being important. The highest motivation occurs when this recognition comes from others within the same working group. Also the person being recognized should understand why it is occurring and should feel that it is deserved.

Growth

Most workers hope to improve themselves and to progress. These desires are achieved by fulfilling by their potential and by being given the opportunity to get ahead. The progressive supervisor creates and maintains a work environment in which effort and growth are encouraged.

Fulfillment

The administrator should insure that work goals both require an effort on the part of the worker and that they be achievable. The task should have meaning and be of value in the eyes of the individual, who should receive feedback immediately after completing the task. The emphasis put on worker fulfillment will help satisfy his need for an interesting and meaningful job.

Responsibility

When specific responsibility is not given to a person, often he will let others finish the job. Every employee needs to clearly understand his obligations. People are most motivated when they have specific tasks assigned to them, and when they understand that they will be judged based upon their completion of those tasks.

Compensation

Each task should be fairly compensated. Besides allowing the worker to make a living, compensation is an important element of motivation.

2.4.7 Communication

Every administrator needs to develop and perfect his communication skills to the maximum, because it is by effective communication that one's instructions are understood and carried out correctly. In order for communication to exist there must be a minimum of two people between whom a message is transmitted. If one speaks or writes, the other listens or reads. The following are some of the fundamental principles of communication:

- All communication is bidirectional. Just because someone has confirmed that he has heard or read a message does not signify that there has been effective communication.

- Communication is more than just the act of speaking or writing, it also involves comprehension. Communication is done basically to influence behavior.

- This behavior is governed by the interpretation given to the message by the

receiver. As such, the perceptions of the receiver rather than the intentions of the sender determine that which is understood. One can integrate these principles into the following definition:

Communication is the process of bringing about an exchange of understanding between two or more persons.

There are various forms of communication:

According to the direction:
- upward
- downward
- horizontal

According to the norms:
- formal
- informal

According to the symbols:
- oral
- graphic (words, numbers, images)

Types of Communication

(a) ORAL: face to face, telephone, conversations, lectures...
(b) WRITTEN: letters, memorandums, signs, files, posters...
(c) NEITHER ORAL NOR WRITTEN: the manner of presenting oneself, of dressing, attitude, actions, habits, gestures...

Written messages can be very useful, they are more permanent and less apt to be forgotten, but they are more rigid and do not give opportunities for clarification. As a general rule, all important messages should be put in writing.

It is estimated that a normal person can speak 125 words per minute while being able to easily think 400 to 600 words per minute. There is a 4 to 1 difference between the velocity with which we think and that with which we speak. This gives us a great deal of mental power to be utilized while listening to someone. If this is utilized, one can listen to what is spoken, can think of what is spoken, and can still have time to predict what will be said. In this way the person listening not only receives the message but can be active in the process of communication.

communication   communication

planning

control   organization

supervision

communication   communication
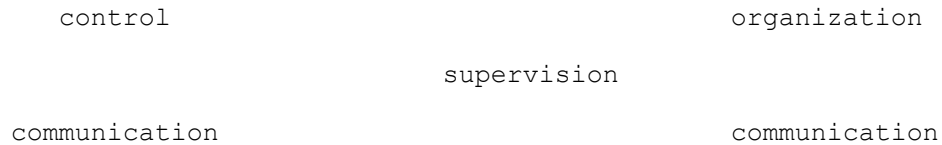
In the figure, communication is represented as surrounding the four
     administrative functions which are called "the techniques of
     supervision", since none of these can be accomplished without
     communication.

The structure of any organization basically exists to establish channels of
     communication. For example, in the process of contracting new employees
     the administrator should explain the work, the required skills, and the
     benefits offered to the candidates. Training is almost entirely an
     issue of communication. Management exercises its authority via
     communication and systems of control are actually systems of
     communication.

Oral communication is probably the most effective way to change attitudes,
     beliefs, feelings, etc. and should be used as often as written
     communication.

Written communication is necessary in giving instructions, orders, and routine
     affairs which people can not absorb all at one time but rather need to
     refer to continuously. Written communication is necessary in reports to
     supervisors.

Many people do not like to write because they believe that writing is
     different from speaking and that to write requires a special use of the
     language. This not true. The only difference between writing and
     speaking is that a special effort must be made so that the written
     message be clear and precise.

It is always recommended that supervisors write in short sentences which, in
     general, is a good rule for anyone to follow who is not confident of
     their writing ability. Naturally it is much easier to commit errors in
     long sentences than in short ones.

The best way to edit a written communication is to read it several times
     before circulating it and to put oneself in the place of the person to
     whom it is being sent.

Communication is the main tool in the functioning of public administration.
     If used correctly, reports are the easiest way to transmit data,
     information, opinions, suggestions, plans, and budgets from one office
     to another. Except for cables, fax, and telex, written reports are the
     only forms of communication which leave a record or what has been
     communicated.

Many administrators prefer to work based on faster forms of communication such
     as telephone calls, conversations, etc. This if fine although there
     should be a written record made of what has been communicated for future
     reference.   Often a supervisor changes jobs and the new person has no

idea of what went on before due to the lack of written material.
Reports, letters, memorandums, and other means of written communication
constitute the only way to prove what went on in a particular situation
or office in the past.

4.1 Control or Monitoring:

This is the last phase of the administrative process. It consists in finding
deviations from the defined course of action in order to correct them in
time. It is an essential process of any administrative process which
seeks to comply with a plan, and achieve objectives.

There are 4 basic aspects of an administrative process which should be subject
to monitoring, or control:

1. Quality
2. Quantity
3. Time
4. Cost

4.1.1   Monitoring can be done in any of the steps in a process or
occupation. There are three types of monitoring: preliminary,
continuous, and final.

Preliminary monitoring

This is done via the planning and assigning of resources to be employed.
Human resources ought to cover the work requirements, and the materials
to be used should be of acceptable quality and should be available in
the appropriate place and time. Equipment should be present when needed
and financial resources should be available in the quantities needed and
on time.

Continuous monitoring

Operations should be inspected while in progress to insure that the objectives
are being met. The principal way to having continuous monitoring is via
the supervisory activities of the administrators.

Final monitoring

This is the final evaluation. Any corrective action is focused at improving
the process. Past results are evaluated in order to help orient future
activities.

4.1.2.   Many of the methods available to the administrator for controlling
the process are monetary in nature. An example is the budget, which
also is a planning tool. If the expenses were greater than those
budgeted, this may indicate that the plans were not followed. At the
same time if the expenses were less than those budgeted, this might
indicate that the administer has done an exceptionally good job,
producing results with less money. On the other hand it could also mean
that he is not doing what he should. If the budget is subdivided into
line items it is easy to see what has been done and what ought to be
done. Nevertheless, all controls are not monetary, for example there
are quality controls, production controls, etc.

Other mechanisms include:

Job Descriptions

Job descriptions are a part of the control function, given that they pre-
    determine the activities, responsibilities, and authority of all
    workers.

Output Schedule

A project's activities can be presented graphically in the form of graphs,
    tables, or diagrams. Graphic representations are useful in providing
    workers with a visual guide to the relationship of activities and the
    time needed to complete them. Preparation of these graphics can be a
    task shared by a supervisor and his subordinates. The personnel's
    participation in this process increases the precision and usefulness of
    the graphics, and motivates staff to achieve the goals they have helped
    to establish.
The limits of control are in part the limitations of knowledge, but even more
    it is the limitation of time and energy.

ACTIVITIES

1. Have the participants discuss the process of annual planning of activities
in their PA and encourage that they propose suggestions for improving it.

2. Have the participants discuss the organization of their PA and ask that
they propose suggestions to improve it.

3. Have the participants discuss the "controls" or monitoring processes used
in their PA, and encourage them to propose different control systems or ways
to improve the present ones.

4. Organize a series of discussions among the participants, using dynamic
interactions (role playing). In one, ask that one of the participants play
the role of the supervisor and another that of an employee who has problems in
arriving late to work.

5. Also ask the following questions of the participants:

a.What are the most important decisions that you must make in your job?
b.Can you remember a time when you made a bad decision? Why? Did you forget
            to consider the true work objectives? Did you consider all of the
            possible alternatives? Did you obtain all of the necessary
            information before making the decision?
c.Do you have an organized method for solving problems? In a few words can
            you explain the method?
d.Do you believe that the PA administrators that you know approach problems
            and make decisions in a scientific manner or do they do it by
            intuition?

Supporting Document E1a

<u>THEORY X AND THEORY Y</u>

(Adapted from Montana and Charnov, 1993)

Douglas McGregor observed that the different points of view of the classical and the behavioral approaches to understanding worker conduct arose not merely from the different emphasis placed upon the work and the worker, but also from a profound difference in the way in which workers were viewed. Taylor and his colleagues, focusing on work and taking a pessimistic and somewhat traditional view of workers, asserted that managers need only to manipulate the working conditions and make effective use of rewards and punishments to foster worker productivity. Mayo and his colleagues, with their psychosocial focus on the worker, were far more optimistic about the nature of the individual. McGregor characterized each of these philosophical views of the worker and labeled Taylor's view **Theory X** and Mayo's view **Theory Y.**

THEORY X	**THEORY Y**
Individuals dislike work and will avoid it if possible.	Workers do not inherently dislike work and will respond to good working conditions and attitudes.
Because individuals dislike work, they must be coerced, threatened, manipulated, directed, and controlled.	People will exercise self-motivation and direction to accomplish organizational goals to which they are personally committed.
The average person desires security, has little ambition, and will avoid assuming responsibility,. Workers have to be directed and actually prefer to be told what to do.	The average person can learn to be responsible.
Few people are truly creative.	Most people are capable of being creative, exercising ingenuity, and being imaginative.
The limited intellectual capacities of common workers are adequately challenged by modern work design.	Individual capacities of the average worker are not fully used in the modern industrial environment.

McGregor's famous conceptualization of the different philosophical traditions regarding worker nature had the far-reaching effect of popularizing the insights gained by human relations researchers. Theory Y, building upon an optimistic view of worker nature, advocated that managers address the psychological side of the worker and work, by doing such things as:

*delegating authority to lower levels in the organization, thereby challenging workers to make decisions and expressing faith in their abilities.

*making jobs more interesting for the worker.

*increasing the level of responsibility inherent in each job.

*innovating new rewards for worker performance that relate to a variety of worker psychological needs, not just money.

*treating workers with respect and increasing the share of information regarding the work content, design, and results.

Supporting Document E1b

WHEN NOT TO MAKE A DECISION

(Adapted from Weiss, 1985)

Managers can, on occasion, be excessively impressed by the apparent importance and urgency of making a decision. In such cases it would be much better if they stopped to consider the situation with more care. There are many work situations in which it is not advisable to make an immediate decision. On the one hand, if the decision can be postponed, it may be unnecessary to make it. Delay is particularly prudent when managers are stressed. Efficient managers will not make decisions without taking sufficient time to consider them first. Of course, sometimes it is necessary to make fast decisions, such as what occurs in an emergency situation. When a first line manager is pressured to make a decision, he should decide first if a temporary or provisional decision would be sufficient. Even though such a decision may not represent a totally satisfactory one for solving the problem, it will usually relieve a problematic situation, and allow the manager more time to develop a solution that will be more satisfactory to the involved parties.

However there are times when delaying a decision can aggravate a situation. Delaying a decision concerning safety, for example, may leave the door open for another accident. Delay in responding to a labor union's complaint may cause a reduction in productivity. You must always carefully study each situation to determine what the impact will be because of a delay in decision-making; decide what steps are necessary to take immediately, and what steps can be deferred. Only after you have studied it can you judge how long a final or global decision can be postponed.

In general, to be determined is as much an advantage as it is a behavioral characteristic for which you will be admired. It indicates that you maintain control and that you are likely to be responsible. However there are times when it is preferable not to make a decision about something. Here are some of those cases:

*Don't act if the decision to be made doesn't coincide with your intuition. Seriously consider your hunch, especially when the decision has to do with people; in those situations, a hunch can give better results than logic.

*Don't decide something when you don't know all of the facts. Continue to investigate and study the problem without resolving anything. That way you will be prepared for when you *must* make the decision.

*Postpone a decision if you are not sure of the consequences. Situations and conditions change with time, as well as the way people perceive them. Waiting will allow you to make a step back in case the consequences of your final decision are not favorable.

*Don't make a decision if other points of view that you are unaware of could affect its acceptability.

*Postpone a decision in order to gain time if people are forcing you to make it. It is very possible that they are pushing you in order to gain benefits for themselves, not for those which you might obtain. Perhaps with more time, their game will be obvious, allowing you to see the situation from another angle.

Supporting Document E1c

<u>PARTICIPATORY DECISION MAKING</u>

(Adapted from Weiss, 1985; and Terry and Rue, 1982)

In view of the increasing complexity of the decisions that must be made by companies, and of the greater commitment and desire to participate on the part of subordinates.

Positive and Negative Aspects of Group Decision-Making

Positive Aspects	Negative Aspects
The sum-total of the group's knowledge is greater than that of individuals.	There may be one person who controls or dominates the group.
The group possesses a much greater range of alternatives in the decision-making process.	Social pressures may inhibit member participation.
Participation in the decision-making process increases the acceptance of the decisions by the group's members.	Competition can take over to the extent that **winning the argument** may become more important than arriving at a viable solution to the question being discussed.
Members of the group better understand the decision and the alternatives that were considered.	The groups tend to accept the first potentially positive solution and pay little attention to other possible solutions.

FACTORS TO CONSIDER CONCERNING PARTICIPATORY MANAGEMENT WORK

1. The desire of workers to participate and the satisfaction resulting from doing so vary from group to group, and even from person to person. Not all workers are enthusiastic about getting involved in what they think is a management function.

2. Even workers who have the temperament and personality required for giving their opinions do not particularly want to do so unless certain conditions exist. They feel that the problem must concern them and not others, and they must have something worthwhile to contribute;

3. Don't confuse participatory management with democratic management. The latter means majority rules.

HOW TO MAKE PARTICIPATORY MANAGEMENT WORK

Participation in management decisions works under certain conditions with certain workers, when you know what you are doing. These steps will help this happen.

1. Make sure the problem is related to your workers' situation.
2. Be convinced that your workers have the knowledge and skill to be able to make a worthwhile contribution.
3. Determine if participation will benefit the PA in this situation.
4. Be sure there is sufficient time for you to obtain and consider workers' suggestions, before you ask for them.
5. State the problem and explain why it must be solved.
6. Consider all suggestions and comments regardless of who makes them.
7. Announce your decision and explain how you reached it.

ARRIVING AT CONSENSUS

Groups are constantly making decisions. How do they make them? Let's see what they must do, and what they must not do to achieve effective consensus, and which allows for better work results within an organization.

Consensus has been achieved within a group when virtually all the members support the decision, even if it is not what each of them would have wanted ideally. Decisions arrived at by consensus are better than those decided by voting or by executive order, and this makes their implementation more effective.

What must be done in order to reach consensus?

*Place all suppositions and proposals on the table.

*Make sure that all members participate and listen carefully to what all of them have to say.

*Look at disagreement as an opportunity to obtain new points of view.

*Consider all alternatives before reaching a solution.

*Decide on the criteria or characteristics of a good solution before deciding on the specific solution.

*Utilize techniques for resolving problems.

*Obtain all the information available concerning the problem.

*Ensure that all of the people who will be affected by the decision participate in the solution.

Lesson 2

PROTECTED AREA PLANNING

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe the general process of planning.

2. Explain why planning is important.

3. Describe the different levels of planning associated with the PA.

4. Describe the responsibilities of the PA personnel with respect to planning.

REFERENCES:

MacKinnon et al, 1986; Miller, 1980; Moore, 1988; Moore & Ormazabal, 1988; PARKS Magazine, Special issue on Planning, V.2, N.2, 1991; Salm, 1984; Snedaker and Getter, 1984.

PRESENTATION:

1.1 Ask the participants to give their opinions concerning what the **planning process** in the PAs should be like. Then analyze with them the situation in their respective PA. In the PAs the administrators must deal with a large number of activities and problems during their daily work. The management of a PA is a very complicated job as it includes the management of personnel, budgets, natural resources, communication media, visitors, neighboring communities, ecological communities, and many other aspects. Any conscientious administrator recognizes the need to organize his activities in order to efficiently accomplish his work. Planning in all of its facets is a mechanism utilized by any public or private institution which wishes to better meet its objectives.

1.2 The importance of planning can be emphasized by beginning with a general presentation of the planning framework.

Planning is an activity done by almost everyone, from individuals to corporations to governments. All of us do planning of one type or another, whether in our daily activities or in our yearly operations. Sometimes we plan formally by preparing lists, making calculations, and defining goals; for example, the process we would follow in order to buy or build a new house. Yet, individual planning is mostly an informal process, and often one is not even aware of doing it. It would be difficult to survive in this world without doing some level of planning, even if done unconsciously. The world increasingly is becoming an environment in which those who best plan and organize their time and resources are those who get ahead.

For governments, corporations, and private organizations, good planning is essential to assure meeting the goals set by the directors. Despite its recognized importance, planning has something of a poor reputation,

especially in the public sector where the results are not always positive. Often the complaint is heard that while plans are prepared and presented with much fanfare, they are later filed and forgotten. Part of this criticism is true because the political systems of all countries lack sufficient maturity to recognize the importance of following plans developed by specialists. On the other hand, it must be recognized that no plan is perfect at the moment of its creation, much less one or more years later. Planning is a dynamic process and it must be understood as such by those who use the plans.

1.3 **What is planning?** In general terms it is the organization of activities in order to accomplish one or more objectives. A more detailed definition follows:
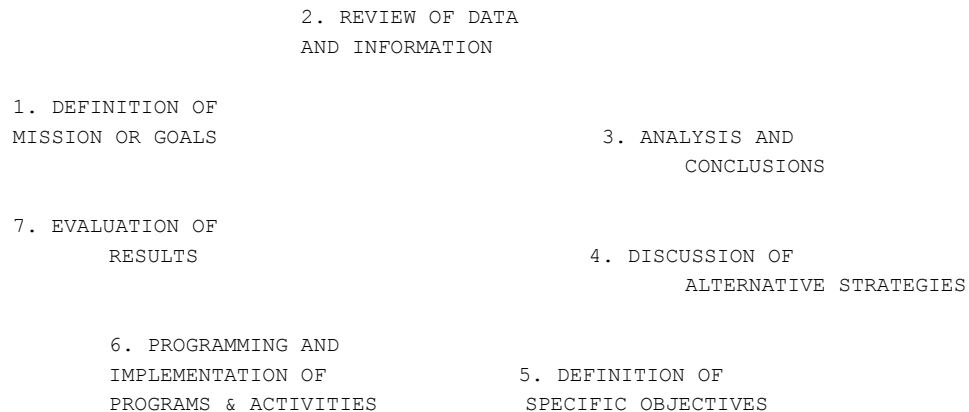
Within a given context, planning is a process of analysis of the past, present and future. In this process past failures and successes are studied, forecasts are made of the future, objectives are defined, and programs and activities are chosen that will lead toward the accomplishment of the defined objectives in the short, medium or long run, depending upon the type of plan.

1.4 Why is planning done? Planning is an ideal mechanism for:

- Learning from the past in a systematic fashion;
- Meeting objectives in an organized way;
- Avoiding making decisions spontaneously, which normally   leads to poor results;
- Uniting a group of people to deal with a given situation by participating in the planning process;
- Optimally organizing necessary work activities;
- Justifying the funding of programs and activities;
- Committing personnel to a plan's implementation by having them participate in the entire process.

1.5 Planning involves a general process that can be applied in any situation (Figure 1).

It should be noted that planning is a circular rather than a linear process.

```
                              2. REVIEW OF DATA
                              AND INFORMATION


        1. DEFINITION OF
        MISSION OR GOALS                      3. ANALYSIS AND
                                                 CONCLUSIONS


        7. EVALUATION OF
             RESULTS                          4. DISCUSSION OF
                                                 ALTERNATIVE STRATEGIES


        6. PROGRAMMING AND
        IMPLEMENTATION OF          5. DEFINITION OF
        PROGRAMS & ACTIVITIES      SPECIFIC OBJECTIVES
```

There should be an element of evaluation incorporated into the process in

order to modify or improve upon any part of the process that has either
failed or is not producing optimal results. Planning and evaluation
must both be integral parts of the management process, for several
reasons:

- No plan is perfect, and even if it were, it would only represent a
    solution that reflects the situation existing in a given moment in
    time;

- The circumstances under which original objectives and activities are defined
    always change with time: for example, the economic situation of a
    country, or of a particular industry is always changing, new
    technologies are developed, the mission of an institution can
    change, etc.

- The continuous analysis and evaluation of results which involves all the
    personnel helps to give those affected a greater interest in the
    product of their work.

Planning is a dynamic process which attempts to incorporate all possible
    variables in order to optimize results. As such, the process requires a
    great deal of information. The greater the amount of information
    available, the better will be the planning results. A company or
    institution should recognize this and assure that the established system
    for reporting and accumulating statistics provides the data and other
    information necessary to conduct the required planning and evaluation.
    If planning is done with scarce information, the quality of the results
    will be reduced.

1.6 Protected area planning is done within a conceptual framework characterized
    by a **planning hierarchy**:

**NATIONAL CONSERVATION
OBJECTIVES**

**NATIONAL PLAN OR STRATEGY
FOR PROTECTED AREA SYSTEM**

**MANAGEMENT PLANS FOR
INDIVIDUAL PROTECTED AREAS**

**OPERATIONAL OR ANNUAL   PROJECT OR
        WORK PLANS   THEMATIC PLANS**

Each hierarchical level in above figure is derived from objectives established
    at the next higher level. As such, each of the lesser levels are
    oriented, in ever greater detail, towards the fulfillment of the
    national conservation objectives which are defined by a National
    Development Plan, the Constitution, or a National Strategy of

Conservation for Development. In other words, the protected areas
fulfill an important function in meeting national development
objectives. The planning of how to do this is of great importance (See
the Supporting Document D1c: "That Which We Should Know About Our
Natural Resources " for a detailed discussion on this point.)

1.7However, this planning sequence (1.6) is rarely implemented as presented.
Normally it is begun at an intermediate level, without having
antecedents established at higher levels. For example, it is common to
develop a management plan for a certain area without having elaborated a
development strategy for the national system of protected areas. Also,
sometimes the administrators of an area do not have a management plan,
but they are required to prepare operational plans. What is important
is that objectives are established for the protected areas which are
relevant for the greater society, and which can be executed. While
fulfilling the planning sequence as presented in 1.6 facilitates this
task, it can be implemented in a different sequence if the PA
administrators have a clear vision of the role of the PA and of its
planning needs.

1.8Have the participants describe the process that they follow as individuals
in making decisions in their daily life. Later they should compare
their answers with the decision-making process in their PA. Ask the
participants about the planning situation in their PA. Which have plans
and of what type? To what point are the plans being followed? How do
the participants differentiate between the planning of their personal
life and that of a PA?

2.1In this section the different **planning levels** are briefly described.
Details concerning each one can be found in the references included in
this lesson.

2.2A **Plan or Strategy for a National System of Protected Areas** is a document
which describes the process of study and selection of a series of
protected areas (and possibly cultural areas) with the purpose of 1)
implementing a series of national objectives through the appropriate
management of the areas, and 2) providing an administrative and
technical outline for the management of these areas. In the Supporting
Document E2b an outline is presented for the planning process of a
system of PA (a process which could serve any system whether it be
national, provincial, public, or private).

2.3A **management plan** for a protected area is a document which orients and
guides the management of the resources present in the area, the
utilization of the area, and defines the necessary infrastructure to
support the planned management. It provides the conceptual guidelines
and activities that should guide the administration and management of
the area. It is a document prepared while looking to the long term: at
least 5 to 8 years.

In the overall process of planning for protected areas, the management plan
normally is the next step taken after elaborating a plan for the system.
It serves to apply the general objectives of the national system to a
specific protected area. When the system plan does not specify the

management category that an area should have, an intermediate planning
step may be taken known as a study of management alternatives for the
particular area. During the preparation of a management plan, however,
the management category of the studied area is analyzed and changes are
recommended when considered necessary.

While the phrase "management plan" is common, sometimes the term "master plan"
is used. This second term actually refers to a document that is much
more detailed in which plans are defined for construction of buildings,
roads, and signs. A master plan has a more permanent and rigid
connotation than that appropriate for a management plan. A management
plan should be flexible and dynamic given the changing conditions that
can affect its execution.

The level of detail to be considered in a management plan is frequently argued
about. The first management plans were very conceptual, and they served
only to very generally orient the management of an area while lacking
sufficient detail to facilitate their implementation. In part this
problem is due to the inability of some administrators to adapt
conceptual ideas to practices. Yet it has been shown that a plan can
be, and in some cases should be, more detailed. Obviously a plan that
will last for many years can not be extremely detailed. Nevertheless,
the planners need to analyze the situation of the area (as well as of
the capacity of the personnel who will be in charge of the area) to
        determine the level of detail necessary. The level of detail will
depend upon other factors also, such as:

- time and financing available;
- information available;
- importance of the area for the system;
- legal requirements for the content of the plan.

A plan should be a key reference document for administrators and others who
seek orientation as to the future management of the area. Generally it
is quite difficult to find the pieces of basic information that exist
for a PA, which can be dispersed among dozens of publications. The plan
should serve as a key reference in which all such information is
summarized in one document. Another important consideration for
improving the content of management plans is to include guidelines or
recommendations for **how to** accomplish what is recommended. Another
factor is making sure that essential information can be easily found.
Detail does not necessarily mean that a plan need be cluttered.

The Process. The first document to present a definitive process for
elaborating management plans was published by the FAO in 1976. The
methodology presented in this publication was later refined and detailed
by Miller (1980). This methodology was later revised and updated by
Moore (1988) and Cifuentes (1990).

The process consists of six general steps:

1. Gathering of pertinent information & surveying the area;
2. Analysis of the information obtained;
3. Analysis of possible management alternatives for the area;
4. Determination of management objectives;

5. Definition of zoning for the area;
6. Definition of programs and management activities.

This process directs the preparation of a plan which normally has a format such as that presented in the Supporting Document E2c.

The process and outline of a plan is applied with small adjustments to any management category. It is important to understand that, while the planning process is presented as a list of ordered steps, in reality it is necessary to consider many steps simultaneously. One should not be discouraged to find that, after finishing various steps in the methodology, it is necessary to return to, revise, and possibly change decisions that had previously been made. This actually is the rule rather than the exception, and it fits well with the concept of planning as a circular process.

Several points presented previously should be emphasized:

- planning should be an integral part of the overall management of an area, and not only an activity added when deemed necessary;

- the evaluation of results is an indispensable step in the planning process.

Participatory Process: While this point has been discussed several times in other sections, it is worth briefly repeating here. It has been proven that a plan that is perceived to be the result of the participation of individuals and groups affected by it will have a wider level of implementation than those plans that have not sought such participation. The participation of different sectors of the public greatly complicates the planning process, increasing both the cost and time required to finish it. Nevertheless, there are three important advantages to involving those persons, groups, associations, and sectional governments that, one way or another, will be affected by the plan:

- the plan will be enriched by the contributions of these persons and groups;
 - the participants in the process will feel committed to participate equally in its implementation, facilitating the future management of the area;
- the plan will receive more political acceptance if it is evident that it has the support of local people.

In summary, the planning process should be considered as important as the final planning document.

Zoning: Zoning of a PA is a management tool that is based upon the classification of both the natural resources present, and of the land and marine areas according to their most appropriate use(s). Zoning is a mechanism which facilitates both the work of the planners (designating, for example, those areas where one can or cannot consider the location of recreational infrastructure or the carrying out of scientific research and of the administrators (designating the uses allowed in different zones of the PA). While zoning is based on natural characteristics, and how they should be best utilized, it also fulfills the need to separate incompatible uses; for example, recreational activities may be conducted in one zone while scientific research may be

considered as inappropriate for that same zone and therefore must be done in another.

One important consideration in determining the location of different zones is that the type of use foreseen for one zone should complement the foreseen uses of adjacent zones. Whenever possible, there should exist a gradual transition between high intensity use zones and zones with low intensity of use to avoid abrupt changes on the landscape.

2.4 **Detailed Plans**. This type of plan represents the last step in the application of the national conservation objectives to the protected areas. They put into practice the policies and recommendations of the management plan, including all necessary detail. Generally these plans are of short duration being implemented over a one to two year time period. They are of three types:

a. Operational Plans
b. Project or Program Plans
c. Site and Construction Plans

a. Operational Plans

An operational plan is simply an annual or biannual work plan. Generally it is prepared to accompany and justify an annual budget. Traditionally the preparation of these plans has resulted in the production of documents to satisfy bureaucrats in central offices but which are seldom implemented nor are they of much use in guiding management activities in the PA.

An operational plan differs from a management plan in its focus on the short term and the level of detail of the activities to be done. The results give the area administrator an activity plan for the year which has been well thought out and organized, and which may be is realistically achieved. For the success of this type of effort, it is essential that all the area personnel participate in the discussion and that an honest evaluation of the previous year's work results occur. At the end of Supporting Document E2d, an example of the development of such an activity is presented.

Despite the effort put into to this level of planning, it is very difficult for the personnel to know the size of budget that will arrive, much less WHEN it will arrive. For this reason it might be useful to prioritize the activities in the operational plan, in order to assign the budget that does arrive to the most urgent and important activities. The activities can be classified into three categories:

1. Survival: Those minimum activities necessary to maintain the existing situation;

2. Moderate Advance: Those activities that tend to minimally improve the management and administration of the PA; these generally require a lesser investment than recommended in the management plan;

3. <u>Optimal Advance:</u> Includes activities that satisfy the goals programmed in the Management Plan which would be completed if full funding is available.

   b. <u>Project or Program Plans</u>

These are thematic plans which serve to develop some aspect defined in the management plan as important for the management of the area. Historically this type of plan has been used to promote educational efforts in the PA, especially environmental interpretation for visitors. Many protected areas have developed this type of plan, while others have developed wildlife management plans. These plans are extremely detailed, going as far as to define the texts and the size of signs and exhibitions to be used. They are normally prepared by specialists in the field in question.

Another example of a project or program plan is a Protection Plan, which is a document developed to define the actions needed to satisfy the Protection Program of a Management Plan, or to guarantee an optimal level of protection for an important sector of a PA. The National Parks of Argentina developed a process for preparing protection plans which utilizes the concept of "areas of control" or "operational spaces" in order to organize protection activities. As with other plans, this requires the participation of all the personnel in order to assure that it fits with the reality of the PA.

Both the environmental education and the protection plans present good opportunities for training local personnel as well as others involved in the theme. Through a workshop facilitated by specialists, the participants have the opportunity to learn while applying their practical knowledge.

   c. <u>Site and Construction Plans</u>

Normally a Management Plan will designate sites or zones for development without going into detail about how to modify the site to best meet the desired objectives. Proper site planning, even when dealing with only one building, demands a technical understanding of various disciplines: construction, aesthetics, landscape architecture, ecology, and civil engineering. While most PA administrators are not well trained in these fields, they often are responsible for making decisions on site design, sometimes with unfortunate results. Indeed poorly designed and placed buildings are common in PA.

Although they bring an added cost, developing site or construction plans after completing a management plan is indispensable for avoiding such problems in the future.

2.5 **Planning for coastal and marine areas**. Scientists generally agree that marine areas are the most unknown biological and geographic regions in the world. Also, until recently, it was generally thought that marine resources were practically inexhaustible, something that is now known not to be true. For these reasons among others, the selection and planning of coastal and marine protected areas has been minimal. (The

term "coastal area" includes both the land as well as the adjacent
marine environment.) There are various factors that complicate the
planning and management of coastal areas:

1. The lack of scientific knowledge about the species and ecological processes
   of these areas;

2. The low level of identification with, and the poor adaptability that humans
   have for the underwater environment;

3. The greater dynamic of the marine environment in comparison with the
   terrestrial environment, due to the constant movement of sediments,
   nutrients, fauna and flora, and pollutants of all types over large
   distances;

4. The need to think in three dimensions. On terrestrial environments most
   planning is done only on the land surface;

5. The difficulty in finding zones not altered or impacted by humans. As a
   result, planning must consider present use and the socio-cultural impact
   on neighboring human populations;

6. The common ownership of marine resources; as no individual owns them, the
   State is responsible for their administration. This typically implies a
   complex jurisdictional and legal situation which complicates coherent
   management of an area.

7. The difficulty in planning and developing infrastructure in marine areas,
   and of determining precise definitions of boundaries or zones. This has
   led to the use of points on the land as indicators of boundaries, often
   without consideration of the ecological aspects in the boundary
   definition.

Because of these issues, Salm (1984) concluded that it is essential to manage
coastal zones in an integral fashion, including both significant marine
and terrestrial environments together. While the jurisdictional and
legal issues are complicated by such an approach, the ecological dynamic
demands it.

In the Supporting Document D6a some other aspects are presented concerning
planning in coastal and marine areas.

2.6 For each of the situations discussed in this lesson, the level of planning
that exists for similar situations in the country should be presented.

2.7 After presenting the information concerning different types of plans, ask
the participants for their opinions concerning the amount of planning
needed to optimally manage the PAs. At what point have the PAs
represented in the course arrived in their planning? What have been the
problems in developing plans and then executing them? How many PAs have
management plans and what have been the problems in implementing them?
It would be useful to enumerate the problems identified and to try to
address the anxieties raised. An individual could be requested to
present his situation to a group of counterparts having them then try to
develop recommendations to improve the situation.

3.1**Responsibilities of Administrators.** The administrators or bosses of the PA have a great deal of responsibility over planning activities related to their PA.

- They should be the most familiar with the PA's situation.

- They should encourage the personnel to participate in a significant way in all of the planning processes.

- They also should actively participate in the planning processes that affect their PA.

- They should insure that their PA is adequately considered in all regional and provincial planning efforts.

- They should maintain records and report files that can serve as valuable guides and references when evaluating the results of different plans.

- They should set an example by treating seriously those plans that exist for the area; and they should insure that planning constitutes an essential element in their management of the PA.

- If problems arise in the execution of a plan, they should make a written record of the problem and, if necessary, justify actions that go against the plan.

- They should hold periodic evaluations of the plans that affect their PA with their staff and other interested parties (local citizens, resource users, public officials, etc.).

- They should insure that the results of evaluations be presented officially through established channels to those in charge of planning at higher levels or, in the case of operational plans, that the recommendations coming from the evaluation be implemented.

ACTIVITIES:

1. To summarize many of the concepts presented in this lesson, a plan of an accessible, nearby PA can be analyzed in detail. The participants can be divided into groups in order to analyze different aspects of the plan: methodology used in its preparation, including the disciplinary and institutional representation of the planning team; the organization and presentation of the plan; the content of the plan (Is it applicable to the reality of the PA?); the execution of the plan; and finally, the process used to evaluate the results.

Supporting Document E2a

IDEALIZED MODEL FOR THE DEVELOPMENT OF A PROTECTED AREA

(Adapted from the Protected Areas Program, CATIE, Costa Rica)

Supporting Document E2b

OUTLINE FOR THE PROCESS OF PLANNING A SYSTEM OF PROTECTED AREAS

I. PRELIMINARY TASKS

A. Put together an interdisciplinary, interinstitutional planning team.
B. Define and assign individual responsibilities; define terms of reference
   for each member of team.
C. Arrange other logistical requirements: office space, secretarial help,
   transportation, funding etc.

II. PREPARE CONCEPTUAL FRAMEWORK

A. Describe, or define, the national conservation objectives.
B. Define the parameters of the planning effort: which systems, subsystems,
   management categories, or territorial limits will be considered; will
   new policies or legislation be recommended?
C. Define the PA selection criteria to be used: e.g. representation of
   ecosystems or geomorphological features; ability to achieve national
   conservation objectives; ability to provide uses or services; present
   and potential use; institutional and administrative factors.

III. COMPILATION OF BACKGROUND INFORMATION CONCERNING EXISTING AND POTENTIAL
   PROTECTED AREAS.

A. Documents, studies, opinions and personal observations.
B. Field Visits, including talks with, and participation of field staff.

IV. ANALYZE AND CLASSIFY EXISTING AND POTENTIAL PROTECTED AREAS

A. Evaluate each protected area according to the selection criteria, using a
   range of numeric values for each one.
B. Prioritize the areas according to the results of the evaluation process
   carried out in the previous step.
C. Select the protected areas to make up a new PA system.

V. PROPOSE A NEW SYSTEM

A. Describe each PA to be included in the new system.
B. Describe the system's ability to achieve national and system conservation
   objectives.
C. Describe recommended policy, legislative or other initiatives needed to
   implement the system.

VI. PREPARE AN IMPLEMENTATION STRATEGY

A. Decide priorities as far as when to incorporate new areas in the system.
B. Propose a general budget for administering the new system.
C. Propose an outline of needed new staff.

Supporting Document E2c

TYPICAL FORMAT OF THE CONTENTS OF A MANAGEMENT PLAN

I.GENERAL BACKGROUND

A.Objectives of the planning exercise, team selection information, planning
process utilized, list of places/people visited or interviewed,
participation of others etc.
B.Funding sources, previous PA history/plans

II.NATIONAL CONTEXT

A.Discussion of PA system, other PAs, pertinent legislation and environmental
policies.
B.Discussion of ecological, scientific, and socio-economic importance of the
area with reference to the rest of the country.

III.REGIONAL CONTEXT

A.Discussion of natural, socio-economic and political aspects of the region in
which the PA exists, and the impact, actual and potential of the
PA's management upon those factors. Also included would be
development projects which may affect the PA, or vice versa.

IV.PROTECTED AREA DESCRIPTION

A. Biophysical Factors: ecological and biological characteristics
B.Cultural-Historical-Archeological Factors
C.Socio-economic Factors: uses of PA resources, local communities, pressures,
and value of PA to surrounding region.
D.Administrative Situation of the PA; include legal situation
E.Institutional Factors: organizations, both public and private currently
working in, or near the PA.

V.SYNTHESIS OF THE SIGNIFICANCE OF THE PROTECTED AREA

A. Describe the importance of the protected area, i.e. what makes it
significant from an international, national and regional
perspective. Data should be derived from the preceding sections.

VI.MANAGEMENT AND OBJECTIVES OF THE PROTECTED AREA

A. Definition of general **Management Objectives** for the PA.
B. Considerations with regard to the correct **management category**.
C. Definition of, or recommended changes in the PA **boundaries**.
D.Recommended **zoning** for the PA, including description of their
characteristics, location, and permitted uses and rules for their
implementation./

E.**Management Programs***

The most common are:

- Public Use (recreation and environmental education/interpretation).
- Natural Resource Management (resource monitoring, research, wildlife
          management, protection)
- Administration (territorial division, administrative functions and
          responsibilities of staff, training, public relations,
          maintenance).

F.Development (Facilities, development sites, staff, development schedule)

G.Budget

VII.APPENDICES

VIII.BIBLIOGRAPHY

IX. MAPS

* Management programs are usually divided into subprograms and then activities
to implement each subprogram. The manner in which programs and subprograms are
presented will depend upon the relative importance of the various themes
involved in the PA's management. For example, Research may very well be a
separate Program if it is a very important element in the PA under
consideration.

Supporting Document E2d

GENERAL OUTLINE OF AN OPERATIONAL/ANNUAL WORK PLAN

I. Briefly describe the national and regional contexts, focusing on those aspects which directly affect the problems of the PA.

II. Describe the outstanding natural and cultural characteristics of the PA, especially those whose protection and management influence the administration of the PA.

III. Analyze the PA's present situation with regard to:

- management objectives
- major management problems
- staff
- infrastructure
- vehicles and other equipment
- degree of compliance with previous operational/annual work plan, as well as the management plan.
- limitations for achieving effective implementation of previous plans.

IV. Prepare Programs and Subprograms (according to the Management Plan); for each subprogram, detail the activities to be carried out, indicating for each one:

- objective(s)
- description of work to be done
- requirements with regard to equipment and vehicles
- staff responsible for implementation
- time period for implementation
- budget

V. Preparation of implementation schedule

VI. Budget preparation

EXAMPLE OF AN ACTIVITY FOR AN OPERATIONAL PLAN

SUBPROGRAM: Protection

ACTIVITY: Patrolling of Aguacate Sector

OBJECTIVE: Avoid the removal of firewood and other natural resources from the area; make observations of flora and fauna, especially of regeneration of (endangered tree species).

RESPONSIBLE STAFF: Two guards working at the guard station "Aguacate".
TIMING: Twice a week, 6 hours each, on varying days of the week.
NECESSARY EQUIPMENT: Pistols, backpacks, canteens, boots, raingear, notebooks.
COSTS: Per diem (25,000); Equipment (40,000).

Supporting Document E2e

COMPATIBILITY OF ACTIVITIES WITH MANAGEMENT CATEGORIES

(Adapted from Thelen, K; Dalfelt, A. 1979. POLITICAS PARA EL MANEJO DE
AREAS SILVESTRES.)

Supporting Document E2f

NATIONAL PARKS AND OTHER SIMILAR WILDLANDS AREAS

by Alan Moore

History

At the present time (1995) there are almost 10.000 national parks and other similar protected areas in the world (IUCN Categories I-V). Of these protected areas, 2.041 are classified as national parks (IUCN, 1993). All of these areas cover more than 926,000,000 hectares worldwide. This may seem like a lot, but most of the growth in their numbers has occurred in the last 30 years in response to the increased general concern for the degradation of our natural environment. This phenomenon has become widespread in the world, where we are just recently beginning to realize that only a few years remain before all of the potential areas which could be national parks will be either occupied or irreversibly altered by human activity.

The idea of protected areas has its roots far in the historical past, both in Europe and Africa, where game parks were set aside for the sport hunting activities of the privileged classes. It was not until 1872 that the first national park was established. Yellowstone National Park was created in a spectacular wild setting in the western United States; it is a park which even today is one of the most beautiful and diverse parks in the United States. The idea of national parks extended to the rest of this world after 1872, as Canada created its first in 1885, with New Zealand, Australia, Mexico and South Africa following suit. During the 1920's, Argentina and Chile created their first parks. It is worth mentioning that most of these parks were created at the initiative of private groups or individuals that pressured their respective governments.

Originally, the idea behind the national parks was the permanent protection of their natural resources and scenic beauty for the enjoyment of visits. It was believed that the parks' ecosystems were self-regulating and did not require human intervention to assure that they remain unaltered under the pressure of human activities, both within and outside the parks, which tended to have an impact upon the ecological processes. At the present time, that attitude of passive management has rapidly given way to one of **active management**, due to increasing recreational demands, and to the necessity that protected areas of all kinds provide economic benefits in the short term in order to justify their existence and the sums of money needed to maintain them. Additionally, it is becoming increasingly obvious that protected areas, even the largest ones, do not contain sufficient territory to achieve long-term protection for the plant and animal species that inhabit them, for genetic and ecological reasons. To assure long-term survival of many of these species will require active manipulation of gene pools and ecosystems.

Definition and Characteristics

Because of the increasing importance of national parks in the world, a meeting was held in 1969 to discuss the topic. In the meeting, the following

definition of a national park was prepared:

"A National Park is a relatively large area:
1) where one or more ecosystems have not been significantly altered by exploitation or human
        occupation, and where animal and plant species, geomorphological sites and habitats of are
        of special scientific, educational and recreational interest, or which contains a natural
        landscape of great beauty;
2) where the highest competent authority of the country has taken steps to prevent or eliminate
        as soon as possible exploitation or occupation in the whole area and to enforce
        effectively the respect of ecological, geomorphological or aesthetic features which have
        led to its establishment; and
3) where visitors are allowed to enter, under special conditions, for inspirational, educative,
        cultural, and recreative purposes."

In short, a national park should:
        1. Contain outstanding unique natural resources;
        2. Be sufficiently large to protect the ecosystems contained in them;
        3. Be protected and managed by the national government;
        4. Be used by the public under special conditions.

While there exists an official definition concerning the objectives and
characteristics of national parks, in reality each country uses the definition
only as a reference, and in many cases, the concept as applied differs
significantly from the definition.

Based upon the definition, national parks should have several functions, among
them:

1. **Maintain in perpetuity representative examples of the world's principal
biological units.**

In more direct terms, we are talking about the conservation of examples of all
of the world's major ecosystems in order that our grandchildren can appreciate
them as we have, but even more importantly, in order that they may be
maintained in order that they may be used for improving our lives. Forested
areas have been shown to be extremely important in regulating our climatic
conditions, both locally and world-wide. We have much to learn from natural
areas: about the complex natural systems which maintain our societies and our
lifestyles, and indeed, our very existence. Many species of plants and animals
contribute directly to our social welfare e.g. over 25% of our medicines
originate from tropical rainforest plants; many others may potentially do so,
but science has yet to determine what their usefulness may be. If we do not
protect representative samples of the ecosystems that contain these species,
then the potential for future human benefit is lost.

2. **Maintain biological diversity and regulate the environment.**

Scientists are discovering that the more diversity which an ecosystem contains
in terms of numbers of species, the more stable it is in the long-run, and the
more resistant it becomes to extreme fluctuations in the individual
populations which make up that ecosystem, as well as to the overall impact due
to environmental conditions. Today, man's activities tend to reduce species

numbers, both through agricultural and livestock raising practices, as well as through the destruction of natural areas for these purposes, and creating large areas of monoculture (e.g. bananas, wheat); at the same time these activities are destroying the habitats of those wild ancestors which have contributed to the creation of all of today's commercial agricultural crops. Of the approximately 10 million species of plants and animals that inhabit the planet, it is estimated that at least 10% of them will be extinct by the year 2000. The economic loss is incalculable. The impact of this species loss, and thus ecosystem degradation, upon our own society's stability and ultimate well-being is also incalculable.

3. **Maintain genetic resources.**

Perhaps this function of national parks (and some other protected areas) is the most important in the long-run. We are continually trying to improve our quality of life and standard of living, which depend exclusively upon the use of natural resources. Since prehistoric times humans have domesticated plants and animals for their own use. This process contains today, but is focused more on plants which may have some medicinal purpose, and on improving our agricultural products. In Africa there are more than 10,000 species of medicinal plants. Wild animal species are increasingly being raised in captivity: a frog in Chile, and a giant snail in Nigeria, and ostriches in various countries are recent examples of this trend.

But the function of national parks as gene banks, where wild genetic resources which have given us our principal agricultural crops are protected, is of even greater importance. Every day our crops need to be improved, in order to assure their resistance to disease and insects, and to increase their yields. The plants and animals which have provided the original sources of these crops require protection so that they may continue to provide genetic material to their domesticated relatives. A national park in Ethiopia, for example, is being created primarily to protect the wild coffee plant, the genetic ancestor of all of the world's coffee. As we slowly eliminate the wild genetic resources, we are also reducing our possibilities of living in a healthy, stable world.

4. **Maintain our cultural heritage.**

Many national parks contain archeological or historical sites which are important either nationally or internationally. Many parks have been created specifically to protect these cultural sites. Machu Picchu National Park in Peru and Mesa Verde in the United States are good examples of this. The protection of cultural resources is of almost equal importance to that of natural resources, because they provide us and our society with the cultural context within which we have evolved; in other words, our social and cultural identity. The physical elements involved in determining our social and cultural identity: historical and archeological sites, are also being rapidly destroyed, much as are our natural resources. National parks and other types of protected areas are crucial to their protection.

5. **Provide recreational opportunities.**

Because of the increasing population and the growing scarcity of green or natural areas close to our population centers, it is becoming more and more important that we set aside relatively natural areas where we can carry out recreational activities. National parks provide this opportunity, as long as the activities are compatible with the long-term conservation of the natural resources which make up these very special environments. Tourism in the parks, both national and international, can become an economic benefit for the country where they are located. Costa Rica, Kenya and Thailand are good examples of this. Some parks have become self-sufficient as a result of the income derived from tourism. The income generated both within and outside the parks through services, employment etc to support tourism activities can be significant for the local population.

6. **Facilitate education and research.**

As protected natural areas in a world where other natural environments are rapidly disappearing, national parks constitute an extremely important scientific resource. In Costa Rica it is estimated that in the year 2000 not a single piece of natural forest will survive outside the national parks and other reserves. The observation, monitoring and study of these areas for the purpose of comparing the natural systems with degraded altered systems is essential if we wish to understand how far we have gone in our progressive destruction of the environment, but it also provides us with the information needed in order to recuperate or return altered areas to a more natural state. Scientific research is also fundamental to obtaining the information needed to properly manage a park.

The education of park users is essential not only for minimizing their impact upon these fragile areas, but also, in the long-term, for creating a concerned conscientious citizenry which will fight to assure that our natural resources are used wisely.

7. **The Challenge.**

With the national park development that has occurred in the last three decades, especially in the developing countries, the need to actively manage human activity within them has become increasingly apparent so that basic park objectives (visitor enjoyment and resource/ecosystem protection) can be complied with.

Fulfilling these objectives in a world of limited physical space and a human population which daily requires more resources just for survival and more and more recreational facilities and green areas for its mental well-being, has obliged governments to recognize the need to actively control and manage these areas; doing this is extremely costly, and technically challenging, especially since the majority of the world's population does not understand the need to do so. While numbers of parks have increased rapidly, effective management has only rarely been achieved, especially in developing countries. Budgetary constraints, lack of trained personnel, lack of an informed citizenry, and pervasive poverty are the primary limiting factors. Overcoming these obstacles, especially the latter two, is probably the greatest challenge that protected area agencies must face in the coming decade.

8. **Other Protected Wildlands Areas**

Although the emphasis of this article has been on national parks, it is important to realize that they are only one type of protected area; there are many other types that also have important roles to play in conserving the environment. Each of the other types has different objectives which govern its management and use. Each of these is called a management category. For example, Biological Reserves, where research may be a prime objective, is one management category; natural monuments, so-called because they are usually fairly small areas designed to protect an outstanding natural (or cultural) feature; Wildlife Reserves, which frequently have as their major objective the production of a particular species of number of similar species of wildlife for a particular purpose e.g. hunting, food, medical experimentation; or National Forests, which usually have a wide range of objectives, frequently characterized as "multiple use" areas. While there are more than 9500 protected areas in the world, only about 2000 are classified as national parks. All of these management categories have distinct management objectives, and as such have different uses.

Internationally the IUCN has defined six different broadly defined management categories, within which others will fall: Strict Nature Reserves, National Parks, Natural Monuments, Habitat/Species Management Area, Protected Landscapes, and Managed Resource Protected Areas (See Supporting Document E2g). The management categories are distributed over a scale which goes from very restricted use (e.g. scientific uses reserves) to very flexible, multiple use types reserves (e.g. national forests).

----------- Restricted Use   Multiple Use -------------------

Scientific   National Forests
Reserves   National
                    Parks

Based on the management objectives of a particular protected area, the area will fit into a particular management category on this scale. Normally national forests, which allow a wide range of activities and have several objectives, will occupy one extreme of the scale; scientific or biological reserves, which have very limited objectives, will usually occupy the other extreme. National parks will usually occupy a position closer to the restricted end of the scale.

8. **Future Directions**

National Parks are under a great deal of pressure at the present time to allow a wider range of human activities, many of which, if allowed, would mean the destruction of important components of the parks' ecosystems. Nevertheless, at

the same time, large numbers of other types of protected areas are being created, most of them on the more flexible end of the scale mentioned above, and which can be used for a wide range of activities, including in many cases the extraction of natural resources under management conditions which assure sustainable yields. This trend, both understandable and necessary, responds to some of the more immediate demands being placed on protected area systems, while maintaining the more restricted, and equally necessary management of national parks and other similar areas. However, management of the more flexible management categories requires techniques and trained personnel which at the present time is scarce and, with regard to the necessary technology, either non-existent or in a state of evolution.

Are national parks anachronisms in a world of tremendous population growth, and of techniques which become increasingly sophisticated in dealing with the need to provide sustainable yields of natural resources? There is a great deal of discussion on this topic, but what is certain is that the protection of genetic resources, the provision of natural areas for rest and inspiration, the need for monitoring and studying natural environments, are functions which are extremely important for today's society. The world's protected areas must fulfill their role of helping to maintain and improve our society. But we must recognize how to take advantage of these areas wisely, and make sure that their utility is not short term.

National parks are an important component of any balanced wildlands system which pretends to protect representative ecosystems and unique or outstanding natural features; a balanced system of management categories will provide many of the basic needs of a country's population, but one category or even two will not be sufficient. National parks are not anachronisms, but instead fulfill one of the important functions of a good national system of protected wildlands areas, just as a species or community are essential parts of an ecosystem. Each has a role to play in contributing to the whole.

Biosphere Reserves are areas which frequently include national parks as their core zone, but may also include inhabited and other altered zones, as long as the human activities carried out within their territories are relatively compatible with the natural environment. By means of the integration of activities such as scientific research, monitoring the environment, comparative research, and education of local people, it is hoped to achieve the optimum, sustainable use of the land. With a world-wide system of Biosphere Reserves, representing all of the world's major biogeographical regions, development, science and conservation will be combined for the benefit of all. The national parks which serve as the core of the Biosphere Reserves, serve as unaltered areas which serve as points of reference for comparison studies with areas under different kinds of land use. Through the Biosphere Reserve program, run by UNESCO, it is hoped to resolve many of the world's key problems concerning appropriate land use. Although the program has been in place since the 1970's, and there are more than 310 Biospheres Reserves in the world, much remains to be done. Achieving appropriate overall management of these Reserves remains a major obstacle, since this involves a large degree of institutional coordination.

Supporting Document E2g

PROTECTED AREA MANAGEMENT CATEGORIES

(Taken from "Guidelines for Protected Area Management Categories"
published by IUCN, 1994)

CATEGORY I Strict Nature Reserve/Wilderness Area: protected area managed mainly for science or wilderness protection

Definition

Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring

Objectives of Management

- to preserve habitats, ecosystems and species in as undisturbed a state as possible;
- to maintain genetic resources in a dynamic and evolutionary state;
- to maintain established ecological processes;
- to safeguard structural landscape features of rock exposures;
- to secure examples of the natural environment for scientific studies, environmental monitoring and education, including baseline areas from which an avoidable access is excluded;
- to minimize disturbance by careful planning and execution of research and other approved activities; and
- to limit public access.

Guidance for Selection

- The area should be large enough to ensure integrity of its ecosystems and to accomplish the management objectives for which it is protected.
- The area should be significantly free of direct human intervention and capable of remaining so.
- The conservation of the area's biodiversity should be achievable through protection and not require substantial active management or habitat (c.f. Category IV)

Organizational Responsibility

Ownership and control should be by the national or other level of government, acting through a professionally qualified agency, or by a private foundation, university or institution which has an established research or conservation function, or by owners working in cooperation with any of the foregoing government or private institutions. Adequate safeguards and controls relating to long-term protection should be secured before designation. International agreements over areas subject to disputed national sovereignty can provide exceptions (e.g. Antarctica).

Equivalent Category in 1978 System

Scientific Reserve/Strict Nature Reserve

_____

CATEGORY Ib Wilderness Area: protected area managed mainly for wilderness protection

Definition

Large area of unmodified or slightly modified land and/or sea retaining its natural character and influence without permanent or significant habitation which is protected and managed so as to preserve its natural condition.

Objectives of Management

• to ensure that future generations have the opportunity to experience understanding and enjoyment of areas that have been largely undisturbed by human action over a long period of time;
• to maintain the essential natural attributes and qualities of the environment over the long term;
• to provide for public access at levels and of a type which will serve best the physical and spiritual well-being of visitors and maintain the wilderness qualities of the area for present and future generations; and
• to enable indigenous human communities living at low density and in balance with the available resources to maintain their lifestyle.

Guidance for Selection

• The area should possess high natural quality, be governed primarily by the forces of nature with human disturbance substantially absent and be likely to continue to display those attributes if managed as proposed.

• The area should contain significant ecological, geological, physiogeographic or other features of scientific, educational, scenic or historic value.

• The area should offer outstanding opportunities for solitude enjoyed once the area has been reached by simple quiet non-polluting and non-intrusive means of travel (i.e. non-motorized).

• The area should be of sufficient size to make practical such preservation and use.

Organizational Responsibility

As for Sub-Category Ia.

Equivalent Category in 1978 System

This sub-category did not appear in the 1978 system but has been introduced following the IUCN General Assembly Resolution (16/34) on Protection of Wilderness Resources and Values adopted at the 1984 General Assembly in Madrid

Spain.

CATEGORY II National Park: protected area managed mainly for ecosystem protection and recreation

Definition

Natural area of land and/or sea designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities all of which must be environmentally and culturally compatible.

Objectives of Management

• to protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational or tourist purposes;

• to perpetuate in as natural a state as possible representative examples of physiographic regions, biotic communities, genetic resources and species to provide ecological stability and diversity;

• to manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will maintain the area in a natural or near natural state;

• to eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation;

• to maintain respect for the ecological, geomorphologic, sacred or aesthetic attributes which warranted designation; and

• to take into account the needs of indigenous people including subsistence resource use in so far as these will not adversely affect the other objectives of management.

Guidance for Selection

• The area should contain a representative sample of major natural regions features or scenery where plant and animal species habitats and geomorphological sites are of special spiritual, scientific, educational, recreational and tourist significance.

• The area should be large enough to contain one or more entire ecosystems not materially altered by current human occupation or exploitation.

Organizational Responsibility

Ownership and management should normally be by the highest competent authority of the nation having jurisdiction over it. However they may also be vested in another level of government, council of indigenous people, foundation or other legally established body which has dedicated the area to long-term conservation.

Equivalent Category in 1978 System

National Park

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CATEGORY III   Natural Monument: protected area managed mainly for conservation of specific natural features

Definition

Area containing one or more specific natural or natural/ cultural features which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities, or cultural significance.

Objectives of Management

• to protect or preserve in perpetuity specific outstanding natural features because of their natural significance unique or representational quality and/or spiritual connotations;

• to an extent consistent with the foregoing objective to provide opportunities for research, education, interpretation and public appreciation;

• to eliminate and thereafter prevent exploitation or occupation inimical to the purpose of designation; and

• to deliver to any resident population such benefits as are consistent with the other objectives of management.

Guidance for Selection

• The area should contain one or more features of outstanding significance (appropriate natural features, include spectacular waterfalls, caves, craters, fossil beds, sand dunes and marine features along with unique or representative fauna and flora; associated cultural features might include cave dwellings, cliff-top forts, archaeological sites or natural sites which have heritage significance to indigenous peoples).

• The area should be large enough to protect the integrity of the feature and its immediately related surroundings.

Organizational Responsibility

Ownership and management should be by the national government or with
appropriate safeguards and controls by another level of government, council of
indigenous people, non-profit trust corporation, or exceptionally by a private
body, provided the long-term protection of the inherent character of the area
is assured before designation.

Equivalent Category in 1978 System

Natural Monument/Natural Landmark

_____

**CATEGORY IV   Habitat/Species Management Area: protected
area managed mainly for conservation through management
intervention**

Definition

Area of land and/or sea subject to active intervention for management purposes
so as to ensure the maintenance of habitats and/or to meet the requirements of
specific species.

Objectives of Management

• to secure and maintain the habitat conditions necessary to protect
  significant species, groups of species, biotic communities or physical
  features of the environment where these require specific human manipulation
  for optimum management;

• to facilitate scientific research and environmental monitoring as primary
  activities associated with sustainable resource management;

• to develop limited areas for public education and appreciation of the
  characteristics of the habitats concerned and of the work of wildlife
  management;

• to eliminate and thereafter prevent exploitation or occupation inimical to
  the purposes of designation; and

• to deliver such benefits to people living within the designated area as are
  consistent with the other objectives of management.

Guidance for Selection

• The area should play an important role in the protection of nature and the
  survival or species (incorporating, as appropriate breeding areas, wetlands
  coral reefs, estuaries, grasslands, forests, or spawning areas, including
  marine feeding beds).

• The area should be one where the protection of the habitat is essential to

the well-being of nationally or locally important flora or to resident or migratory fauna.

- Conservation of these habitats and species should depend upon active intervention by the management authority if necessary through habitat manipulation (c.f. Category Ia).

- The size of the area should depend on the habitat requirements of the species to be protected and may range from relatively small to very extensive.

Organizational Responsibility

Ownership and management should be by the national government or with appropriate safeguards and controls by another level of government, non-profit trust, corporation, private group or individual.

Equivalent Category in 1978 System

Nature Conservation Reserve/Managed Nature Reserve/Wildlife Sanctuary

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CATEGORY V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation

Definition

Area of land with coast and sea as appropriate where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area.

Objectives of Management

- to maintain the harmonious interaction of nature and culture through the protection of landscape and/or seascape and the continuation of traditional land uses, building practices and social and cultural manifestations;

- to support lifestyles and economic activities which are in harmony with nature and the preservation of the social and cultural fabric of the communities concerned;

- to maintain the diversity of landscape and habitat and of associated species and ecosystems;

- to eliminate where necessary and thereafter prevent land uses and activities which are inappropriate in scale and/or character;

- to provide opportunities for public enjoyment through recreation and tourism appropriate in type and scale to the essential qualities of the areas;

- to encourage scientific and educational activities which will contribute to the long term well-being of resident populations and to the development of public support for the environmental protection of such areas; and

- to bring benefits to and to contribute to the welfare of the local community through the provision of natural products (such as forest and fisheries products) and services (such as clean water or income derived from sustainable forms of tourism).

Guidance for Selection

- The area should possess a landscape and/or coastal and island seascape of high scenic quality with diverse associated habitats flora and fauna along with manifestations of unique or traditional land-use patterns and social organizations as evidenced in human settlements and local customs livelihoods and beliefs.

- The area should provide opportunities for public enjoyment through recreation and tourism within its normal lifestyle and economic activities.

Organizational Responsibility

The area may be owned by a public authority but is more likely to comprise a mosaic of private and public ownerships operating a variety of management regimes. These regimes should be subject to a degree of planning or other control and supported where appropriate by public funding and other incentives to ensure that the quality of the landscape/seascape and the relevant local customs and beliefs are maintained in the long term.

Equivalent Category in 1978 System

Protected Landscape

_____

CATEGORY VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

Definition

Area containing predominantly unmodified natural systems managed to ensure long term protection and maintenance of biological diversity while providing at the same time a sustainable flow of natural products and services to meet community needs.

Objectives of Management

- to protect and maintain the biological diversity and other natural values of the area in the long term;

- to promote sound management practices for sustainable production purposes;

- to protect the natural resource base from being alienated for other land-use purposes that would be detrimental to the area's biological diversity; and

- to contribute to regional and national development.

Guidance for Selection

- The area should be at least two-thirds in a natural condition although it may also contain limited areas of modified ecosystems; large commercial plantations would not be appropriate for inclusion.

- The area should be large enough to absorb sustainable resource uses without detriment to its overall long-term natural values.

Organizational Responsibility

Management should be undertaken by public bodies with an unambiguous remit for conservation and carried out in partnership with the local community; or management may be provided through local custom supported and advised by governmental or non-governmental agencies. Ownership may be by the national or other level of government, the community, private individuals or a combination of these.

Equivalent Category in 1978 System

This category does not correspond directly with any of those in the 1978 system although it is likely to include some areas previously classified as "Resource Reserves", "Natural Biotic Areas/Anthropological Reserves" and "Multiple Use Management Areas/Managed Resource Areas".

Lesson 3

PERSONNEL MANAGEMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Enumerate four steps to consider when conducting a job interview and develop an outline for use in conducting an interview.

2. Explain the three different training methods that can be used in a PA.

3. Explain the importance of giving appropriate work assignments.

4. Cite four ways for improving one's capabilities in personnel management.

5. Explain the importance of communication in personnel management.

REFERENCES

Lesson E6; Montana and Charnov, 1994; Terry and Rue, 1982.

PRESENTATION:

1.1   Selection of Personnel

The personnel aspect of an administrator's job begins with the **selection** of individuals to perform the necessary work. After the functions of the PA have been defined, it is necessary to fill positions with the most capable employees possible. This is an ongoing task as employees leave, are promoted, or are transferred to other sites. Obviously the goal is to select the best candidate possible for each position. This can be difficult, especially when there are no individuals with the necessary qualifications to fill the post, or when the salaries being offered are low, or when personnel decisions are made by persons not familiar with the PA or its needs. As such, at times an individual is hired who may not be fully qualified for the position. If this be the case, the new employee must have his skills enhanced through training.

When selecting personnel, the administrator should keep several things in mind. Among them are:

the position to be filled, and the skills required to fulfill the responsibilities of the position;
-the governmental system which regulates the contracting or employment of personnel for the PA;
-the existing personnel in the PA who may wish to change their positions or work sites;
-individuals in the region surrounding the PA who could fill the position. This factor can be very important since the employment of local residents demonstrates that the PA can benefit the local community, it can improve public relations, and it helps incorporate personnel knowledgeable of the area. Also, the

logistics of hiring local personnel can be helpful as often there is no need to provide them with lodging or other costs associated with employees who live far from the PA. However, there can be negative aspects to employing local people as they have their local ties which can make it difficult for them to act independently or according to the norms of the PA when dealing with friends and acquaintances.

Ask the participants about their experiences with employees who are from the areas adjacent to the PA.

1.2 What techniques are used in the process of selecting personnel?

The techniques available include the personal interview, an examination of the candidate's documentation, contact with past employment references, and, in some cases, a trial work period. Generally the best selection is made when they are used in combination.

It is very important that the administrator understand that the most crucial part of the selection process is the interview, and it is here where he can make the greatest contribution by being well organized. If one does not already exist for the PA, an interview outline should be developed with the questions defined to be asked of the candidate. If an outline is not followed, sometimes the desired questions are not asked of the candidate. This can occur if the administrator allows the candidate to dominate the interview or if the administrator talks too much, not allowing the candidate to speak. The candidate should also be allowed to ask questions that he might have regarding the job.

In the selection of personnel, it is important that an administrator clearly and realistically determine what the position requires. While it would be ideal to fill each position with the perfect candidate, this is not usually what happens. Reality dictates that, of the candidates available, the one be selected who possesses the skills that best fit the needs of the position, even if they are not optimal.

2.1 Training

One of the most important responsibilities of an administrator is that of giving adequate training to his staff. An administrator cannot expect optimal work if the knowledge and skill level of his employees is less than that demanded by their positions. A well-trained employee is more productive.

Training is the process of teaching and informing the employees so that: (a) they are enabled to optimally carry out their work functions, and/or (b) they can qualify to work in higher positions with greater responsibilities.

Training is a two-way process: there must be one who wants to teach and one who wants to learn.

2.2There are various training methods used in institutions and organizations such as a PA, among these are:

a)The "sink or swim" method which consists of putting the employee to work and letting him alone learn how to succeed or fail. Those who practice this method believe that a successful employee will learn his job well in this way. This method is generally considered to be harsh and wasteful, and it requires a long time to apply. Nevertheless, that which is learned by this method is not easily forgotten.

b)The "send him with John" method consists of sending the new employee with an experienced employee who will teach all there is to know about the job. This is actually the more traditional teaching method. If this method is to be successful, "John" must be both a good worker <u>and</u> a good teacher, who is interested in teaching the new employee and has sufficient time to do so. This method is better and costs less, and generally it serves to train the new employee more rapidly than the first method described.

c)The "methodical or systematic school" method is based on the following principles: (a) training should be systematically planned and carried out, (b) training should be based upon the individual's needs in relation to the demands of the position, and (c) the best teaching method should be selected according to the circumstances.

This method can give the best results at a low cost.

Perhaps some of the second training method, in certain situations combined with a little of the "sink or swim", combined with the "methodical school" will give the best results.

New PA employees may need special orientation with regard to general conservation philosophy and ecology in order to better understand the purpose of their work.

3.1 <u>Assigning Work</u>

The effective assignment of work is a function of the individual responsible for the PA. In any organization, no matter how small, it is difficult for the head administrator to be personally in charge of every work function. As such, authority must be delegated to others within the organization in order to insure that specific tasks are carried out.

The individual who receives the delegated authority is in charge of making decisions related to the specific task in question and assumes the corresponding responsibilities. The delegating administrator, however, reserves the ultimate authority and final responsibility. Some administrators resist delegating authority and try to do everything themselves, thus weakening the organization.

Some prerequisites for delegating include:

Recognize the need.

The administrator should believe that the delegation of authority will bring benefits, will help to develop an efficient group effort, will facilitate the multiplication of his own efforts, will benefit his subordinates, and will empower them to give their maximum effort.

Decide what type of decision to delegate.

It is possible to prepare a list so that the decisions of what to delegate are predetermined. This ties the delegation process with planning and makes it a part of the administrative model to be followed.

Carefully select the delegate.

The task should be given to someone considered competent to successfully carry it out. Give opportunity to those people who are not developing all of their abilities.

Help the delegate.

Help him, but do not tell him exactly what to do nor what to decide. As a general rule, if the delegate solicits help it should be given to him, in the form of stimulating and developing questions which help him to explore or to discover the possible solutions to the problem. However, to give him answers negates the benefits of the delegating process.

Establish a system of control over the delegation of functions.

Delegating authorities wish to remain informed so as to have knowledge of what is going on and to be in a position to apply corrective measures if necessary. Reports, audits, or periodic meetings can help give the necessary information.

Many administrators do not assign work to their employees which is one reason why many employees are not productive. At other times although the administrator clearly assigns work to his employees, the work is not done because he did not make clear the quality or quantity of work expected. Many administrators fail in the task of assigning work. According to Nathaniel Steward, an administrative expert in the USA, the reasons are:

1) Some administrators believe that their employees lack the adequate experience to do the job (often they prefer to do the job themselves rather than ask an employee to do it).

2) Often the administrator believes that it takes more time to explain the work to the employee than to do it themselves.

3) Some administrators use the excuse that an employee error costs too much, and thus it is better not to assign work.

4) Sometimes an administrator believes that if he does the work it will be done quickly, but for an employee to do it will require a longer period.

5) Some administrators believe that there are certain jobs that can not

be delegated.

6) Some administrators believe that their employees are not yet ready to do the work.

7) Some administrators prefer to do the work of their employees more than their own administrative work.

Of the seven reasons given by the administrators, only the fifth can be true (there are certain things that he can not delegate such as the development of a training plan, the conduct of an evaluation of the personnel, etc.); the others are simply excuses.

It is common for directors to be afraid of delegating authority. While at times this fear can be justified, generally it comes from a desire to keep direct control over all that occurs in the area. In a small PA this may be possible. But in large PA's with many visitors or potential problems, the delegation of authority is essential for maintaining optimal efficiency. If the employees to whom authority should be delegated are not capable of correctly exercising the authority, it is the director's job to train these individuals or change them. For those employees who have little experience with authority, the preparation of a document which explains the pertinent policies and rules to be followed would be helpful.

Use of Volunteers. In some PA the services of volunteers are used to help meet work demands. Volunteers can free up permanent PA staff from many bothersome or time-consuming tasks, allowing them to focus on other important functions. Also this allows for public involvement in the management of the PA and may allow for the evaluation of the work of possible future candidates for employment in the PA system. The negative aspects of using volunteers can include:

- they require training
- they require supervision
- they require logistical support (lodging, food, transport)
- sometimes they do not have the necessary skills for the work at hand.

(See Supporting Document E3e)

4.1   Personnel Management

There are few jobs more difficult nor more interesting than that of managing people. While it requires more knowledge, more common sense, more imagination, more humor, and certainly more intelligence than many other jobs, it can also cause more pain, problems, and difficulties than other jobs, especially if the boss has not learned the art of working with other people.

Most people reach their work positions due to their technical knowledge of carpentry, mechanics, park management, biology, etc., but very few get their position because they are good at personnel management.

A new administrator must quickly learn what he must overcome and what he needs

to develop in the area of personnel management and should seek help from various sources:

a) there are many books written on the subjects of personnel management, human relations, administration, etc.

b) There are many magazines and newspapers which contain new ideas and advances in the fields of administration and personnel management.

c) There exists the possibility of taking university courses in one or another aspect of administration.

d) The administrator who really wishes to improve his work can review and analyze as objectively as possible, the manner in which he is working and producing results.

4.2   The Administrator's Work

Anyone working as an administrator or work supervisor needs to learn many things, among them:

a) To guide and direct the efforts of the workers. This means learning those things that motivate people as well as understanding and prudently using the principles and methods of administration.
b) To work within the organization of which he and his people are a part. This implies that the administrator understand something about organizational principles and how an organization is efficiently managed.
c) To train his staff so that they can do a good job. He should also train his people so they are able to assume positions of greater responsibility.
d) To write and speak clearly and effectively, and to cultivate the ability to read and to listen, i.e. communicate well.
e) To evaluate the work done. Anyone who tries to direct people and resources must be able to judge what is a reasonable amount of work for one day, for one week, or for one year. This is necessary in order to know how many people are needed.
f) To make operational and action plans. Good planning is necessary for any type of work but especially for administration.
g) To prepare work schedules and to establish priorities among the various tasks to be completed.
h) To improve operational efficiency, thus gaining rapid, quality results at less cost.
i) To resolve problems in the area of personnel management.

5.0   Communication (see Supporting Documents E3a and b, and the Lesson E7).

ACTIVITIES:

1.Ask that the participants present situations which they believe demonstrate

a lack of efficiency. Discuss with them how these situations could be improved.

2.If time allows, visit a nearby PA, and ask the participants to identify problems related to a lack of efficiency at the PA and to suggest ways to address the problems.

3.Divide the class into groups of 3 to 5 people each and ask them to participate in role plays of conflict situations involving human resources, examples:

- contracting of an individual (conduct an interview)
- conflict with an administrator who is ill-prepared but arrogant
- assignment of work responsibilities

Each group should select one of its members to play one of the roles in the "drama". Another group will provide the other participant in the role playing. The group then helps those individuals to prepare for the presentation.

Supporting Document E3a

COMMUNICATIONS FOR SUPERVISORS

(Taken from: "An Approach to Training Park Managers in the
South Pacific Region" (Draft) by Mossman, R. 1985)

Communication is the process of passing of facts, advice, opinions,
instructions, requests, ideas, from one MIND to another MIND.

The Supervisor and Communication

You, as supervisors, are very much concerned with communication. You have to
receive information, feelings, thoughts, opinions and knowledge, and you have
to pass on those same things to others. You are in communication with workmen,
seniors, fellow supervisors and the public.

Methods of Communication

There are many ways and means of communicating and the two main methods are:

(a) by sound
- speech
- drums
- morse code

(b) by sight
- reflecting mirrors
- hand gestures
- flags
- written words, drawings, signs.

The two most widely used methods are speech and written words. Radio and
newspapers are good examples of these methods. In both cases WORDS are the
vehicle of communication.

Words are tricky things - they can mean one thing to one person, another to
some else: Remember that the 500 most used words in the English language are
recorded in the Oxford Dictionary as each having an average of 28 meanings.

The person initiating (starting), the communication should use words known to
the receiver: e.g. the term "epistanis" is alright when a Doctor is
communicating with another Doctor, but when he is communicating with us the
words "bleeding nose" should be used.

Receiving the message

Take time to understand
Ask yourself - what is the communication meant to convey
NOT   - what do I think it should mean.

Supervisors are receivers (or listeners) of communications, check to see if
you are following the pattern mentioned above. One study of a group of

supervisors, reported that their time was spent:

45%   listening
30%   talking
16%   reading
 9%   writing

Kinds of Communication

Here we have a further division, communications can be:

- Formal
- Informal

Formal Communication

This is:
Planned
Official - has authority
Purposive (done with a purpose)

The main forms are:
Official letters and memoranda
Minutes and reports
Circulars
Statistics
Manuals, official instructions

Its advantages are:
Accuracy
Provides a clear record
Represents formal authority and responsibility.

Its weaknesses are:

Slow in transit (going around)
Often lacks interest
Often contains too many official terms and too much official language
Often fails to give a full sense of what is intended.

Informal Communication

In a lot of organizations, most of the information that is used in decision-making is informally transmitted.

Informal Communication is:

At the lowest level - gossip and scandal
At the normal level - grape vine (coconut news).

Never underestimate the efficiency of the "grape vine" in transmitting - and distorting (becoming incorrect) - information.

Characteristics of informal communications are:

It is swift
It is usually interesting
It often promotes morale

Its dangers are:

Often misinformed
Often inaccurate
Cuts across lines of authority.

Barriers to Effective Communications

Some of the things that prevent good communications are:

(a)   Language

    The extreme being of foreign language not know to the receiver.

    Technical terms: These are terms know only to those in the organization, e.g. All forestry staff know that D.B.H. stands for diameter at breast height but someone outside the Forestry Division would most likely not understand.

    (b)   Geographical Distance

    Sometimes difficult to ask for clarification.

    (c)   Pressure of Work

    Often communications are only glanced at and their meaning not fully appreciated until too late.

    (d)   The "Frame of Reference"

    Sometimes the receiver of a message will, without realizing it, re-interpret the meaning of a message to fit his own experience or conditions. These may often differ from the senders wishes.

    There are other barriers to the communications process which are just as important as those listed above.

    Supervisors tend to let through what they want, thereby making poor communications. The result is misunderstanding, lack of motivation, insecurity, conflict and inability to take effective action. Halfway communications get halfway results.

    Check to see if your communications are effective.

Supporting Document E3b

IMPROVING INTERPERSONAL COMMUNICATION

(Adapted from Terry and Rue, 1982; from a Training
Course given in Costa Rica, 1991; and from CONAF, Chile.)

1. STOP TALKING! If you are talking, you can't listen.

2. In any conversation, first focus on the positive before the negative (give a compliment before a criticism).

3. Encourage others to express their point of view.

4. Ask questions. This encourages the other to talk, and shows him/her that you are listening.

5. Encourage the expression of different points of view.

6. Always appreciate the contribution of others.

7. Confront anger when it occurs; allow the angry person to express how he feels.

8. Give feedback. ("I feel that you ..." or "I am hearing that you are saying that ...".

9. Observe and respond to non-verbal signs (crossed arms, hands gripping the chair, frown)

10. Do not let people leave a meeting angry; try to eliminate the causes of the anger.

11. Be sure that you are focusing on the real problem. (Your problems with an employee could be the result of a personal conflict rather than a work related one.)

12. Write congratulatory notes for good work. Write "get well" notes to employees that are sick.

13. Be clear about assigned responsibilities (everyone should be clear about his/her responsibility and to whom they should report).

14. Put all agreements, formal and informal, in writing.

15. LISTEN. Try to understand the other's point of view.

16. Show the other person(s) that you are willing to listen; show that you are interested; don't read correspondence during meetings.

17. Eliminate distractions. Will there be more peace and quiet if you shut the door? Don't allow beepers or portable-cellular telephones in the room.

18. Be patient; don't interrupt the person who is talking. Don't move toward

the door or move away form the person who is talking.

19. Repress your bad mood (if you have one!). An annoyed person misinterprets what others say.

20. Be moderate in what you say, and how you say it. If not, others will be put on the defensive, and may close up or get mad.

21. STOP TALKING! This is the first - and the last guideline, because on this depends all of the others. You can't listen effectively while you are talking.

- Nature gave us two ears and only one tongue, which is a subtle suggestion that we ought to listen more than we speak.
- In order to listen, use two ears, one for meaning, the other for feeling.
- Those who decide, and don't listen, will have less information with which to make their decisions, and are therefore less likely to make good decisions.

HOW TO DEAL WITH DIFFERENT TYPES OF PEOPLE

TYPE OF PERSON

1. Impulsive. Nervous when talking; rapid in everything he does.

2. Thrifty. Deliberate in speech and behavior; tends to be very studious.

3. Decisive. Doesn't hesitate; is sometimes presumptuous. Self-assured.

4. Indecisive. Vacillates; not much self-confidence.

5. Suspicious. Careful in all that he does; suspicious of everyone; slippery and sometimes cynical.

6. Introverted. Quiet; doesn't integrate well with the group.

7. Extroverted. Talkative; gets lost in details; doesn't focus well.

1. Don't diverge with him; show him clearly the important points; Be quick as well.

2. Explain things well to him; give him time to think; don't hurry him.

3. Let him give his opinion; With ability, make him believe that other ideas are really his own.

4. Suggest decisions to him; motivate him in his work; decide for him if necessary.

5. Be doubtful with him in order to arrive at certainty; applaud his prudence, but extract a commitment from him.

6. Awaken his interest and be friendly with him; make him participate in the conversation, ask him questions.

7. Ask him to make a synthesis of his remarks, and present his major points; don't let him diverge from the topic.

HOW TO TREAT THAT PERSON

Supporting Document E3c

LEADERSHIP

(Taken and translated from the Course on Disaster Administration, OFDA/USAID)

Leadership is a standard of behavior designed to integrate individual interests along with personal and organizational efforts to reach an objective.

"The members of a group need a leader to guide them. The leader needs people
     with whom to work and for whom to serve.   If one or the other does not
     recognize the mutual necessity to love and respect each other, one or
     the other will lose."

Lao Tse

Leadership includes various complex elements, the three most important are:

- **The leader**

Is an individual who possesses the ability to induce followers to work
     responsibly on tasks that he leads.

The same attitudes and qualities that have been described for an administrator
     are desired for a leader. In order to better conceptualize the other
     two components, it will be useful to describe the principal types of
     leadership:

Autocratic leader: Based on formal authority. Egocentric (his priority is to
     satisfy his own needs), and not much interested in the needs of others.
      Demands blind obedience.

Democratic leader: Keeps the group sufficiently informed, stressing their
     participation, encouraging their initiative, and respecting their needs
     and interests. The leader integrates with the group and demands only
     their sincere cooperation.

Born leader: This type of leadership generally arises in informal groups, in
     which there can exist born leaders for different purposes. These
     natural leaders can influence the success of certain activities, even
     when the group has other formal leaders.

Situational leader: This is one in which the leadership style is subordinated
     according to the situation. The leader and the followers adjust to the
     existing situation and establish a certain level of flexibility in their
     relationship.

Flexible leader: This is one in which the overwhelming factor is the behavior
     of the leader. For example, in one case the leader may allow the group
     to act independently, while in another apparently similar situation, he
     may adopt an authoritarian or autocratic attitude.

- The follower

Without followers there is no leader. The followers have an important
        influence over the style of leadership. For example, the focus will be
        different when dealing with unskilled laborers than with planning
        professionals. If the group feels a great need to have concrete
        objectives, the members will tend to better accept the orientation of
        the leader concerning the task at hand. In other cases, the members
        will be more sensitive to whether or not the leader is concerned with
        the welfare of his subordinates.

Of the three components of leadership, the follower is perhaps the most
        complicated. Certainly a successful leader of one group could be
        rejected by another because of the difference in followers.

- The situation

In the same organization different situations can occur that require different
        approaches. When speaking of situations one refers both to the problem
        and the environment (including the people).

In order to adjust to the different situations possible in different
        organizational levels, administrators must possess three fundamental
        types of skills:

Technical: This comes from the skill and knowledge in the specific field
            which the person is managing.

In human relations: This involves the capacity to motivate and to integrate
            people in a work situation.

Conceptual: This refers to the capacity to visualize, manipulate, and relate
            ideas. These are essential for making critical decisions. The
            higher the level that the administrator occupies in the
            institution, the greater will be the need for good conceptual
            skills.

If a group is confronted by an emergency situation requiring rapid action, an
        authoritarian leadership style would be the most appropriate.

On the other hand, if the group must do a job requiring freedom and
        creativity, a more "laissez-faire" leadership attitude will produce
        greater benefits.

When the group's objective requires the participation of everyone in a
        tranquil environment, the best leadership style would be the democratic
        one.

In summary: The leader needs followers and he should be capable of keeping
        them; for this he must have the following attributes:

- an attractive personality
- a convincing capacity to communicate
- represent a worthy cause

Supporting Document E3d

MOTIVATION

(Taken and translated from a Training Course on
Disaster Administration OFDA/USAID)

Definition: The process by which a situation is achieved in which each person
fulfills his work with enthusiasm, because he wants to do it.

This definition shows that motivation is part of an individual's behavior. It
involves an interior force of great emotional content of a human being. In
order to motivate others, an administrator must be motivated as to the
progress and success of his work. He must know who works with him, and he
should have an idea as to their personal needs and desires as well as an
understanding of their behavior.

The objective consists of FINDING A WILL TO ACCOMPLISH, SUCH THAT THE TASK IS
DONE TO SATISFY PERSONAL NEEDS AS WELL AS THE DEMANDS OF THE INSTITUTION.

Ways to motivate

Among the best ways to increase motivation are:

- Enrichment of duties

This is related to the importance of the duties that are associated with a
work position. One can often motivate the person in charge by deliberately
enriching his position by incorporating more responsibilities and greater
challenges.

- Rotation of duties

This method for motivating is gaining in popularity. Periodically the work
responsibility can be passed from one individual to another, helping to
minimize boredom and lack of interest in the task. In developing a job
description, one should include a variety of tasks so that individual
development and satisfaction of personal needs are possible and are
encouraged.

- Administration by objectives

Allowing the worker to participate in deciding not only his own personal
objectives, but also how to accomplish them (with final approval of his
superior), has a great motivating influence. In this way the individual
focuses more on the results than on the activity, on the effort rather than on
the mistakes, and on intelligent management rather than on improvisation.

- Participation

The best way to achieve a positive contribution of an individual to the
objectives of the organization is to allow for his participation. It is
important for an individual to know that his ideas contribute to the final

decision and that his input is effective. When workers are encouraged to
participate, the individual desire to feel important and to contribute to
progress is recognized and successfully utilized by his superiors. The best
results occur when the worker: a) is aware of the objectives being sought, b)
possesses adequate understanding to manage the present problem, and c) is
given the time needed to analyze the problem in its entirety.

- Recognition

Generally people feel the need to have a position and to be accepted as a
group member. People aspire to have their presence, their efforts, and their
contributions considered important. The greatest motivation occurs for an
individual when recognition comes from those of the same or similar group.
Also the individual should know why he is being recognized and should feel
that he merits it.

- Growth

All employees have the desire to develop and to progress. These desires are
expressed in the need to live up to ones own potential and in the aspiration
to rise in an organization. The progressive director tries to satisfy these
needs by creating and maintaining a work environment in which growth and drive
prosper.

- Fulfillment

The administrator should insure that the work goal is an achievable challenge
for the worker. The task should make sense and have value in the eyes of the
individual, who should be evaluated as soon as the job is finished. The
emphasis put on job fulfillment will help satisfy an individual's needs to
carry out an interesting and useful job.

- Responsibility

When responsibility is not specifically determined, many people leave the job
to be finished by others. All employees need to clearly understand their
obligations. This helps one to carry out the job that he knows he should.
The common desire to be assigned specific tasks and to be judged based on
their fulfillment is a clear example of the motivation achieved by adequately
assigning responsibility.

- Reward

Every task should be justly rewarded. Besides permitting one to satisfy his
immediate needs, the reward or payment is an important element of motivation.

With a long-range plan there are greater opportunities to motivate the
employees and volunteers more efficiently. Why is this? The answer has to do
with the way planning affects key elements of motivation in a typical work
environment.

Frederick Herzberg, a motivation expert, believes that there are two groups of
MOTIVATIONAL FACTORS involved in any work situation: HYGIENE FACTORS and

MOTIVATION FACTORS.

According to Herzberg, and as shown below, the HYGIENE FACTORS - such as supervision, status, employment security, and organizational administration - DO NOT motivate people to produce more. They can only cause dissatisfaction. In other words, good supervision never motivates a volunteer or employee . . . but poor supervision can lead to dissatisfaction or a reduction in motivation.

The MOTIVATION FACTORS, on the other hand, are those facets of ones work that can inspire one to work harder and with greater productivity. There are six of these factors - achievement of the task, recognition, the work itself, responsibility, the opportunity to grow, and the opportunity to advance. To motivate employees and volunteers, these factors should be introduced into the work environment.

LONG-RANGE SYSTEMATIC PLANNING helps one to do just that. By establishing specific goals and objectives for the performance of your personnel, volunteers, and agency as a whole, you actually introduce a sense of work achievement for each one. By giving each person within your organization something to work towards, you give a new significance to daily work, offer new responsibilities, and offer new opportunities for development and personal and professional satisfaction.

In summary, PLANNING INCREASES THE MOTIVATION FACTORS in each job position within your organization by reducing emphasis on the daily problems and policies which are hygiene factors.

HYGIENE FACTORS

Agency policy
Administration of the agency
Supervision
Relations with the supervisor
Work conditions
Salary
Relations with companions
Personal life
Relations with subordinates
Status
Security

MOTIVATION FACTORS

Achievement of the task
Recognition
The work itself
Responsibility
Progress
Development

Supporting Document E3e

USE OF VOLUNTEERS

(Translated from a training course given in Costa Rica, 1991)

WHY ARE THERE VOLUNTEERS

In their search for different opportunities, people are actively becoming
involved with volunteer service. A volunteer is an individual who gives
services to the community BECAUSE HE WANTS TO, not because he has to.

Today's volunteers have growing levels of education and experience, and a
greater variety of skills. Add to this the greater amount of free time and
the desire to use it well, and one finds an important human resource available
to an organization that otherwise could not buy it.

Through the use of volunteers, the community can learn about an organization
and its personnel. A motivated volunteer promotes acceptance and support for
the efforts of the organization. On the other hand, a poorly managed
volunteer poses a risk for an organization, both in the way the work is done
as well as in potential damage of relations with the community.

TEAM WORK BETWEEN VOLUNTEERS AND PAID PERSONNEL

Team work between volunteers and paid personnel expands the scope and enriches
the quality of the services offered by an organization. By working in teams,
the skills and resources of the paid personnel and volunteers are maximized.
How do the team members work together . . . ?

- they focus on the same objective or goal
- they understand the role of each other
- they consult and share possible ways of doing things
- they openly communicate new ideas and perspectives
- they share mutual respect and responsibility

SOME POINTS TO CONSIDER

Volunteers and paid personnel work together to reach a COMMON PURPOSE. The
way in which they achieve this working relationship, and how they perceive
their objectives, affects the success or failure of their mission.

The volunteer and the employee bring to the relationship very different work
experiences, skills, feelings, personalities, and attitudes. The challenge
for the team is to establish a climate which permits the development of the
unique skills of each. This process of relating and interacting towards goal
achievement is really the process of SUPERVISION. Volunteers who are poorly
supervised often become part of the problem rather than part of the solution.

The role of an employee in developing an effective working relationship with a
volunteer includes:

* a personal commitment to work with volunteers

* a careful identification of the tasks that the volunteers can accomplish within the area employee's responsibility

* providing an environment which allows the volunteer to make use of his skills

* the disposition to develop basic techniques of human relations needed for the supervision of volunteers.

Expanding on these basic elements will provide paid personnel with guidelines for their daily contact with volunteers.

PERSONAL COMMITMENT

Attitudes and feelings are exposed when working close together. For this reason, one needs to examine his own expectations and personal commitment for working with volunteers.

Identify ones own individual objectives as well as the group objectives.

Develop understanding and empathy towards the volunteers. Do you accept their needs . . .?

. . . to accomplish something
to feel recognized
to belong
to be heard
to be treated justly and humanely

IDENTIFICATION OF THE TASKS

*Clarify your role as well as that of the volunteer

*Give instructions in order to eliminate confusion

*Work for a common goal and objectives

*Prepare a volunteer to accomplish a task

*Assign tasks according to the skills of the volunteers

It is the paid personnel, through their attitude and feelings, who set the tone of the work environment with volunteers. An open, warm, receptive attitude creates an environment in which the relationship can grow.

To work together, one on one, implies perception, sensitivity, understanding, and the acceptance of the role of each other. By cultivating these qualities both in oneself as well as in the volunteer brings about a process of individual and group maturation.

BASIC SKILLS FOR GOOD SUPERVISION

Supervision is the process of working through human relations to achieve a mutual objective. It involves communicating by words, attitudes, and feelings as much as giving an orientation.   Supervision involves the communication of ideas and information in such a way that they can be received and used.

The process of interacting with a volunteer includes:

  - establishing an environment which encourages creativity

  - relating through a two-way system of communication

  - structuring opportunities for development and making changes

  - perceiving needs and responding to them sensitively

  - providing encouragement and direction

  - knowing how to confront anxieties and failures

How one achieves these depends upon his own style, nevertheless, there are some basic elements that can be useful:

  - meet regularly with the volunteer

  - include him in the meetings of paid employees when appropriate

  - give him reading material which will provide him with a better understanding of the job.

HOW TO CORRECT A VOLUNTEER

Volunteers need your approval and they need your guidance. There are times when one must correct errors, attitudes, and practices. When small problems are dealt with appropriately and opportunely, there is less possibility that they will grow into large problems.

Often confusion, anxiety, and lack of understanding are at the root of the problem. Upon reconstructing a sequence of events, the real problem is often identified . . . it may be a question of human relations. Avoid being drawn into conflicts as these experiences tend to reduce your own effectiveness and your relation with the volunteer. You are the experienced counterpart. The manner in which you interact and deal with the situation could result in success or failure. Here the challenge is in doing, not in knowing.

Some suggestions that may be helpful:

  - correct the volunteer in private, not in front of others

  - begin with a question - give the volunteer the opportunity to speak first

  - be specific and constructive - give follow-up to your suggestions and

review the results
VOLUNTEER EVALUATION

To facilitate the evaluation of each volunteer, one can develop a specific evaluation sheet. It is recommended that evaluations be done every six months, at the end of the volunteer work period, or whenever either party feels that there is the need. When the evaluation sheet has been completed, it should be turned in to the coordinator for review and then placed in the personal file of the volunteer.

This is a responsible action within a systematic process of evaluation, and it is too important to be ignored.

Regular, conscientious evaluations are vital for providing significant and effective service.

Supporting Document E3f

ORGANIZING AN EFFECTIVE INTERVIEW

(Adapted from document of the Costa Rican National Park Service)

Any kind of interview, whatever its objective, should consist of 5 steps: planning, establishment of familiarity, questions, closing, and evaluation.

Planning of the Interview

The interview process must be planned beforehand. Specifically, the CV and other relevant documents presented by the candidate must be reviewed; those points which are confusing, his strong points and weak points should be noted, in order to ask the most appropriate questions. You should have a clear idea of the job requirements so that you will be able to judge whether the candidate(s) fulfill those qualifications.

Establishing Familiarity

Receive the candidate and do what you can to make him/her feel comfortable and at ease. The room where the interview takes place should lend itself to reducing tension and establishing a cordial environment, by being quiet and without distractions. Offer the candidate a cup of coffee. As a rule, the candidate should be treated courteously, not only for humanitarian reasons, but also because your and the institution's reputation are on the line.

Asking Questions

The interview goes from the "familiarity" phase to the questioning stage. Avoid questions that can be answered by YES or NO. Ask questions that require a more detailed response. Don't put words in the mouth of the candidate; for example, by asking "You have worked with horses, haven't you?", you are signalling the desired answer. Don't interrogate the person as if he were a prisoner, and don't be energetic, sarcastic, or distracted. Lastly, don't monopolize the interview with non-stop talking.

Closing the Interview

Towards the end of the interview, you must leave time to respond to any questions the candidate may have, (if appropriate), and to sell the institution or PA to the candidate. Try to conclude all interviews on a positive note. Make sure you tell the candidate how and when he will be informed of the final decision. Be honest in your appraisal.

Evaluation

After the candidate has gone, you should review the notes you took during the interview in order to evaluate what happened during the interview while it is still fresh in your mind. Make any necessary supplementary notes that may be necessary to summarize your impressions and conclusions. Remember that instantaneous judgements and an undue emphasis on the negative are common errors in interviews.

Supporting Document E3g

ETHICS IN PARK MANAGEMENT

(by Lemuel A. Garrison, Regional Director
National Park Service, Midwest Region)

A great many questions of an ethical nature arise in the average manager's dealings with his subordinates, his colleagues, and his own superiors. The following, for example, are some guides that one large automobile company has developed for its own managers:

1.   Supervisor with superiors
a.   Do not go over a superiors head regarding any new development or
                anything requiring his decision.
b.   Never ridicule, publicly criticize, or make disparaging remarks about
                those in authority.
c.   Avoid any semblance of overfamiliarity.
d.   Don't "pass the buck."

2.   Supervisor with other supervisors
a.   Never make damaging personal remarks concerning other supervisors.
b.   Never deliberately attempt to "show up" another supervisor.
c.   Do not use abusive language or quarrel with other supervisors in
                presence of employees, or others.
d.   Never deliberately withhold necessary information.
e.   Never form or join cliques.

3.   Supervisor with his workmen
a.   Do not become indebted or obligated to employees.
b.   Do not make a practice of becoming too familiar with employees.
c.   Avoid promises except those you're sure you can deliver on.
d.   Avoid any indication of favoritism.
e.   Never use abusive language toward employees.
f.   Never brag.
g.   Do not employ relatives in your department.
h.   Never yield to the temptation of doing the "smart thing. Good ethics
                require doing the "right thing."
i.   Do not betray confidences of employees.

4.   Supervisor with the public
a.   Never divulge confidential information to outsiders.
b.   Do not participate in gossip concerning company matters.
c.   Never talk shop outside of working hours unless it is of a wholesome,
                constructive nature in the interests of the organization.
d.   Avoid talking about money involved in departmental business
                transactions.

It has been said that "character of an organization is the lengthened shadow of one man." This was undoubtedly true, back in the days when industrial empires were being carved out of the raw materials of the times - by rugged individuals, whose personalities dominated the organizations they were in the process of creating. Today, management has largely been divorced from ownership, and few organizations are cast in the mold of one man's character

and personality. They are composites, and they reflect the thinking, the values, the character of many men - necessarily in a somewhat diffused way, since they are a blend of diverse influences.

For this very reason, however, it has become true - but in a different sense - that the character of an organization is "the lengthened shadow of one man." Not to the public, but to the worker. We have all heard it said many times that the immediate supervisor represents "the company" to the average employee, who has never sat in on a board of directors' meeting, has possibly never exchanged a direct word with people at the very top-policy level. Ethics, values - as viewed through the many layers of organization that separate top management and the worker - become pretty vague and impersonal. In this sense the mantle of leadership has largely fallen to the operating-line manager. For it is he who, in clear outline, shapes not only the shadow but the substance of a company's "character."

President John F. Kennedy's Message to Congress on Ethical Standards:

> In a message to Congress on April 27, 1961, on ethical conduct in the Government, the President said: "No responsibility of Government is more fundamental than the responsibility of maintaining the highest standards of ethical behavior by those who conduct the public business. There can be no dissent from the principle that all officials must act with unwavering integrity, absolute impartiality, and complete devotion to the public interest. This principle must be followed not only in reality but in appearance. For the basis of effective Government is public confidence, and that confidence is endangered when ethical standards falter or appear to falter.

> "The ultimate answer to ethical problems in Government is honest people in a good ethical environment. No web of statute or regulation, however intricately conceived, can hope to deal with the myriad possible challenges to a man's integrity or his devotion to the public interest. Nevertheless, formal regulation is required - regulation which can lay down clear guidelines of policy, punish venality and doubledealing and set a general ethical tone for the conduct of public business."

Lesson 4

TIME MANAGEMENT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Keep an activity diary to learn how they use their time.

2.Utilize at least three ideas or techniques to improve the use of their time.

REFERENCES:

Drucker, P. 1967; MacKenzie, A. 1972; Webber, 1980.

PRESENTATION:

1.0Time management is a collection of ideas and techniques that can help an individual to improve the use of his time. "Time management" is really a misnomer as no one can actually manage time; one can only manage one's <u>activities</u> with respect to the time. By better managing their activities, most individuals should be able to increase by at least 25% the work accomplished in a typical day.

The effective use of time requires both planning and a critical analysis of how we have used the time in the past, in order to make better use of the time in the future. It is essential to remember that the supply of **time** is inelastic; there will never be any more of it.

An analysis of how time is used is probably the key to effective time utilization. Studies have shown that few people (including administrators) know how they use their time, and if by chance they do know how they use it, they don't know how to determine if they have a problem. All that they know is how to bemoan the fact that there are only 24 hours in a day and 7 days in a week. Very often administrators and even employees ask, "How can I use my time more effectively?"

1.1 THE DIARY

There are various ways to determine how we are using (or losing) time. Probably the best is by keeping a diary. Keeping a diary is a simple process that can be done in different ways. The key is to frequently take note of all that one does during the day by dividing the day into blocks of time of no more than a half hour, preferably a quarter hour.The time used by different activities, with whom one was working, and what work was being done are all written down.

After keeping the diary for 3 or 4 weeks, one can critically analyze what he was doing and if something else could have   been done to better utilize the time. It is important to remember that to keep a diary which will be useful requires keeping track of the exact time that one begins and ends each activity. Without precise information one can not determine how to change daily work habits.

1.2 THE DEMAND FOR TIME

The demands on one's time rarely allow a person to do all   that he would like
       or believes necessary to do. Also there are always situations which
       demand more time of the administrator due to unanticipated complications
       such as the sudden death of an employee, a long illness, damaged
       machinery, etc.   Studies done concerning the use of time by
       administrators have found the most common causes for loss of time to be:

       1.   Telephone interruptions
       2.   Visits
       3.   Meetings
       4.   Unanticipated crisis
       5.   Lack of objectives and priorities
       6.Unorganized personnel. An unorganized desk. Unorganized files, etc.
       7.Involvement in routines and details that should be delegated to others.
       8.Trying to do everything without realizing that this takes much time.
       9.Lack of clear lines of responsibility and authority.
       10.Inadequate, incorrect, or late information.
       11.   Indecision, tendency to "put off until later".
       12.Lack of communication or clear instructions.
       13.Inability to say "no".
       14.Lack of knowledge concerning the progress of the institution.
       15.Exhaustion.

For other Time Wasters, see Supporting Document E4a.

1.3In general, there are three types of tasks: boss-imposed, organization-
       imposed and self-imposed. There are three time categories: personal,
       supervisory and executive. For PA managers, a major objective should be
       to spend as much time as possible in the executive time category so that
       you can generate more self-imposed tasks. This will not happen if
       subordinates are allowed to take away your discretionary time. Management
       is getting results through others; delegation of responsibilities should
       be a high priority. As a manager, as you move up through the
       institutional hierarchy, more of your time should be spent in managing
       through delegating and less in operating through doing.

2.1 AN ANALYSIS OF THE TIME USED

After keeping a diary for two or three weeks one can begin to apply the
       principles of efficient time utilization. It is always difficult to
       admit that one has been losing time or using time ineffectively.
       Nevertheless, this recognition is crucial if one is to make a behavioral
       change.

To improve the use of time the first thing that one must do is truly WANT TO
       CHANGE. What are the principles of effective use of time? Those who
       deal with this issue often cite the following mechanisms that can be
       used:

1. Prepare a list of activities for the day in order of priority, and then deal with them in the order established in the list.

2. Set firm, realistic objectives for the week.

3. Be punctual.

4. Establish clear procedures.

5. Delegate authority.

6. Review what has been done to see if it could have been done in less time.

7. Review what has been done to see if it could have been done by another employee.

8. Do the most difficult task first.

9. Assign all the work that can be done effectively by other people.

10. Do not get involved in things that other people are doing, especially if your interest is only curiosity.

11. Give clear orders to your employees.

12. Establish the procedures to be followed when you will be absent.

13. Take some time from your busy schedule to reflect on the work and on what really needs to be accomplished.

14. Be punctual. This establishes discipline in yourself and also sets a good example for others.

15. Have in mind tasks that can be accomplished during days with little activity.

ACTIVITIES

1. Have the participants think about the amount of time they spend on the various activities they engage in normally, and have them record their estimates on the following table; the activities can be adjusted to more adequately represent the activities of the participants. After filling in the table, have the participants utilize the Time Log in Supporting Document E4c, either after the course to compare actual results with their estimates in the Table; another alternative is to make sure they fill out the log for one week before the course, and then compare results with their estimates.

Type of Activity	Time %
1. Phone: seeking information	
2. Phone: giving information	
3. Attending meetings	
4. Giving instructions	
5. Training	
6. Purchasing	
7. Writing reports	
8. Planning	
9. Public relations	
10. Discretionary time	
11. Other	

Supporting Document E4a

MANAGERIAL TIME WASTERS

(Taken from: Mackenzie, 1972)

PLANNING

Attempting too much; unrealistic time estimates.

No deadlines; daydreams.

Fire fighting; crisis mgmt.

Leaving tasks unfinished.

Shifting priorities.

No objectives, priorities, or daily plan.

ORGANIZING

Multiple bosses.

Confused responsibility and authority.

Duplication of effort.

Personal disorganization; stacked desk.

STAFFING

Personnel with problems

Understaffed/overstaffed

Untrained/inadequate

DECISION MAKING

Snap decisions

Indecision/procrastination

Wanting all the facts

Decision by committee

DIRECTING

Not coping with change

Not managing conflict

No coordination/no teamwork

Lack of motivation

Ineffective delegation

Involved in routine details

Doing it myself (no delegation)

CONTROLLING

Inability to say no

Overlooking poor performance

Mistakes/ineffective performance

Overcontrol

No standards or progress reports

Incomplete information

Telephone/Visitors

COMMUNICATING

Meetings

Under-over and unclear communicating

Failure to listen

Socializing

ADMIN. E4a-b

Supporting Document E4b

SUGGESTIONS FOR IMPROVING TIME MANAGEMENT

(Taken and translated from a Course on Preparing Proposals, Costa Rica, 1991)

1. Have 5 minute meetings with your secretary, key staff, and volunteers, about 20 minutes after the day has begun, in order to decide on the main results which should be achieved by the end of the day.

2. Institute a system of "I'll call you back". Instead of accepting every telephone call, have your secretary say that you will call them back. Then make all of the phone calls in one block of time. This will save your time, and allow you to prepare for the calls.

3. From the start, establish the tone of phone conversations. Reduce wasted time by asking "What can I do for you?" or "What is the problem?" before the conversation becomes personal.

4. Set aside time on your calendar for meeting with the boss; do the same for other important groups of people: Key staff, secretary, volunteers etc.

5. Before meetings, decide exactly what decisions you want to be made, and don't make decisions about other topics. Write down decisions made in order to avoid losing time trying to reconstruct later what was decided.

6. Always prepare an agenda for meetings, and present it at the beginning of the meeting. Establish a time for finishing the meeting, and make adjustments to keep to it.

7. Do not cancel meetings that have already been scheduled. Others will have already programmed their time accordingly.

8. Inform the visitors before the meetings so that they are prepared to make decisions at the meeting.

ADMINISTRATION OF TIME - HOW TO OBTAIN MORE RESULTS IN LESS TIME; 35 IDEAS

1. FOLLOW YOUR TIME IN 15-MINUTE TIME SEGMENTS for one or two days to see what you do with it. Then decide: What important things are you doing? What unimportant things are you doing? What things could done by others?

2. EACH DAY MAKE A LIST OF THINGS TO DO. Place everything in order of priority, and work on the most important things first. Try to finish each high priority item before moving on to the next.

3. FILL THE "DAILY WORK SCHEDULE" AND TRY TO ADHERE TO IT.

4.SEPARATE A "SPECIAL TIME" WITHOUT INTERRUPTIONS in order to finish large, important tasks. 80% of the most important tasks will be done in 20% of the time, so reserve at least 20% of your time to work on the most important things. This special time should not have interruptions and it should be during the period of the day during which you work the best.

5.COMPLETELY CLEAN YOUR DESK before working on a project. This will help to avoid working on easier or lower priority jobs.

6.ESTABLISH BEGINNING AND ENDING DATES FOR ALL PROJECTS.

7.WORK IN YOUR HOME as much as possible. You will have fewer interruptions and you will be able to work during the time used to commute to the office.

8.WORK ON A PROJECT UNTIL IT IS FINISHED. This will save the time that would be lost if one had to get involved in the project again after having left it for a period of time.

9.ALWAYS CONSIDER THE BENEFITS THAT ADMINISTRATION OF TIME WILL BRING. Get the best returns from your investment of time.

10.USE A CALENDAR to help remember those things that must be done in the future.

11.UTILIZE THE PRINCIPLE OF "ENLIGHTENED MEDIOCRITY". In other words, be aware that perfection often requires too much time. Do things only as sufficiently well as needed to obtain the desired results, and no more.

12.USE FOLDERS to keep information ordered which is frequently used, so that it is always easily located close at hand.

13.THINK OF YOURSELF AS AN EMPLOYEE WHO EARNS INCOME BY THE HOUR RATHER THAN BY THE MONTH. Ask yourself "Did I accomplish enough work to justify X amount of money in the last hour?"

14.MAKE MINOR DECISIONS RAPIDLY. Save time for more important things.

15. DELEGATE WORK whenever possible.

16.DIVIDE COMPLICATED TASKS INTO SMALLER JOBS and then attack each smaller task until finishing the entire job.

17.HAVE VOLUNTEERS READ BOOKS AND REPORTS FOR YOU.

18.HAVE THINGS READY TO DO IN FREE MOMENTS (in the bus, when waiting in line, when waiting for a person).

19.RELAX, EXERCISE, AND PLAN FOR SOME FREE TIME. In the long run working too much will make one less efficient.

20.KEEP A POSITIVE FRAME OF MIND. Do not waste time thinking about past

mistakes. Rather, think of errors as learning experiences.

21. CONGRATULATE YOURSELF FOR JOBS THAT YOU HAVE DONE WELL rather than chastise yourself for errors made.

22. WRITE ONLY WHEN NECESSARY. Dictate or telephone messages, and write them down only when necessary.

23. LEARN SHORTHAND OR STENOGRAPHY.

24. ESTABLISH PERSONAL GOALS and ask yourself how your daily work is bringing you closer to those goals.

25. REDUCE INTERRUPTIONS as much as possible.

26. PLAN BEFORE ACTING. The time used in planning will help to avoid loss of time needed to correct unforeseen errors.

27. OBTAIN THE HELP OF EXPERTS. Do not "reinvent the wheel". Ask yourself where you can get suggestions that will make you more efficient.

28. SUMMARIZE AND MAKE NOTE OF DECISIONS AND AGREEMENTS arrived at with other persons. This will save time by not having to reconstruct past meetings.

29. PUT ASIDE ALL THINGS OF LOW PRIORITY. Later, use an afternoon to take care of them all together.

30. SEPARATE A TIME WHEN YOU WILL NOT BE INTERRUPTED BY THE TELEPHONE. If you do not have a secretary or other person who can take messages, nor a machine to record telephone messages, then work on important things away from the telephone.

31. PRIORITIZE YOUR TASKS, according to the following categories: Category A (My life depends upon getting this done.); Category B (I would like to do this today); Category C (I should do this in some moment). Do the things in Category A first. Ask yourself what would happen if you did not do them. If nothing would happen, then don't do them or place them in Category C.

32. USE ESTABLISHED FORMATS to speed up the job of writing repetitive reports.

33. ASK YOURSELF "IF MY LIFE DEPENDED UPON DOING THIS RAPIDLY, HOW WOULD I DO IT?" Then ask yourself "Why don't I do it in that way?"

34. SAY "NO" MORE OFTEN.

35. IF YOU ARE NOT SURE OF WHAT TO DO WITH A PIECE OF PAPER, THEN THROW IT INTO THE GARBAGE.

Supporting Document E4c

MANAGING TIME: THE TIME LOG

(Taken from Mackenzie, 1972)

The only way to manage your time is to first find out where it is going-how you spend it. This means taking inventory of your time. This time sheet is a form of diary. After keeping a time record for at least a few days, you can analyze where your time goes.

Day of the week:_____   Date:

Time	**Name of person in contact with**	**Subject or activity**	**Code**
8:15 AM			
8:30			
8:45			
9:00			
9:15			
9:30			
9:45			
10:00			
10:15			
10:30			
10:45			
11:00			
11:15			
11:30			
11:45			
12:00PM			
12:15			
12:30			
12:45			
1:00			
1:15			
1:30			
1:45			
2:00			
2:15			
2:30			
2:45			
3:00			
3:15			
3:30			
3:45			
4:00			
4:15			
4:30			
5:00			
5:15			
5:30			
5:45			

ADMIN. E4c-2

Record all events at the time they occur; do not wait until noontime or the end of the day to record them.

After completing the Log, answer the following questions:

1. What was the longest period of time without interruption?

2. In order or importance, which interruptions were most costly?

3. What can be done to eliminate or control them?

      a. Which telephone calls were unnecessary?
      b. Which telephone calls could have been shorter or more effective?
      c. Which visits were unnecessary?
      d. Which visits could have been shorter or more effective?

4. How much time was spent in meetings?

      a. How much was necessary?
      b. How could more have been accomplished in less time?

5. How many of your daily activities contributed toward achieving long-range goals and objectives?

6. Did a "self-correcting" tendency appear as you recorded your results?

7. Take each activity, and ask yourself: What would happen if this weren't done at all?

8. Which of these activities could have been done just as well, if not better, by someone else?

Lesson 5

PUBLIC RELATIONS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   Enumerate the basic principles of public relations.

2.   Describe the working tools of public relations.

3.   Explain the two ways to carry out public relations.

4.   Describe the two types of "publics".

5.   Explain the two types of publicity.

6.   Prepare a public relations program.

REFERENCES:

Fazio and Gilbert, 1981.

PRESENTATION:

1.1 Almost all PA have public relations problems. As most PA are fairly new, the public and government authorities in general have little understanding of the goals and objectives of the PA. There has been little dissemination of this information and little effort to educate those responsible for implementing those policies, programs and activities which influence the PA in one way or another. One can not overestimate the importance of the public image that the PA presents.

Ask that the participants present examples in which the good or poor use of public relations has had impacts upon the management of their PA.

1.2 **Basic principles of public relations**. As a result of the previous discussion, with the participants review and comment on the following basic principles, and determine if they are in agreement with the participants experiences:

a. **Every action creates an impression**. This principle is fundamental for all of the others. Every individual or group that deals with other people creates an impression: good, bad or indifferent. Perhaps the impression will not be very significant or long-lasting, but it does have some impact.

b. **Good relations are a pre-requisite for success**. Success requires support, and that support comes from good public relations.

c.**The public is, in reality, many publics**. To obtain support, it is essential to identify the public involved in a particular cause or situation. A public can be identified as two or more persons with common interests and that will react in a similar way to a particular situation or message.

d.**The truth, and honesty are essential**. It doesn't matter how powerful, organized or well-financed a campaign is, it will not have success if it is based on dishonesty.

e. **Being on the offensive is better than being on the defensive**. This is something that few people working in the natural resources field understand; and public relations is usually utilized when a problem occurs, not as a tool for implementing a program or project.

f.**Communication is key to obtaining good public relations**. It is common for the cause of problems to be identified as the lack of communication. The more effective the communication, the greater will be the opportunity to successfully influence public opinion.

g. **Planning is essential**. If good planning is carried out, the organization is on the offensive and avoids the problem of continually "putting out fires".

1.3 Present a definition of Public Relations: "A planned effort to influence public opinion with good intentions and in a responsible way, based on a two-way communication which is mutually beneficial." If there are not good intentions and responsible actions, then the public relations effort is only a facade. While it is not possible to have two-way communication at every moment, it is essential that it exist during the period of a specific campaign or program.

1.4 Public relations can be implemented as an independent function of the PA administration, or as an integral part of all the functions of the environmental interpretation program. (Interpretation is a field apart which deserves special attention. See Unit C). It is an activity which should have the capacity to integrate information from all of the various PA work programs in its representations.

Sometimes public participation is seen as a part of public relations. This is not necessarily so, as the objective of participation is to involve the public in decision-making and not necessarily to influence their opinion. See the Lesson D7 which deals further with this aspect. However, maintaining a good relationship with neighboring communities may very well involve achieving a high level of participation with the local population with regard to PA management. This would facilitate any public relations campaigns needed to be carried out.

1.5 Address the importance of public relations for the PA. Although the PA administrators understand the importance of the human element in resource management, they continue to have failures in this area. These failures

are due principally to a lack of knowledge with regard to maintaining open lines of communication between PA employees and surrounding communities. It is critical to work in agreement with and to maintain good relations with the PA's neighboring communities, as well as with other authorities and "publics" which may have an influence upon the PA's future. But it should be done in an organized, professional manner.

2.1 There are two basic tools used in public relations.

a) COMMUNICATION: is defined as the activity of discovering, manifesting, or letting someone know something in such a way that the idea being transmitted is understood. It is very important that the communicating entity present a "good image", credibility, and a sense of honesty. (The issue of **credibility** is a very important one. Many PA administrations, for historical and bureaucratic reasons, do not have much credibility with their publics. This will greatly impede public relations campaigns. Good PR campaigns will never overcome bad administration, or ineffective work in the field.)

b) THE MESSAGE: is the content of what is being communicated. The method of transmitting the message can be: a publication, a letter, a radio program, an audiovisual presentation, a television program, the spoken word, etc. The effectiveness of the message is measured in results obtained and not by the number of listeners or the number of pamphlets distributed. Review and discuss the Supporting Document E5a.

3.1 There are two ways to apply public relations in the PA context:

a) As a general function, that is as part of the daily, direct contact that the personnel have with the public;

b) As an administrative function, that is where an individual or department is in charge only of public relations. In the PA this is almost never the case. Should it be? Discuss this with the participants.

4.1 Identification of the "public". To practice public relations it is necessary to clearly and precisely define the audience to be reached with a particular message. There are two general types of audience or "publics": internal and external.

Internal: this consists of the employees and officials of the institution, of similar agencies, or legislators. The importance of good public relations with the officials of your own institution can not be overemphasized.

External: traditionally these have been divided into broad categories:

- communities
- consumer or commercial resource users

- passive users (recreational, tourism)
- land-owners
- merchants
- young people and their leaders
- mass communication media

Identify some typical PA problems and have the participants determine to what "public(s)" they would direct a PR campaign.

5.1   Publicity can be of two types: planned and unplanned.

The administration has control and direction over planned publicity. It should have precise ideas with dates, costs, objectives, frequency, and goals.

The unplanned publicity is that which happens on its own as a result of the various interactions between the PA and the community, the visitors, other PA, etc. Over these the administration has no control, but it can give direction to them by ensuring that the "first impression" of the visitor is positive, that there is harmony and collaboration between the PA and the community, etc. A well directed rumor can sometimes be more effective than a publicity campaign.

6.1 When planning a public relations program it is necessary to:

-establish goals and objectives that are measurable, specific, realistic, and clear in terms of the time and results desired;
-identify the potential problems;
-identify the target "publics";
-select the channels or means of communication;
-recognize the importance of when to implement the public relations activities;
-carry out the actions;
-follow-up and evaluate the effort or program.

It is important to document and evaluate:

a) to what extent the message reached the target public;
b) if the response was that which was desired;
c) the long range impact. It is important to compare the results of an evaluation, with the objectives established at the beginning of a campaign or program.

ACTIVITIES:

1. Ask the participants to design a public relations program to help resolve some problem that they anticipate will come to their PA or that already exists. They should apply all that was learned in this lesson.

Supporting Document E5a

CHECKLIST FOR STRENGTHENING MESSAGE STRUCTURE

(Taken from: Fazio and Gilbert, 1981)

a. Have you incorporated the evidence into your own wording and a smooth, coherent presentation? A good speech is as important as concrete data.

b. Does your message gain and hold attention? Contrasts, potential rewards and threats can help, but these must be at optimal levels. Too much of anything can be bad.

c. Will your words, symbols, analogies, situations and stereotypes be understand by your target audience?

d. Is your message clearly related to known interests of the target audience?

e. If you seek to change opinion, do you first make statements that you know your audience will agree with? Begin where the audience is and reshape slightly, thus making many subtle changes over time. Moderate difference of opinion has the best chance of resulting in a shift in the direction desired by the orator.

f. Do you arouse needs in the receiver <u>and</u> outline specific routes of action to satisfy those needs? If not, appeals for action tend to be ignored. For example, persuasion regarding the need for dental hygiene is more effective if accompanied by procedures to attain it.

g. Does your message suggest ways to meet needs which are appropriate to the group situation in which the receiver find himself?

h. For any strong fears you arouse in the audience, do you provide ways for relieving those fears? If not, the audience will tend to ignore or minimize the importance of the threat that aroused the fear.

i. Do you state your conclusions explicitly if addressing a lay audience? When dealing with complicated issues or topics unfamiliar to the audience, this is usually more effective than relying upon the audience to draw its own conclusions. In the case of highly informed or highly intelligent audiences, however, let <u>them</u> arrive at the conclusions.

j. If your audience will be exposed to counter arguments, or if you know they will initially disagree with your position, have you included both sides of the argument? This "inoculation" technique is believed to be important in sustaining long-term attitude change.

k. Are you including visual illustrations?

l. It is a good <u>not</u> to forewarn your audience of the manipulative intent of your presentation. That will only increase resistance to it.

Supporting Document E5b

FOUR COMPONENTS OF AN EFFECTIVE MEETING

(Translated from a training course given in Costa Rica, 1991)

"Everyone wants less talk and more action . . . But an action that is poorly planned and coordinated can cause problems. The future is in the hands of those who are ready to attend meetings and more meetings; GOOD meetings obviously; meetings that LEAD TO ACTION . . ." (LIK LIK BUK, 1977).

Given that meetings are the most frequent activity held in almost any organization, it would be useful to point out some elements which, when applied, can make them more beneficial.

THE FACILITATOR OR DIRECTOR OF THE MEETING

The facilitator is like a traffic policeman. She or he acts like a group leader and keeps the meeting moving and productive. Unlike a president, the facilitator concentrates on the PROCESS of the meeting, and not on its content. Rather than comment on subjects or issues, the facilitator suggests diverse techniques to the group to help them to work more effectively. These techniques include "brainstorming" among others to help plan and solve problems.

The OBJECTIVE of the facilitator is to help the group arrive at DECISIONS BY CONSENSUS, to do things in such a way that everyone wins. And how is this done?

* Establish and maintain a supportive atmosphere without offering opinions

* Protect individuals from attacks

* Be concerned with and respect all the individuals with whom one is working, whether customers, employees, volunteers, Board members, community members

* Maintain the flow of conversation

* Listen to what the people have to say, try to understand, listen to all points of views and share them with the others

* Encourage the participation of everyone

* Use formal and informal processes to encourage open communication, resolution of problems, and consensus decision-making

* Provide information to the group to clarify concepts

* Concentrate on the positive (points of agreement) more than on the negative (points of disagreement)

* Be open to make changes

* Find and suggest alternatives and procedures

* Do not make evaluations and do not be on the defensive

* Help the group or the individuals to agree upon where they want to go with the meeting before beginning

* Make everyone feel at ease and welcome

* Help to establish and maintain situations where everyone wins.

THE RECORD OF THE GROUP

The Record of the Group is made up of notes written on large sheets of paper placed on flipchart stands in front of the meeting room. A "group secretary" is named whose task is to write down the decisions taken or the most important points of the meeting, as they arise, on these large sheets visible to everyone present.

The Record of the Group encourages people to express their ideas and to guide towards new and creative ways to confront problems. Also it helps to remind the members of the group of key points earlier established in the meeting. This often stimulates creative combinations between old and new ideas.

Finally, the record helps the group to focus its ideas and themes. When an idea has been written on the record, the individual tends to give up ownership of it and it becomes property of the group. As such an attack on the idea is not as likely to be seen as a personal attack. This encourages good feelings and consensus decisions.

Other advantages of the group record include:

* Frees the participants of the need to take notes

* Prevents repetition

* Reduces the importance of status in the meeting

* Encourages participation

* Helps those who arrive late to review what has been discussed

* Facilitates the writing of the minutes of the meeting

* Permits noting who will do what and when, publicly confirming these tasks

* Allows for the report to be quickly corrected

What are some of the KEY ELEMENTS which allow for writing down clearly and

effectively that which is said in the meeting, so as to accomplish the above listed objectives?

- Use the words of each individual
- Write down enough of the idea so that later the note is still useful
- Avoid editing and paraphrasing
- Listen to recognize the key words to write down
- Remain neutral
- If ideas are presented rapidly, have two or more people taking notes
- Write rapidly and do not worry much about penmanship. Number the pages
- Write clearly and change the size of letters to give emphasis
- Make the letters at least three centimeters tall
- If available, use paper with thin blue lines to guide the writing
- Use abbreviated words and diagrams
- Use stars, arrows, points, circles, numbers, etc.
- Use different colors
- Use markers, not pens
- Have two or three markers in the hand at once
- Cover the markers when not being used
- Have plenty of tape handy
- Preferably, support the paper on an easel or tripod
- If writing on paper hung on a wall, be careful that the ink does not pass through the paper to stain the wall

THE ORGANIZATION OF CHAIRS AND TABLES

It is important to be conscious of the dynamics present in different styles of distributing chairs and tables. Some of the basics are presented here.

The "F" represents the facilitator; the "N" represents the note-taker of the Group Record.

SEMI-CIRCLE: This probably is the best arrangement for meetings with lots of participation. It encourages people to not feel outside of the circle. The facilitator can be included in the circle.

Diagram

RECTANGULAR TABLE: The more powerful participants tend to sit at the ends of the table: this discourages participation. This arrangement is good for small, formal meetings.

Diagram

ROUND TABLE: This is good for encouraging dialogue among members of the group, but it removes the focus on the note-taker. Make sure that no one has their back to the facilitator or the note-taker.

Diagram

CONFERENCE OR CLASSROOM: This is probably the least desirable arrangement for a meeting where a problem is to be resolved. Participation is discouraged except for questions. The focus is on the facilitator to provide all of the information in the meeting.

Diagram

ROUND TABLES: This is the best method for a large meeting with participation of everyone. The round tables encourage discussion at each table, and it is conducive to a more informal and participatory atmosphere.

Diagram

HORSESHOE: This is another good arrangement for a medium-sized, participatory meeting in which the participants need to refer to written materials.

Diagram

PROCESS AWARENESS

To successfully conduct a meeting, the facilitator should encourage the group to be aware of the PROCESS of the meeting: HOW decisions are made, what TECHNIQUES contribute to the progress of the meeting. The following are some key elements to help with this task:

* Clearly agree on a time for the length of the meeting (fix a time for the end of the meeting)

* Reach agreement on how decisions will be made (by majority vote? by consensus?)

* Each participant should understand his role and his responsibility during all of the meeting

*   Clearly indicate what technique is being used (brain-storming, forced analysis, prioritization, etc.) and be sure that each individual knows how to use it

* Arrive at an agreement on how to use a technique before using it

* Understand the main content areas:

     - reason for the meeting (decisions that must be made)
- subject matter of the meeting
- agenda
- necessary information so that the meeting is productive

* Solve problems systematically

- define the problem
- establish some facts
- determine the criteria for a satisfactory solution
- produce alternative solutions
- evaluate the solutions based upon the established criteria
- arrive at a compromise with the solution
- evaluate

* Be clear concerning the implementation plans

* Be sure to write down all the decisions made in the meeting

* Decide what will be done next before ending the meeting

Supporting Document E5c

TECHNIQUES FOR CONTROLLING SPECIFIC SITUATIONS

(Translated from "Supervision Techniques", published by
the National Forestry Corporation of Chile)

1. The meeting is at the point of getting out of control

a. The Director (or facilitator) can call a pause in that which is being
     expressed. During the subsequent silence, the excited participants
     probably will calm down.

b. Use visual control. Directing his gaze at those participants who are most
     excited, the Director can attract the attention towards him and force
     them to focus again on the meeting.

c. Stand up. The physical action of standing up will attract more attention
     to yourself.

d. Use the chalkboard to summarize, guide, and illustrate the discussion.
     Other aids can be introduced such as: video, graphics, hand-outs, etc.

e. Direct a question at the individual who is disturbing the session.

f. Ask a question of the most veteran participant whose intervention will
     bring the meeting to order.

g. Introduce a new phase of the meeting agenda.

h. Tactfully, but firmly, call the group to order.

i. If the disorder is extreme, call a recess to the meeting.

2. The meeting turns away from its objective

a. Using direct questions, determine how the discussion is related to the
     problem being studied.

b. Gradually, gain control of the conversation and center it on the principal
     topic. Conciliating two points of view of the group is one of the most
     important tasks of the Director.

c. Do not allow the introduction of information that is not related to the
     central theme.

d. When information is introduced that is not related to the central subject,
     focus the attention of the group by explaining that "the discussion is
     very interesting, but it does not refer exactly to that which we are
     discussing."

e. Make a summary of that which has been discussed, and plan for the following part of the discussion.

The previous situations generally result from the negligence of the director in his personal preparation and approach. The following are the consequence of the group's behavior or of other causes.

3. <u>The group does not speak</u>

a. Slightly deviate from the main theme and introduce a topic of more general interest that can later be related to the theme.

b. Stimulate a change of ideas by directing a question at someone who knows how to answer it.

c. Use "yes" and "no" questions, followed by a "why" question.

d. Direct a general question to the group, preferably one of a stimulating nature.

e. Show by your questions that you are alert and interested.

f. Do not use questions that could antagonize the group or put a participant in an unfavorable position.

g. Deliberately make a mistake so that the participants can criticize it.

h. Relax the tension of the group by telling an appropriate story.

4. <u>The group, or part of it, refuses to accept the director's conditions</u>

a. The director perhaps needs to agree with the group.

b. Direct the discussion such that the same conclusions come from the group.

c. Stimulate those participants who agree with the director to defend his position.

d. Make a balance of the divergent opinions.

5. <u>The participants argue among themselves</u>

a. The Director takes control of the situation by summarizing or instructing until they calm down.

b. The Director interrupts and makes direct questions.

c. The Director asks the last person who spoke to repeat his commentary.

d.   If the arguments are relevant to the discussion, have the antagonistic sides interpret the opposing position.

6. The subject being discussed is outside of the control of the group

a. Demonstrate why the subject is outside of the group's control and move to another point.

7. The group is bothered or discouraged due to external circumstances

a. The introduction of a funny comment may reduce their preoccupations.

b.   If they persist with their complaints, allow them to finish them until relieved, at which point they may be ready to continue with the subject of the meeting.

c. Discover if there are positive or favorable elements in the external events or happenings and present them.

8. There exist large differences in authority among the participants

a. Treat the authority the same as any other member of the group.

b. Don't allow the authority to sit apart from the group.

c.   Do not allow the authority to take notes during the meeting. The other participants may think that he is registering their opinions and they may tend to remain silent.

d.   Do not put any participant in a position in which he might be embarrassed in front of his superiors.

e. Whenever possible prevent these situations, but when inevitable, coordinate with the superiors as to how they should act in the meeting.

SUMMARY OF TECHNIQUES FOR DIRECTING OR FACILITATING A MEETING

I. Questions

a. Direct
b. General
c. Reversed
d. Redistributed or redirected

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II. Comments

a. Direct comments made by members of the group
b. Reference comments made in the discussions among members of the group.

III. Behavior of the director

a. Eye control
b. Walk in front of the group
c. Move around and sit down
d. Pauses
e. Gestures and sign language
f. Facial expressions
g. Head gestures of agreement or disagreement

IV. Instruction aids

a. Diagrams
b. Filmstrips
c. Slides
d. Chalkboard, flipchart
e. Film, movie, or video
f. Discussion sheet
g. Summary sheet
h. Meeting minutes

Lesson 6

HUMAN RELATIONS

This is a topic of fundamental importance for achieving an optimal PA administration. If staff, who frequently must live in close quarters for prolonged periods of time, requiring frequent if not constant interaction, cannot get along with each other, this will negatively influence all PA operations. It is a topic essential for improving supervisor-subordinate relations, as frequently supervisors have no training in personnel management, and do not know how to effectively utilize interpersonal situations in order to achieve short and long-term goals of the institution.

In particular, topics should be dealt with such as:

* conflict resolution, focussing on PA personnel relationships.

* conflict resolution, focussing on relationships between PA staff and PA neighbors, community leaders, authorities etc.

* teamwork i.e. achieving genuine interpersonal interactions in work situations which aid in achieving work objectives and goals. This should cross hierarchical or structural considerations.

* development of techniques which staff can use to resolve interpersonal problems.

This is a topic which should be presented by a professional in this field. The format presented in Lesson 9 of the Orientation Unit should be utilized. It is a topic which should be taught to all personnel, not just those receiving a course on administration.

Supporting Document E6a

FUNDAMENTAL CONCEPTS OF HUMAN RELATIONS

(Translated from a publication of the National Forestry Corporation
of Chile, prepared by Mercedes Carmona)

DEFINITION

The term human relations includes all types of human interaction in any type of
organization.

The interaction occurs in a working situation where people have come together
in some formally structured organization to reach an objective. As a social
science, human relations is a study of human work behavior to find solutions
which promote greater efficiency and productivity. As such it can be viewed as
an activity oriented toward goals.

Considered operationally, the goals of human relations is to integrate people
into a working atmosphere in which they are motivated to work together in a
cooperative and productive fashion with economic, psychological, and social
satisfactions.

THE PHILOSOPHICAL BASES FOR HUMAN RELATIONS

1.MUTUAL INTEREST

A key concept is the presence of some mutual interest between the Company or
Organization and the workers. If this mutual interest doesn't exist, it makes
no sense to try to develop a team and to seek cooperation with no solid base to
support it.

Both the Organization and the workers reach their objectives through a
cooperative association.

2.INDIVIDUAL DIFFERENCES

Mutual interest must be applied situationally within the real world. A key
truth is that each man and woman is unique. This signifies that work
supervisors or the Organization must manage individual differences in order to
obtain maximum satisfaction and motivation on the part of its worker
collaborators.

This means that justice and equity with employees must be applied on the
individual level. The individual is a dynamic personality who is changing with
each daily experience.

In human relations the individual is recognized as a unit of feelings,

judgements, and action.
3.MOTIVATION

Individuals must be stimulated to work together, and it is motivation which provides this stimulation. Motivation is the medium by which the supervisor creates and maintains the desire of people to accomplish the objectives of the organization. No matter what equipment or machinery a company has, it will be of little use unless prepared and operated by motivated individuals.

The principles of motivation come from human psychology. It is assumed that all human conduct is induced. The individual acts in order to satisfy his necessities as he sees them. An individual is not motivated because others believe that he should be, but rather because he wants to be. He behaves in a way that he feels will best satisfy his needs. As such, an individual's conduct can be oriented toward goals.

Consequently, a supervisor has two ways to motivate his workers:

1) Make the worker see that a certain behavior will increase the satisfaction of his necessities.

2) Convince the worker to continue a course of action which will keep from diminishing the satisfaction of his needs.

4.HUMAN DIGNITY

This basic concept of human relations is very different from the other three. Although all four concepts are basic, they are very different in nature. Mutual interest is the operational basis for getting groups to work together effectively. Individual differences and motivation are characteristics proven by psychology. Human dignity is the moral and ethical basis of human relations. It is derived from moral laws, although research has also proven that it exists. All studies of human needs have shown that people wish to be treated with dignity, and treated as human beings.

Human relations accept human dignity as basic. If people were treated as animals there would be no human relations.

INDIVIDUALISM

From the moment of conception, different combinations of genes lead to individual differences. The physical constitution of each individual, the intellectual capacity, the different metabolic cycles, etc. all contribute to define different types of persons. These characteristics contribute to the development of the individual personality based upon two types of influences:

a) Inheritance
b) Environment

PERSONALITY

It is the dynamic organization of the psychological/physical systems which determine the unique adaptation of the individual to his environment.

As previously stated, the individual in all his actions and in all his conduct is influenced both by hereditary and acquired factors which determine his complexity. All aspects, inherited and acquired, constitute the personality of the individual.

TEMPERAMENT

This refers to the emotional nature of the individual, including how he is emotionally stimulated, the force and speed by which he reacts, his mood, and all the peculiarities and intensity of his moods which to a great degree are inherited.

At the same time, this inherited temperament is modified by the existing social structure in which roles are often defined and forms of human interaction established. An individual is born and is taught to adapt in the best way possible to "his" world.

The influence that the environment has on each individual, from his earliest age, constitutes an individual's character.

CHARACTER

This can be defined as all those personality traits which are acquired through experience.

A given unique individual with his own hereditary characteristics (tall, thin, with stomach problems, and with a natural inclination towards mechanics), "learned" from his youth to be responsible, to look at his work colleagues as friends rather than as competitors, and to believe in certain superstitions (to not walk under a ladder, to return to the house if a black cat crosses his path, etc.)

This unique individual enters to work in an organization and is destined to work with a certain team. The manner in which he arrives, how he relates with his supervisors, the speed with which he learns and integrates with the group will depend upon his temperament, and his character, both of which define his personality.

COMPLEXITY

All forms of conduct observed in an individual come from his personality. That which has been said above allows one to throw out the idea that all workers are equal and will act equally. A supervisor with 10 individuals under his

direction will find that some will be thin, some fat, some short, some tall, some passive, others aggressive. Each will be distinct and will have a different conduct although the work that they do is the same.

The conduct of each individual is complicated because it is the result of different physical constitutions and from even more diverse life experiences. Nevertheless, IT WILL BE OUR MISSION TO CONFRONT THIS COMPLEXITY AND UNDERSTAND THIS CONDUCT IN ORDER TO UNDERSTAND THE INDIVIDUALS AND, AT THE SAME TIME, ALLOW FOR AN UNDERSTANDING AMONG THEM.

If we start with this base, we can analyze from perspectives the personality of an individual:

1. The image projected to the group: that is what the group thinks and sees in him.
2. That which the individual thinks of himself.
3. That which he really is.

WHAT THE GROUP THINKS OF HIM: This is a very important motivational factor as the individual seeks approval from others. To this end society has created rules of conduct which obliges one to maintain correct behavior. Yet from an individual/personal aspect, the individual establishes his own rules of conduct which seek to win the approval of the group of which he is a part or which observes him.

WHAT THE INDIVIDUAL THINKS OF HIMSELF: All humans have a deeply rooted need to evaluate themselves. This might be called the "need" for egoism, which leads one to think that his actions or decisions are better than those of others. Generally an individual's opinion differs in some degree from that of the group.

WHAT THE INDIVIDUAL REALLY IS: This is the most difficult step to measure and understand. Even the best tests of human understanding (intelligence, personality, etc.) only give leads for recognizing predominant features of a person, but not of really knowing him.

FRUSTRATION AND CONFLICTS

In everyday life we find obstacles and interferences to the satisfaction of our motivations or in the activities we pursue in this process. Some barriers are more perturbing or permanent than others. Some are tangible, physical limitations which impede or restrict effective action, while others are psychological and intangible and cause a person to restrict his own actions, to criticize or assume negative attitudes, or to become indecisive.

Frustration refers to obstacles or impediments of conduct directed toward a determined objective which results in a state of internal disturbance known as anxiety or psychological tension.

ORIGINS AND SOURCES OF FRUSTRATION

The origins of frustration can be found in the external environment, in the form of barriers or obstructions, or within the individual in the form of some type of deficiency.

a) **External sources of frustration**. These sources can be physical or social. The physical forms of frustration can appear as automobile problems when we are in a hurry to arrive somewhere. It can include inferred offenses from a loved one; a pen that will not write; or a domestic machine that will not function. The lack of certain things can be equally frustrating. The lack of rain over a long period, for example, can cause frustration for a farmer.

The inability of a married couple to have children causes frustration. Frustration from social sources begins almost immediately after birth. The process of socialization inevitably brings frustration given that the individual must give up some personal freedom in order to live in the greater society. From the beginning, an infant is frequently fed on an arbitrary schedule, which signifies that at least part of the time the hunger impulse is frustrated. Other examples can include: social discrimination or poverty in which an individual lacks the privileges or advantages enjoyed by others, loss of work, or the rivalry between siblings to win the approval of their parents.

b) **Internal sources of frustration**. Deficiencies in the form of physical impediments can be extraordinarily frustrating for the affected individual. The blind person who refuses to accept his limitations of sight would cause considerable frustration. Personal characteristics such as an unattractive physical appearance, poorly developed intellect, and physical weakness can all be sources of frustration.

FACTORS WHICH DETERMINE THE INTENSITY OF FRUSTRATION

Frustration can be more or less intense, depending upon different factors which pressure the conduct of the individual confronted by the barrier which exists between the need and the objective:

NEEDBARRIERGOAL or OBJECTIVE

The intensity of the frustration depends upon:

1. The lack of information.
2. The urgency of the need.
3. The proximity of the goal.
4. The persistence of the need.
5. The person's background.

6. The specific significance that each person attributes to the situation.

PRACTICAL ASPECTS OF HUMAN RELATIONS TO APPLY AT WORK

We have learned to understand and to distinguish among the attitudes, the motivations, and the reason for human actions. As such we are trained to TOLERATE, to UNDERSTAND, and to MODIFY these behaviors. The responsible supervisor will seek, among the techniques and knowledge offered, the necessary tools to intelligently apply to each individual.

It is not my intention to give recipes, but rather to offer - for the general discussion and analysis of the course - pertinent situations and recommendations
to varied interpersonal relations, whether in the family, at work, or in social groups.

The spiritual needs of pride and satisfaction in work accomplished giving a sense of belonging and of importance are common to all humanity and are elements that should always be considered.

Experience shows that to maintain good human relations the following basic points should be considered:

1. All people do not react equally
2. Create in the individual the desire to do something
3. People need to feel important
4. Criticism given at the wrong time is useless
5. Display sincere interest in the problems of others
6. Learn to smile sincerely
7. Try to call individuals by their name
8. Listen to others while talking with them
9. Always speak of that which interests your colleagues and yourself
10. Emphasize the importance of your colleague when conversing with him

Lesson 7

WRITTEN COMMUNICATION

OBJECTIVE:

By the end of this lesson, the participants should be able to:

1.Write a good quality report.

REFERENCES:

Corfield, 1984; Fazio and Gilbert, 1981; Weiss, 1985; Supporting Document E5a; E3a; Lesson E3.

PRESENTATION:

1.1What does a supervisor want to communicate to his employees? He wants to ensure that they can do good work, which means that his instructions should be clear. Also he would like to stimulate the desire to work among employees.

The process of communication fundamentally implies:

   a)   a sender   b) a receiver   c)   a message

   Communication can be of two forms: (a) oral and (b) written.

   a)Oral communication is probably the most effective for changing attitudes, beliefs, and feelings, and it should be used as often as written communication.

   b)Written communication is necessary for instructions, orders, and routine subjects that can not be easily memorized and which must be referred to continuously. Written communication is necessary in reports to superiors, and when it is necessary to leave documentary proof that some message was communicated.

Many people do not like to write because they believe that writing is different from speaking and that to write requires the use of a special form of expression. This is not true. The only difference between writing and speaking is that a special effort must be made to ensure that the written message be clear and precise. The written word must transmit a message without the benefit of gestures, tone of voice, and the possibility of clarifying some doubt presented by the person receiving the message.

Administrators are always taught to write short sentences. This is generally a good rule for those who are unsure of their writing ability, since it is easier to make errors in a long sentence than in a short one.
The best rule to follow for judging written communication is to read it several times before sending it and put oneself in the position of those who will

receive it. This is very useful when writing a memorandum to one's employees or a letter to a boss. One should ask oneself while reading it: Would this interest me if I were in the position of the person to whom it is being sent? Am I clearly stating that which I want to communicate? etc.....

1.2 Explain the importance of communication in general: it is the principal tool in the operation of the public administration. If well utilized, reports are the best mechanism for transmitting information, data, opinions, suggestions, plans, budgets, and other things from one office to another. Apart from the FAX and Telex, it is the only form of communication which leaves documentary proof of what has been communicated. Many administrators prefer to use more rapid communication (such as telephone calls and conversations). While this is fine, written documentation should be made of what has been communicated. It is common that when a new official assumes a position, he has little idea of what his predecessor was doing due to the lack of written information. Reports, letters, memoranda, and other means of written communication are the only methods for documenting what has happened in a previous situation or in a specific office.

Ask the participants to give their experiences with reports, and to present the most prevalent means of communication in their PA.

1.3 Briefly review the different types of reports. Depending upon the office and the objective of the communication, reports can have a uniform or a suggested format. No matter what the report format, there are certain aspects that can both help in the organization of the report and improve the possibility that the report be read and considered by others. Have participants review the following suggestions for improving reports, and talk about each one, and its potential applicability.

* **Who will read it?** A report is a not a literary effort. Its purpose is to communicate ideas, facts, and opinions. Outline the points and then write.

* **Get attention quickly.** "Background material" on the first page is usually well-known. Boil it down or leave it out or place it in an addendum. State the report's purpose in a few words, itemize and then come to grips with the facts.

* **Make it objective.** People are seldom interested in what we think, and would rather read about what we know. Don't write reports with the idea of making an impression. Let the report and the information presented speak for themselves.

* **Practice restraint.** Your report need not be stuffy, but it should take a conservative approach to the problem under consideration. Avoid extravagant statements, unless they are supported by facts.

* **Spell it out.** The typical executive is too busy to take time digging out pertinent information from a deluge of words. List facts in 1-2-3 order,

set off with headings.

* **Break it up**. Long paragraphs are poison. Hold them down to a few lines, and provide key paragraphs so that the reader will know what it is all about. Indent and underscore important points- important to the reader, that is, not just to you.

* **Give it plenty of air**. A good report invites reading. Don't crowd a lot of words in a little space. Leave margins on the right for notations. Make plenty of copies.

* **Button it up**. Conclude the report with a brief summary of its main points and, if desirable, offer recommendations.

2.1**Filing systems**

A system for appropriately filing all of the documents related to a PA's administration and management is essential; unfortunately, few of them have an adequate system. There are various systems for organizing files; the most important factor is that there is a system which ensures that documents can be found when they are needed.

A PA's files contain documents which some day will tell the interesting story of the work and progress of that PA. Their value lies in the facility with which they can be accessed, and in the prudent safeguarding of those documents which will be of interest/use in coming months or years. File management should be recognized as an essential part of PA administration. In other words, files contain the past, present and future of a PA. All PAs clearly need to institute a program for creating, maintaining and disposing of files.

When we speak of documents, we are referring to letters, books, maps, memoranda, photographs, and other materials prepared, received or acquired by the PA in connection with carrying out its day to day affairs. There are some documents which should be saved only for the data they contain.

The responsibility for file maintenance falls on all of a PA's employees, not only on the person directly in charge of this. Each employee should make sure that:

a. Only those documents strictly necessary for carrying out a PA's activities be prepared and filed.

b. Files should be maintained in a systematic, efficient manner.

c. Documents that are not needed on a daily basis should be destroyed or transferred to an appropriate location in the filing system.

2.2The following is a system for a filing system that can be adapted for the particular needs of any PA. It is a system based upon primary, secondary and tertiary topics, and for each a letter or number is assigned.

<u>Classification</u>: In the following case, the files of a PA are divided 12 primary
topics, which broadly cover all of its activity.

<u>Primary Classification</u>	<u>Letter Code</u>
Administration	A
Concessions	C
Development	D
Financial	F
History and Archeology	H
Interpretation/Information	I
Natural Sciences	N
Maintenance	M
Personnel	P
Research	R
Supplies and Acquisitions	S
Legislation and Legal Matters	L
Forest Management	G

The secondary topics are divided up using two-digit numbers, beginning with the
number 10; the tertiary topics would use three digits, beginning with
100. Secondary topics, for example for administration, could be salaries,
letters, office space, etc. Tertiary divisions could be training,
orientation, interpretation. Combining the primary key number with the
secondary and tertiary ones, a code is competed for a file. For example,
File Code A 14-121 would mean

A= Administration,   14= Training,   121= Interpretation

The number system and the number of divisions is subject to modification. For
instance, the primary thematic divisions may include the PA's work programs or
the names of the institutions and organizations with which it corresponds most.

2.3 <u>File Management</u>

The effective use of a file system requires that:

1) Each document is in its appropriate place, with appropriate cross-
referencing when a document could be placed in more than one location.
2) One person must be placed in charge of the file system, who will be in
charge of systematically and periodically filing all documents.

This will eliminate the problem of document duplication, and reduce the number
of people who will deal with the files.

Thematic dividers should be used to separate significant topical files or
folders. File folders should be placed behind the thematic divider
corresponding to their topic. The dividers should be arranged in alphabetical
order, and in general correspond to the primary topics. When enough secondary
topics have been included, dividers should also be utilized.

Each file cabinet should labels indicating what files are included in it.
ACTIVITIES:

1. Distribute copies of the following memorandum which was hanging on the door of a supervisor's office so that all the PA employees could see it. Allow the participants to read it, and then discuss it by asking the questions presented below.

Memorandum:

As of today, the vacation time of all personnel will be programmed according to their length of employment in the PA, as long as the vacation schedules do not cause work disruptions. In no case will the vacations of new employees take precedence over the vacations of employees with more years at the PA, with the exception of very important jobs which require that no more than 2% of all workers be absent at the same time. The importance of jobs will be defined at the discretion of the PA supervisor.

a.   As an employee, how would you react to this memorandum?
b.   Do you think that the memorandum is adequate as written?
c. Should this memorandum be clarified, or should it be rewritten? What changes would you make?
d. If you were the supervisor, how would you interpret the memorandum? How could it be improved?

2. Divide the participants into small groups, and ask each group to prepare a three-page report (maximum of 1000 words) over some relevant theme from their work experience, and in which they must request something from their supervisors (for example: after conducting an inspection of employee housing in the PA, it is determined that immediate and expensive repairs must be made in order to avoid loss of infrastructure or possibly of life). Each group should present its report to another group, which will then make a decision based upon how convincing is the report. Was there good understanding of the report, or were there misinterpretations? Why? Point out the factors which influence whether the written communication was a success or a failure.

Lesson 8

ENTRANCE AND SPECIAL USE FEE COLLECTION

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Describe some of the advantages and disadvantages of charging entrance fees and special use fees for the use of a PA.

2. Explain the types of limitations presented by the establishment of entrance fees and special use fees in a PA.

3. Design systems for collecting entrance and other fees for a PA.

REFERENCES: Dixon and Sherman, 1990; Lindberg, 1991; Whelan, 1991.

PRESENTATION:

1.1 Discuss the philosophical issues behind the charging for the use of facilities or the exploitation of resources within a PA.

The basic idea is that, as in any business, the user should pay for what he receives. Also most users value more and pay closer attention to that which has a cost to them. On the other hand, some PAs may wish to encourage certain users to visit free of charge for educational or other reasons. Entrance fees can discourage visits. Present the fee situation of a national system of PA, and ask the participants to express their opinions about it.

1.2 The following are some of the advantages and disadvantages for charging entrance and special use fees for the use of PA:

<u>Arguments in Favor:</u>

- People tend to appreciate more those things that have a cost; as such when they pay to enter a PA, it is more likely that they will support the PA in the future and that they will treat the facilities with respect.

- If the income from the fees are reinvested in the PA, the services and facilities offered can be expanded and improved.

- The general public should not be required (through their government taxes) to subsidize the costs of providing services to the relatively few people who use the PA.

- A system of entrance and licensing fees can be used to regulate and limit use.

-Charging fees reduces the competition with the private sector operating outside of the PA (for example, for camping).

-The fees allow for giving better quality services than those that could be otherwise given.

-Charging fees requires that the PA maintain a minimum level of services to justify the fees.

Arguments Against:

-It is possible that the government budget assigned to the PA will be reduced after implementing a fee system.

-The quantity of visitors will be increased but not necessarily the quality of service.

-An entrance fee is basically a double tax; people already support the PA through their taxes.

-Entrance fees may reduce visits by poor people.

-Personnel and administrative needs are increased; it is possible that the fees will not cover the additional costs.

-Increased possibility of poor management of collected fees. Possible inability to properly administer collected fees.

2.1 Obviously, there are legal and administrative limitations to charging entrance and special use fees in the PA, and these should be discussed. Aside from these, the following factors should be considered in order to determine the implementation of a fee system for a PA:

- Numbers of visits, both existing and anticipated;
- The impact of the fees on the amount of use;
- Number of access points to the PA;
- Ease of collection and enforcement;
- Availability of personnel;
- Potential for increasing financial income;
- Cost of fee collection and management of special uses;
- Possibility of implementing a differential fee system (for example: one fee for local people, another for foreigners).

2.2 What types of fees should be charged? Possibilities are:

VISITORS:

- Entrance fee to the PA;
- Fees for entering a building or a special event;
- Fees for renting equipment or animals (such as horses);
- Fees for using a facility: camping area, picnic area, a guided tour, etc.;

- Fees from the sale of items: books, souvenirs, food, etc.;
- Licenses or permits for special uses such as for fishing, special camping.

OTHER USERS:

- Special use fees for tour operators who periodically visit the PA with visitors;
-Fees and other support from concessionaires who have infrastructure within the PA;
- Fees for research, professional filming and photography permits.
-Fees for resource utilization (e.g. firewood, medicinal plants, grazing etc.)

2.3 Many PA maintain a donation system in which the funds are designated for some specific project or for the general operations of the PA. Sometimes these systems do not have a legal basis, and this can cause administrative problems. Since a collection system which is not legal has no official auditing, great care should be taken in these cases. In some countries foundations have been organized that collaborate with the PA system to receive donations and to facilitate their expenditure in the PA.

3.1 Methods for Collecting Fees: The best method will depend upon the local situation. The following criteria should be considered when making a decision about this.

The method should:

- be functional in its operation;
- have a minimum cost;
- maximize income;
- maintain good public relations;
- be equitable for all visitors;
- insure a high quality experience for the visitor;
- be flexible;
- minimize the possibility for misuse of funds.

There are three methods of collection: manual, automatic, and honor systems. The first implies the use of personnel positioned at the entry gate of the PA or in other key places. In the long run it is more expensive than the other methods and it can result in embezzlement problems, yet it has the advantage of having personal contact with the visitor. The automatic system requires a large, initial investment, but it is less expensive in the long run than a manual system. Nevertheless, it leads to mechanical problems and the maintenance cost can be problematic. The third method is based on the honesty of the visitor to pay the fee with no supervision. An information station is established with envelopes, and it is hoped that the visitor will deposit his fee in the designated place. With spot checks carried out by PA staff, the second and third methods efficacy is greatly increased.

3.2 Upon implementing a fee system, the public reaction can be negative. The following can be done to try to avoid such a reaction:

- Announce ahead of time, via different communication media, that the fee system is being implemented;
- Initiate an education and information campaign;
- Assure a quality experience in the PA;

Some groups accept fees easier than others. These include:

- Those who travel a great distance to arrive at the PA;
- Those who have never visited the PA before;
- Families rather than individuals or groups of friends.

3.3 Audits: The collection of fees in a PA creates opportunities for possible embezzlement. Systems should be established to reduce this possibility.

- The use of numbered ticket stubs as receipts helps to monitor the income received as entrance fees, the use of facilities, etc.;
- An active and creative supervision of the collection process also helps to reduce possible embezzlement;
- A permanent auditing system should exist for the collection of fees, and a daily accounting should be done of this income.

4.1 A fee system should consider concessions or licenses for the use of the PA. This mechanism of charging commercial users for their use of the PA represents a way to obtain significant income without directly charging the visitor. These costs are incorporated into the cost of the tour or other service being offered.

ACTIVITIES:

1. Ask that the participants discuss what would be the general public reaction if a fee system were initiated or if fees were increased in their PA. Ask them to distinguish among different social groups as to the reaction to the fee system.

2. Ask them to design a fee system for their PA which might include entrance fees, fees for use of facilities, fees for renting equipment, etc. What impact would such a system have on the management of the PA?

Supporting Document D8a

USER FEES IN NATURAL PARKS - ISSUES AND MANAGEMENT

(By Antoine Leclerc, in PARKS Magazine, V. 4, No. 2, 1994)

It is only relatively recently that governments have begun to systematically charge user fees for their services. With regard to public lands used for recreational purposes, this development has mainly taken place since 1975. Not all government managers are yet reconciled with this trend, but there are few sectors of government activity that have not been affected by serious budgetary restrictions in recent years, and many services have had to turn to other sources for financing.

The governmental or para-governmental agencies responsible for managing the parks have growing needs and, like most other government agencies, they are subject to the pressures of major budgetary restrictions. The contribution to parks financing that could be achieved by a judicious recourse to user fees is thus of growing interest to them.

Some park agencies are even giving increasing consideration to "privatizing" park operations, in their quest for economy and for enhanced efficiency. This recent trend has met with strong public opposition in Canadian provinces, and has somewhat fanned the flame for user fees as a more desirable, or at least less objectionable, option.

The Canadian policy for external user charges

In 1989 the Canadian Treasury Board published its Policy on External User Charges. This policy is based on a principle of equity, defined as follows: "While most government services generate broad public benefits, many are provided primarily for the benefit of specific groups such as users of the services and consumers of their products ... User charges provide a means to promote equity in financing these activities by shifting more of the financial burden from taxpayers in general to those who benefit most directly."

The Treasury Board adds that, in addition to the principle of equity, this policy also has two other goals: to better manage the resources allocated to each service by giving more weight to market forces, and to reduce the national budget deficit.

In practice, the various government agencies have to decide whether to try to recover all the costs involved in making services available, to follow the market or to justify the implicit subsidies to users if there is only partial cost recovery.

The document further provides that government bodies must evaluate the potential repercussions of fees before imposing them, and must consult with the users and other concerned groups to get to know their points of view.

Parks Canada user fee policy

Many of the services offered in the Canadian national parks constitute typical examples of services provided principally for the benefit of particular groups, especially the users of these services. The context in which these services are offered is unique, however, and Parks Canada has sought to develop a user fee policy that articulates how the principles accepted by the government as a whole should be applied to the particular activities of the Parks Service.

It should be noted that the policy addresses only those cases where Parks have chosen to provide the services as part of their operations. The choice of having certain services provided by the private sector, usually on a concession basis, is made on a case by case basis, depending on "mission",

operational and market dictates. In all cases, however, Parks seeks to derive appropriate fiscal benefits from granting the profit and non-profit enterprises the right to serve its users.

The policy is based on four guiding principles:

• **It is both legitimate and desirable to charge user fees in the parks.** Clearly, the parks provide services that are in the public interest, such as the protection of the natural patrimony and raising public awareness of environmental issues, but it also provides services whereby visitors receive benefits that are not available to non-visitors, such as installations and recreational services. Thus, to be fair to all taxpayers, the users should be asked to defray their fair share of the costs of those services from which they alone benefit.

• **Nevertheless, it is necessary to favor public access to the parks.** The general objective of the Parks Service remains to encourage public understanding, appreciation and enjoyment. The Service must concern itself with the effect of the user fee policy on Canadians' inclination to discover and appreciate their natural patrimony.

• **Decisions concerning the user fee policy must take into account the economic repercussions of parks operations.** Parks contribute to economic dynamism in that they offer attractive destinations to the travelling public. In return, the growth in economic activity that results from parks operations leads to an increase in tax revenues for all levels of government. Hence, in making decisions pertaining to user fees, Parks Canada will take into consideration the potential impact of the user fee programme on the capacities of the various communities and of the private enterprises to profit from the economic effects of the existence of the parks.

• **These guiding principles must be counterbalanced by the collection costs and the repercussions of the user fees on other aspects of management.** Parks will only apply fees in situations where it appeared they would be financially profitable and where it is believed that these fees would not constitute an unreasonable impediment to other park or government management priorities.

"Public" and "private" services

The views of the Treasury Board of Canada and of Parks Canada concerning user fees for government services have thus been based above all on the ideas of "public" and "private" services. The most widely accepted version of the "user pay" philosophy is that government services should only be offered free of charge when they benefit the population as a whole. These are the so-called "public" services. Those services which provide personal benefits to their specific users, on the other hand, are termed "privates" and their costs should be defrayed by the users themselves; this is a question of basic social justice. It is also generally considered that services of a purely private nature are strong candidates for provision by the private sector.

But it is rare that the benefits provided by government services are either purely "private" or, for that matter, purely "public". For instance, roads in, and leading to, parks directly benefit those who use them, but it is generally considered that society as a whole benefits from having access to the land and, more specifically in this case, to parks.

Such services are what economists call "merit services". They are situated somewhere on a scale of "merits" ranging from "public" to "private". The degree to which cost recovery applies to each of these services depends on where they fall on this "public-private continuum", as it is called by the American scholar John L. Crompton: "An important point in understanding this public-merit-private classification is that the decisions as to where a service should be located along the continuum . .. are defined through

political process. Hence this position may ebb and flow with changes in the values of the community ..." (Crompton 1986.)

What degree of socioeconomic benefit do services provided in the parks offer? Who really benefits from them? Why, and according to whose judgement? These are all questions that must be answered by a parks agency that is considering charging for its services. That is why Parks Canada saw the need to adopt a user fee policy and guidelines for applying it.

Pros and cons of user fees for parks services

Even though a variety of studies show that North American populations often support "user pay" government policies, these policies nonetheless remain controversial. Government bodies that generate revenues must be able to justify their fees and to answer the numerous objections they entail.

A look at the recent literature on user fees shows that the arguments against charging for services in the natural parks fall under three main headings:

• Charging user fees in the parks is equivalent to double taxation, since the taxpayers already pay for the parks with their taxes.
• User fees must be avoided for recreational, cultural or other activities, since they turn these activities into consumer goods that must be paid for, whereas recreation should be considered a universal right, like health.
• Charging for park services discriminates against the less well off, since it constitutes an obstacle to their access to the parks, which is contrary to the principle of redistribution of wealth that every government must apply.

The majority of taxpayers do not visit parks, why then should they subsidise the recreation of the minority that do? Charging for parks services thus should not be seen as double taxation, but rather as a way to avoid making the taxpayer pay more to benefit a minority.

The free provision of recreation services in parks would be defensible if parks were the only places where people could obtain recreation services, and if it were demonstrated that it is the natural parks that can best provide the basic recreational services they need. Tax revenues cannot pay for everything. If the government simply doesn't have the means to increase budgets for these services, there is a risk that parks services, conservation and ultimately the population itself will suffer. Seen in this context, user fees do not restrict the right to recreation. They rather contribute to its preservation, since they reduce the net cost of operating the parks and thus permit a more judicious allocation of the public funds dedicated to recreation.

Finally, the common argument that "user fees impede access, especially for the less well-off, and are contrary to the redistribution of wealth" can be refuted, at least in North America, on the strength of studies of the clientele of American and Canadian natural parks. These show that the typical park user has above-average income, and that the less well-off use the natural parks very little, even when entry fees are low or nonexistent. Furthermore, data shows that a large majority of persons with low income are in favor of charging user fees in the parks. Thus when we subsidise all park visitors to favor the use of protected areas by the less well-off, we tend rather to help the wealthier people who use them. It would be better to find other ways to favor universal access.

"Fee systems needn't be inhumane. Waivers are a widespread way to exempt the poor, unemployed, disabled and senior citizens from entrance and other fees. For fees to work ... they simply need to be fairly levied, fully explained, and tactfully implemented." (Johnson 1984.)

Advantages and disadvantages of user fees

As demonstrated above, it can be supported that charging for certain services in the parks is legitimate, attainable and socially acceptable. Still, there are risks.

The largest inherent risk in implementing a user fee programme is clearly the risk of commercialisation. A parks agency that places its emphasis on user fee revenues can lose sight of some of its objectives, if a) revenue production becomes a predominant measure of operational efficiency and/or an unwarranted performance criterion for managers, and if b) the government begins to abusively restrict tax resources for government programmes on the basis of their capacity to produce revenue. In all cases, there is also a risk of disaffection on the part of the staff, who may have the impression that the agency is neglecting its primary mandate.

Also, if this is the case, setting prices at market levels leads to a level of usage which is more representative of the "commercial" demand for a service; but government services often aim to meet a need rather than a demand, and the two are often not equivalent. The notion of a measure of real demand must thus only be applied to certain services, and only for carefully defined evaluation purposes. There is a risk of abuse if it is applied without adequate consideration of the agency's objectives as a whole.

However, making parks "revenue conscious", and visitors "price conscious" has its advantages. When a user fee programme is implemented, the park users to a certain extent become "clients" and the parks become providers. If commercialization can be avoided, this transformation can favourably influence the respective dynamics of these two entities and the nature of their interaction. The personnel may become more attentive to their professional responsibilities regarding the clientele, and this clientele may be made more aware of the value of the "product" purchased, and more respectful of it.

The one thing that is clear from this range of arguments and points of view is that nothing is absolute. The principle of user fees can neither be totally supported nor totally rejected on these grounds. But together, they show that we must approach the subject with caution.

For many governments, however, the current economic situation tends to make the arguments of the opponents of user fees sound somewhat theoretical. Many parks would be virtually paralysed within a few years were it not for the revenues from user fees.

The challenge is to assure the more efficient and harmonious implementation of user fee programmes which meet the social, political and economic imperatives to which the parks are subject in their own contexts.

Political and economic factors

The manner in which this challenge can be addressed will be affected significantly by social, cultural, economic and environmental imperatives. These constitute a complex whole of policy, economic, market and perception issues that are sometimes difficult to quantify, and cannot be ignored.

Government policies and park objectives

User fees should help the cause of protected areas by becoming a precious source of revenues for financing conservation and environmental education, not a source of friction between advocates of resource protection and those who advocate development.

Since the decision to recover the costs of government recreation services is a political one, supporters of user fees will find themselves in a policy vacuum if the agency to which they report has no precise position on the conservation recreation and education vocations of their parks.

Economic dictates

Even if a parks agency that wishes to implement a user fee system can refer to clear environmental, educational and recreational policies, it still often has to deal with pressures from governmental and private economic organisations. It is impossible to ignore the regional economic development mission that is inevitably associated with parks, especially with regard to tourism.

In all likelihood, private enterprise will try to take control of as large a portion as possible of the activities where it makes its profits - often with the support of local politicians - and it will exert pressure to alter the rules of the game in its favor. On the other hand, it is also clear that visitors have access to a greater range of services - and at little or no cost to the government - when the private sector is involved.

The government/agency that needs revenues must consider reserving part of the market for itself, or make sure that it assesses appropriate licensing or concession fees from the businesses operated by the private sector on its territory. On the other hand, the agency should give consideration to the potential undesirable impact of its "business" decisions on the private sector, when implementing a revenue programme.

Market dictates

Parks are tourist attractions, economic development tools and educational and recreational instruments as well as being mechanisms for conservation. The behaviors, needs and expectations of their clientele thus must be considered as pre-eminent factors in any decisions concerning user fees. In fact, it would be hard to resolve the questions surrounding user fees without having sufficient knowledge of the parks' "markets". A park that charges user fees is a consumer product. Like any other product, its services are subject to the laws of the market with respect to setting prices, promotion and the other essential elements of marketing.

The better we understand the composition and expectations of these markets, the more likely it is that their needs will be met, producing more efficient marketing and greater economic benefits. Knowing the markets is also essential to anticipate the potential repercussions of user fees on the parks' social vocation, whether on an educational, recreational or cultural level.

Subjectivity and reality

There is another important reason to acquire a broad factual knowledge of the context in which the parks operate: even if a park's policies and guiding principles are clearly established, the various players also need to share an objective view of the situation.

Each person's impressions and suppositions tend to mask the reality where park users' expectations and behaviors are concerned. The gap that exists between the way the less well-off are thought to see the parks and their actual views as represented in opinion polls is just one example of this phenomenon.

An important challenge for managers recommending user fees is thus to make sure that the reality depicted by the appropriate studies overrides the suppositions of the many other players involved in the issue. This will be easier if they can refer to the proper socioeconomic analyses to build a strong and rigorous case.

Administrative factors

Once the decision is made to charge user fees, one must expect the user fee programme to affect the agency's general management and administrative operations.

Depending on the particular park, its target markets and the agency's political will, the user fee system may simply consist of charging a unitary

entry fee, or it may include a complex range of service fees charged either directly or by third parties, either individually or in packages.

It is only possible to predict the requirements of such a programme with respect to costs, administration and personnel once it has been decided precisely what fees will be collected, by whom, where, with what equipment, how the users are to be informed, etc. At all times, however, one must account for future requirement in equipment, staff, including training and control, and operational costs that may be significant. Also, as indicated above, there will be repercussions on agency management that could be quite significant. At issue is the organizational culture. Services become products, users become consumers and the personnel henceforth needs to think more in terms of "business".

The implementation of a user fee system implies training and recruitment, as well as long-term planning to make sure that personnel and management have time to learn and to adjust.

If necessary, it is also possible to use the services of consultants. The private sector is more at ease with marketing than are governments. Management consultants can be effective allies if they are judiciously used.

It must be anticipated that administrative, management and consultant costs may be substantial. Agencies that are considering user fee programmes often have access only to limited financial resources. Those who control the purse-strings must be convinced of the need to allocate resources to this project, which will quickly become self-enhancing and which will bring substantial dividends in the short term. Moneys spent on such a project should not be seen as an expense, but rather as an investment. In some cases, suitable arrangements will only be possible if the agency, and perhaps also the government itself, agree to rethink their financial administration policies.

How to get there - the "marketing" approach

The word "marketing" is scary to some. In "What Are We in For?" (Parks & Recreation, January 1988), John H. Schultz et al. associate marketing with commercialization and fear that by using marketing-based techniques we run the risk of neglecting the social vocation of the parks and protected territories. The preceding sections make clear that the risk does exist. But that is not a sufficient reason to reject marketing as such. "Even the most articulate advocates of adopting a marketing orientation make the point that "private-sector marketing knowledge is transferable, with important modifications, to government and social service agencies" ... Certainly we do not want to copy the worst characteristics of the commercial sector, but we shouldn't be above examining and borrowing from the commercial sector's strength."

Let's face it, user fees are relatively poorly understood by most governmental and para-governmental agencies, but they are quite well understood by the private sector, which is much better versed in marketing. In addition to using consultants from the private sector, parks can also take inspiration from techniques, proven in the business world, that could be applied to government services. John L. Crompton and Charles W. Lamb deal with this question at length in their book, Marketing Government and Social Services (John Wiley & Sons, New York, 1986).

One such technique, "market planning" makes it possible among other things to fine-tune a product's characteristics, including its nature, its mode of distribution or access, the types of promotion used etc. to the needs and expectations of its potential clientele. The product could just as well be a service with a social vocation as a commercial article.

A marketing plan also makes it possible to take into consideration in an articulate way the organizational characteristics that create the product and the capacity to oversee its production and distribution.

A parks agency has much to gain by adapting this approach to try to

harmonise the delicate and complex relationship between clientele and supplier found in the application of user fees for government services.

Proposed planning process for a user fee programme in the natural parks

This proposed process includes four main steps. Each of these can be more or less onerous and complex, depending on the territory and the services concerned, the quality of information the agency has at the outset, and the degree of rigour it chooses to pursue.

As a whole, the process must be pursued with flexibility. It is an iterative process where each step may need to be reviewed in the light of the results of the previous step.

1. Defining the mandate

What is the real purpose of introducing fees? Enhancing fairness in taxation? Reducing the government deficit? Providing recreational services without detracting limited operational resources from conservation programmed Generating revenue for conservation measures? A combination of goals?

Having the true overall objective of the initiative well understood by all the players will help keep proper focus, determine the relative weight to attribute to the various factors under considerations, and make better decisions based on appropriate perspective.

2. Analyzing the context

In what context will the mandate have to be achieved? What external factors (e.g. political climate, relevant government policies, lobbies, overall fiscal situation, etc.) affect the agency and/or will impact on the project? Internally, what are the agency's limitations and potentials (e.g. financial and human resources, ability to access external resources, legal framework, etc.) for designing and implementing a user fee programmed

This review will permit the agency to set realistic goals for itself, and to design a realistic programme. Moreover, this will permit the agency to inform precisely senior management and, as required, the government, of true opportunities and of restraining factors.

With market dictates in mind, it will also be important to evaluate from the outset the quantity and quality of the available statistical data, and to seek remedies if these are insufficient. A lack of primary data is a serious handicap, but may not be an insurmountable obstacle. An abundance of data from secondary and tertiary sources may permit intelligent decision-making based on crosschecking information, deduction and common sense. It is nevertheless better to be prudent and sometimes delay implementation in order to have time to obtain the minimum data required.

3. Determining programme goals and setting the broad outline

Setting out specific programme goals based on the results of the above two steps will allow the players to establish the first tangible parameters for defining the outlines of the user fee programme, and to identify the basic criteria required for evaluating the relevance of the detailed potential measures to consider for implementing it.

The agency must define precisely options of approaches for charging, both in terms of policy and of management: what services and markets will be targeted and why? What are the revenue goals? What role will the private sector be called upon to play? And so on.

At this point, it is important to paint an image of the programme sufficiently precisely that relevant authorities can make final decisions on its orientation and component parts, and that external players (private sector, user groups, the public at large) can intervene as required in an

enlightened way. Cost estimates can provide the appropriate indicator for deciding how precise the "broad" outline should be. The authorities concerned cannot make a valid decision without at least a reasonable estimate of what the overall costs and potential revenue will be.

4. Preparing a detailed programme and action plan

The requirements for this next step evidently vary a great deal depending on the complexity of the option chosen and on the availability of data.

What is required, here, is to spell out in detail each of the planned programmers practical aspects, and to make a detailed plan for their implementation: targeted services and service levels; fee structures and price schedules; legal authority to charge and to enforce; regulatory process; administrative framework; financial, security and access control systems; participation of third parties; plans and programmes for announcements and information; systems and criteria for programme evaluation and adjustments; and so on.

Certain aspects of this planning are particularly important, because user fee programmes involve areas which are normally delicate for any government: the legal and regulatory framework, and financial administration. Obtaining the relevant authorities can be time-consuming. On the other hand, the programme's implementation can require new, or modifications to park physical installations; this is also likely to cause delays. Finally, one should never underestimate the importance of necessary modifications to the agency's management, including personnel management.

In lieu of conclusion

This overview of the implementation of user fees for park services brings out the complexity of this area of public service management. The importance and breadth of the challenge have been recognised for many years by several government agencies, and discussed by various authors.

Several broad management principles emerge from past experience and the relevant literature, which deserve special attention as they may be of use to agencies that wish to set up a framework in which their user fee projects are more likely to succeed. By way of conclusion, these principles are set out below.

• Implementing a user fee system is a major project, and leadership must come from the agency's top management.

• The project must be handled openly, and internal communications must be favoured at all levels. Dialogue with all the stakeholders is a key factor for success.

• Because user fees constitute a delicate and controversial issue, both internally and externally, it must be managed very rigorously.

• The programme is much more likely to be accepted both by the staff and the potential clientele if the revenues from user fees are reinvested in whole or in part in the parks.

• Because the expenses connected directly and indirectly with the user fee programme will almost inevitably appear suspect or totally inappropriate in the eyes of many, it is essential that operations in this area be particularly efficient.

• There is no perfect user fee system; we have to choose the one which is the least imperfect.

•   User fees represent a complex management challenge which must be approached rigorously and methodically, but also with humanity, since setting up a user fee programme requires substantial modifications, on the part of both the affected groups and those who serve them, of their very way of looking at the world.

•   However, once in place and weathered, a sound user fee programme can rapidly become a tremendous asset for any conservation/parks agency, giving it autonomy and resources to achieve otherwise impossible goals.

Lesson 9

ALTERNATIVE SOURCES OF SUPPORT

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.Summon general information about how to use the different types of support
   which can be found outside of the national system of PAs, in their
   areas.

2.Prepare a draft proposal for financing projects in their PA.

REFERENCES:

Supporting Documents E9a and E9b; The Nature Conservancy, 1993; Norris, 1995?;
PARKS Magazine, Special Issue on Financing Protected Areas, V. 4, N.2, 1994.

PRESENTATION:

1.1In nearly every PA in the world it has been found that the assigned
   government budget is insufficient to do all that is necessary. In this
   lesson the focus will be on possibilities for outside help and the
   methods for obtaining it.

1.2There are basically four types of outside help which can be utilized by a
   PA:

- economic resources (money)
- human resources
- material and equipment
- services

The type of support that a given institution or civic group can provide will
   vary enormously, depending upon the particular situation.

1.3The types of organizations which at times provide support to PAs include:

- other governmental institutions;
- municipal governments;
- provincial or state governments;
- civic groups (Rotary Club, Lions Club, Scouts, etc);
- private foundations;
- universities;
- schools and colleges;
- commercial sector;
- private conservation groups;
- international institutions: binational, multilateral, private, and public.

Ask the participants to present the experiences of their PA with respect to
   outside help.

1.4There is a more or less normal process involved in the development of a
   project proposal:

- Development of a good idea into a good project. This is not always easy.
   Good ideas are easy to come by. Translating them into good projects is

not.

- Initial development of the project: is the institution capable of carrying this out? What do we need to do it? Do we have the people and the knowledge? Can we get it? General idea of budget.

- Search for possible donors of support. Make sure you inquire as to the priorities and possibilities of prospective donors before preparing a formal proposal for them.

- Prepare a formal proposal, tailored to the needs of the donor.

1.5 Each institution, organization, group, or person has its own interests, orientations, and particular limitations. One must understand these aspects in order to orient a request for funds, equipment, etc. For example, while a neighboring municipal government may have no funds, it may have construction machinery available if a PA can pay for fuel. As such rather than to solicit funds, it would be much better to request help in the construction of an access road to a tourist site that might benefit the local population. Another example: perhaps a private institution is interested in wildlife but not in aspects of public use. It would not make sense to request funds from them for a visitor's center unless the contribution would be used to prepare an exhibit about the wildlife of the PA. One always should look for an angle or an entry point. Also one should remember the value of personal contacts and friends. Maintaining good relations with local authorities can be an enormous help to the PA in the long run.

Schools are obvious sources of untrained labor. Businesses lend services and donate equipment and materials. Civic groups also are sources of labor, but they also finance small scale projects or activities which are highly visible. Almost all institutions, groups, etc. which give something, also want something in return. Often it is simply an announcement in the newspaper; but in some cases they want special favors. In these cases much care should be taken to not compromise the values and integrity of the PA or of its administration.

2.1 <u>Preparation of Proposals</u>: Any contribution or donation for a PA must be solicited. In many cases the solicitation could be simply a letter from the director of the PA. Yet in other cases, especially for international foundations or institutions, a formal proposal is required accompanied by a letter. One should inquire beforehand concerning the requirements as to the format and information necessary to include in the proposal. In many cases, an initial letter contacting the donating institution is advisable, in order to obtain a preliminary indication if the proposed project coincides with the donor's priorities and funding possibilities. The donor will then send a format for a formal proposal.

2.2 Review with the participants the Supporting Document which accompanies this lesson. Focus on the concept of **counterpart** and its importance in developing proposals, especially in the budget. Donors prefer, and often require, that the recipient of funds also contribute to the project or purchase. The counterpart can be considered in terms of money, in-kind support, volunteer time, etc., but it must always be transformed into monetary value in order to structure the project's budget.

Also focus on the need for a proposal to be logical and consistent and that

the parts be tied together while keeping to the basic components:

OBJECTIVES-> JUSTIFICATION-> METHODS-> ACTIVITIES-> RESULTS-> COST

2.3 Frequently the writing of proposals is seen as a necessary evil for obtaining funding. This is unfortunate since writing a proposal is one of the best ways to establish realistic goals and objectives. With good will, proposal preparation is an excellent exercise for institution. strengthening.

Obtaining money to begin a project is a requires a strong persuasive effort. It should be remembered that potential donors receive more requests than they can possibly fund. A donor needs to know rapidly the answers to the following questions: What does the project want to accomplish? How does the project fit with the donor's priorities? What results are expected, and what obstacles could interfere with obtaining those results. What has been done there before? How can the results be evaluated.

2.4 There are numerous reasons for a donor's rejecting a funding request. Among them are the following:

a. The project doesn't coincide with the donor's priorities.

b. The project doesn't deal with a substantive conservation issue or problem.

c. The project is difficult to evaluate because its methodology is vague, or the proposed activities do not reflect what has been defined as goals and objectives.

d. The project's applicants is known for its lack of cooperation or antagonism towards other institutions.

e. The donor doesn't have funding available for the respective year.

f. Then proposal is badly written, making it difficult to evaluate.

2.5 Administrative support: Many PA have legal, administrative, and/or time restrictions which impede the management of donated funds, or the management of support activities for the PA such as environmental education and publications.

In many countries, foundations have been established which, apart from pursuing their own activities, directly help the PA system at the national level, searching for and channeling funds, preparing publications, posters, etc., and conducting activities in the PA. Normally an agreement is signed between the foundation and the PA system, or with one PA in particular.

In the U.S.A. almost every national park works together with a natural history association: a private entity formed to support the respective park. Its principal role is the elaboration of publications which are then sold by the park; the income being invested in park activities and to support the preparation and printing of other publications. The only obligation of the park administration is to assign an official to oversee the sale of the publications. This is an individual who normally would be in place anyway to answer questions for the public.

ACTIVITIES:

ADMIN. E9-4

1. Using the format in the accompanying document, ask that each participant prepare a proposal for financing some program of activity to be done in their PA (funds, equipment, materials, or services). Review the results and make constructive criticisms.

Supporting Document E9a

Guidelines for Protected Area Managers

(Taken from: "Financing Protected Wildland Systems",
In: PARKS AND PROGRESS, IUCN, 1993)

Through the review of funding needs, existing financing mechanisms, management requirements, and the region's successes in fundraising, a number of lessons can be drawn that provide some guidelines for formulating funding strategies:

1. Diversified funding strategies are more effective than dependence on a single source of input.

2. Partnerships among governments, NGOs, and the private sector take maximum advantage of the range of financing mechanisms available and can help to increase management capacity.

3. Strategies should aim to secure adequate funding to meet management objectives; in other words, they should be based on and reflect budgetary requirements.

4. It should be the aim of any strategy to reduce dependence on government subventions which, in turn, would reduce annual competition with other government agencies and budgetary uncertainties.

5. A successful funding strategy should provide a level of protection against economic fluctuations and unforseen emergencies as well as provide a pool of funds to take advantage of opportunities when they arise.

6. Whenever possible, strategies should include mechanisms to provide a return on services; i.e., the user should pay.

7. Strategies should aim to improve the linkages between wildland management and the private sector, particularly the tourism industry.

8. The accrual of benefits from management to local communities, such as business or employment opportunities or improvement of community services and infrastructure, should be an objective of any strategy.

9. Regional collaboration can provide access to human, financial, and technical resources that are not available at the national level.

Bearing in mind the guidelines noted above, Table 7.1 provides a simple framework for the selection of appropriate funding mechanisms.

ADMIN. E9a-2

Fig 7.1

Supporting Document E9b

PREPARING A FUNDING PROPOSAL

(Based upon documents provided by WWF-US)

The following information is provided with the caveat that it is only an
<u>example</u> of what proposal preparation should consider. Although the
material was prepared primarily by World Wildlife Fund-US, it does not
necessarily represent their policy at the present time; any proposals
for that institution should first involve a preliminary contact with a
WWF representative to obtain up-to-date information. Most donor
institutions follow similar procedures to those presented here.

This Supporting Document is divided into two parts: 1) Information
regarding the initial contact to be made with a potential donor
institution, and then 2) Information on how to prepare a proposal.

GENERAL INFORMATION

I. <u>INITIAL CONTACT</u>

Before encouraging preparation of a formal proposal, WWF-US recommends
that applicants fill out the attached Cover Sheet and submit it
with a brief letter of inquiry and a Curriculum Vitae. The
information on the Cover Sheet, including the abstract, will
provide WWF-US staff sufficient information to determine whether
or not a request for a full proposal is warranted. This procedure
enables WWF to provide some guidance to applicants in designing
projects and eliminates preparation of full proposals for projects
not likely to be funded.

II.<u>REVIEW PROCESS</u>

Proposals are first reviewed by a staff committee. In many cases,
projects which the staff committee feels are worth pursuing are
circulated for outside review. Reviewers recommended by applicants
may or may not be contacted. All project grants in excess of
$5000 require approval by the WWF-US Board Program Committee and
Board of Directors which meets in March, June September and
December. Applicants should realize that proposals cannot in every
case be reviewed at the first meeting following their receipt.

III.<u>MULTI-YEAR PROPOSALS</u>

WWF-US policy allows approval of funding only an annual basis. Multi-
year projects are reviewed annually and decisions concerning
continued funding are based on evaluation of performance during
the previous year.

IV. <u>REPORTING REQUIREMENTS</u>

All applicants are required to submit an annual report, and in some
cases, a mid-year report. Full financial accounting is required at
the termination of each grant period. Photographic documentation
is also required for most grants. In the case of multi-year
projects, funding for continuation is not released until all
reporting requirements have been submitted.

ADMIN. E9b-2

<u>**INITIAL COVER SHEET**</u>

(To be submitted with letter of inquiry)

1. <u>TITLE OF PROJECT</u>

2. <u>NAMES OF APPLICANTS</u>:

Provide names, addresses and fax/phone numbers of project directors.
Please provide institutional address and, if applicable, the
contact address and phone number in the field. If the application
is being submitted by an institution, provide the name of a
contact person.

3. <u>INSTITUTIONAL ENDORSEMENTS</u>

Approval of institution for which applicants work; or endorsements from
other pertinent/involved institutions and organizations. Letters
may be attached.

4. <u>PROJECT PERIOD</u>

When will project begin, and when will it end. Please give the dates for
which current funding is being sought.

5. <u>TOTAL BUDGET</u>

Provide total budget amount, without details. For multi-year projects,
show overall costs, and also costs on a yearly basis.

6. <u>AMOUNT REQUESTED FROM WWF-US</u>:
State amount requested with this application and, for multi-year
projects, indicate which year (year 2 or year 3 etc.) the current
request would cover.

7. <u>SUPPORT FROM OTHER SOURCES</u>:

Identify other funding sources, confirmed or pending, and indicate the
amount of funding which has been either committed or requested.

8. <u>ANTICIPATED FUTURE REQUESTS</u>:

If you anticipate seeking continued WWF-US funding for this project in
future years, please indicate the years for which funding will be
sought, and the estimated budget for each year.

9. <u>ABSTRACT</u>:

The abstract should consist of a concise summary of the information
requested under Project Description (See next section) The
abstract should not exceed one page in length. *While this is
sometimes placed at the beginning of a proposal, it should be
written last. It should not be an extract of one or two of the
proposal's sections, but a sequential representation of its
content. It should answer the questions: What is the problem or
issue? What is the significance or potential impact of this
project? Why is it important for this donor to fund the project?
How much will it cost, and who will do it? What are the major
activities to be carried out.*

INSTRUCTIONS FOR PREPARATION OF PROPOSALS

I. (Section I consists of the information presented on the previous page to be sent upon your initial contact. For the formal proposal, this information should be updated and constitute the first section.)

II. **PROJECT DESCRIPTION**

We request that the proposal be submitted in the format provided below. Please use the headings provided. Applicants may use as much or as little space as they require to provide the necessary information for each category, but the overall length should not exceed 10 pages. Please leave a 1 1/4" (3cm) left hand margin and 1/2" (1 1/4cm) right hand margin. Proposal are to be typed and may be single spaced or double spaced, depending on the space requirements of the applicant.

A. State of Conservation Need or Issue

Briefly state the need or issue in general terms, that will be addressed by the proposed project. *It is important to not underestimate the importance or severity of the problem. A logical relationship should be set up between the professional experience of the soliciting personnel/institution and the identified problem. Do not assume that the reader will be familiar with the problem, or with any other information presented in the proposal. Final decisions concerning this proposal may be made by people who are totally unfamiliar with the problem or area.*

B. Significance of Project to Addressing the Conservation Need or Issue

Briefly describe what aspects of the need or issue the project is designed to address. *The donor should feel that the problem can be resolved in a reasonable time, and with the available resources, and that this project will have a measurable effect on the problem's solution. You should show confidence, but not excessive confidence. A serious, realistic tone is usually more convincing than unrealistic promises.*

C. Background

Describe the history of the development of this project and cite relevant previous work on the topic. *This information is largely historical: how was the project conceived and developed? Does the project fit with existing development and other projects? Does the project coincide with or complement the long-term objectives of the soliciting institution (which it ought to)? This section ought to serve to establish the credibility of the soliciting personnel or institution?*

Previous work relevant to the problem should be cited here. Comments concerning the work done by others will provide the reader a clear impression of how the project will contribute to what has already been done, thus avoiding duplication.

This section shouldn't occupy more than two pages.

D. GOALS AND OBJECTIVES

1. **State objectives of the project in the most specific terms possible. For multi-year projects describe the long-range goals and the specific objectives for the year for which funding is currently sought.** *It is important to distinguish between goals and objectives. A goal can be defined as a "general objective", not necessarily achievable during the length of the project. An objective is a specific indicator of what should be achieved or accomplished during a particular time period i.e. one month, one year. When looking for funding, it is tempting to establish goals and objectives which are too ambitious. Inflated goals/objectives give the potential donor the idea that the proposal is unrealistic.*

2. **Identify possible impediments or limitations to achieving objectives.** *You should be very realistic about what might go wrong with this project. Is it possible that the project will not obtain the necessary local support? Could communications be a problem in the isolated area where the project will take place? What possibility is there that local authorities will not accept the project's recommendations? Will my institution be able to adequately handle the donated funds? If the donor feels that the project has considered all of the limitations and obstacles, it will have more confidence that the project will succeed.*

3. **All projects are evaluated at the end of their grant period. Decisions concerning continued funding of multi-year projects are based in large part on this evaluation. Please identify those success indicators by which you believe we will be able to evaluate whether or not your objectives have been met.** *The role of the donor doesn't end with the arrival of the money. It is essential that, when possible, the project suggest specific parameters or advances that will allow the donor (and yourself) to evaluate the progress of the project. e.g. if objective is institutional strengthening, the numbers of new members could be an indicator; or if producing environmental education materials for primary grades in the nearby schools, then the percentage of schools that have adopted those materials could be an indicator.*

E. <u>METHODS/PLAN OF ACTION</u>

Describe the methods that will be used to carry out the project. Please provide a timetable indicating anticipated dates for various phases of the project. If space does not permit detailed description of methods in an appendix. *The methods should describe how the methods used by the project will achieve the objectives. The objectives should not be repeated, but there should be a clear relation between the methods/activities and that which the project wishes to achieve. You should be realistic in designing the project's activities. The action plan should be divided in steps or phases. The donors tend to value more those projects and individuals who seem to know how to proceed in steps.*

F. <u>LOCAL INVOLVEMENT</u>

Identify local institutions (government and private) and individuals who will be involved in the project. *This section is very important.*

*Universities, community groups, governments and government
agencies, NGOs, and individuals who will be cooperating or
collaborating with the project should be identified. This
participation and cooperation can multiply the project's results
if it has been appropriately planned.*

G. TRAINING AND ENVIRONMENTAL EDUCATION

WWF-US encourages inclusion of environmental education and training
(particularly training of local counterparts) components in
projects whenever feasible. Please describe these aspects of the
project if applicable.

III. **ANTICIPATED PROJECT FOLLOW-UP**

**Many projects will represent only one step in a continuing process to
achieve a particular conservation goal. Please describe what steps
would likely follow upon completion of this project to ensure its
long-term success. Indicate whether you would expect to be
involved in the follow-up, or whether it would be undertaken by
other individual or institutions.** *Since funding is always limited,
most donors do not have any interest in funding projects which
represent only an isolated conservation effort; rather they prefer
to fund projects which fit in with the long-range priorities of
the receiving organization, or others who have a long-term
commitment to the area and problem in question. It is important,
therefore, to demonstrate that there will be follow-up and an
authentic commitment of the soliciting institution or others to
implement the recommendations, plans, strategies, materials etc.
produced by the project.*

IV. PROJECT PERSONNEL

**Describe briefly the special qualifications of the principal
investigator and the other project personnel or institution to
undertake this project and explain their responsibilities specific
to the project. Individuals should attach Curriculum Vitae and
publication lists; institutions should include an annual report or
statement of activities and financial statement.** *Why is this
personnel the best to undertake this project? Why is this
institution the most appropriate?*

V. BUDGET

Please provide the budget for the entire cost of the project. In cases
where WWF-US is not asked to cover all costs, indicate budget
items for which WWF-US funds are requested with (*) asterisks.
Please provide footnotes for any budget items which may not be
clear.

ADMIN. E9b-6

Please specify budget categories (e.g. personnel, travel, expendable
       supplies, permanent equipment) and itemize project costs within
       these categories. For projects taking place outside the US, please
       show costs to be incurred in both US dollars and local currency.

Applicants are advised that WWF-US policy prohibits the payment of
       overhead on grants.

*It is necessary to provide a monetary value to local contributions of
       money, materials, equipment, and salaries. Donated time can also
       receive a value.*

VI. AWARDING OF GRANT

A. Agreement with WWF-US

In most cases, WWF-US issues an agreement with grant recipients when a
       grant is approved which stipulates payment schedules, reporting
       requirements, etc. Please indicate who would sign such an
       agreement. If the agreement is to be made with an institution,
       please provide the name and title of the person who will sign the
       agreement for that institution.

B. Person or Institution to Whom Payment Should Be Made

If funds are to be sent in the form of a check, please indicate how the
       check should be made out. Also include address and telephone
       numbers, and in the case of institutions, give the name of the
       person to whom payment should be sent. If funds are to be
       deposited into an account by wire, please provide name and address
       and phone number of the bank, contact person at the bank, account
       name and number, and name of individual or institution who holds
       the account.

C. Requested Payment Schedule

Please indicate what schedule of payments would best meet the needs of
       the project.

VII. REFERENCES

Please provide names, addresses, and phone numbers, of three individuals
       competent to review the proposal and judge your qualifications to
       carry out the project. WWF-US will use its own discretion in
       deciding whether or not to contact these individuals, and may
       contact reviewers not listed by the applicant.

VIII. APPENDICES

1. Curriculum Vitae and publication lists for project personnel.
2. Annual report or statement of activities and financial statement of
       institution.

3. Map of project area, and other relevant maps.
4. Letters of endorsement from local institutions, governments agencies, etc.
5. Expanded description of methods (if 10 page limit on proposal does not provide adequate space for details).

Lesson 10

BUDGETS AND ADMINISTRATION OF FUNDS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. Explain the two fundamental processes for developing budgets and administering funds of a PA.

2. Explain the three principal parts of a budget.

3.   Explain different ways to present a budget.

REFERENCES: Corfield, 1984.

PRESENTATION:

1.1 The preparation of the budget has always been considered a process of systematically relating the expenditure of funds with the execution of planned objectives, the management of existing resources, and the control of different operations.

The budget, which is a tool of the administrator, is a plan to spend a certain amount of money to meet certain ends. If the actual expenditures exceed the budget, it is an indication that activities deviated from the plan, perhaps for good reasons. Similarly, if actual expenditures are less than budgeted, this may indicate that some supervisors were able to execute well and accomplish more with less money, or that they actually carried out less activities than were planned, perhaps with acceptable reasons, perhaps not. If the budget is divided into sections, it is easy for the administrator to determine what happened and what special action should be taken. That is, to have financial control within the organization, budgets should be prepared separately for each section or program of the organization.

1.2 At the level of the PA, the responsibilities for administering funds vary greatly as they depend upon the administrative system of the country, the respective agency, and the size and importance of the PA.

Sometimes a PA will have its own accountant or finance officer. In other cases there will be no one in this position. In any case it is evident that each PA needs to have someone in charge of the administration of funds, even if these funds are small. This lesson will not prepare accountants nor specialists in the field, but rather it will offer the basic knowledge necessary for a non-specialist to assume basic administrative functions and also help

other people to better understand this important function.

1.3 For effective programs to exist, there are two fundamental processes that must be carried out within the administration of a PA:

a. activity programming/planning, and
b. budget preparation

The programming is done at various administrative levels and also it is done conceptually. There are management plans which define programs in the PA over the long term of 5 years or more, and also there are annual or operational plans which define the activities in much greater detail and in the more immediate future (generally for one year). See Lesson E2.

After having a general plan of action, the following questions will help in the preparation of a budget:

a. What will be done?
b. How will it be done?
c. When will each phase of the plan be done?
d. Who will do what?
e. What will be the cost of everything and of each section?
f. What results are hoped for and when?

The preparation of budgets is normally done annually and it is based on the programming that has been done beforehand. **It is the operational plan put into economic terms**, and its preparation is the most important function of those who administrate and manage the PA.

1.4 Describe the process of preparing a budget. First, ask that some participants present the process from their point of view. Beginning from the administrative level that is represented in the course, continue presenting the budget preparation process up to the highest levels and then bring it back down to the PA level.

The process at the level of the PA, should include all the personnel as each will have his own opinions and needs. Although the ultimate responsibility is of only one person (normally the PA director), this individual should consult others, either in writing or verbally.

2.1 There are three principal parts of a budget:

a. estimate of income
b. estimate of operational expenditures
c. estimate of capital expenditures

Explain each of these. Some PA systems have the goal of becoming economically self-sufficient which implies collecting funds from various sources (see Lessons E8 and 9).

- The basis for a budget is the operational/annual work plan or some other similar document that has been prepared.

- In some systems, the preparation of budgets is done at the central office, with little or no discussion with the directors of the PA.

3.1 There are different ways to present a budget. Sometimes it is presented by specific line-items, i.e. 1000 gallons of gasoline: 1000 dollars. Yet for the majority of systems it is presented in a general form using a system of categories of expenditures, such as these:

1000 - Personnel services: salaries (for full-time and part-time personnel).
2000 -   Contracted services: work, services, materials delivered under contract (transport,publishing, repairs, cleaning, etc).
3000 -   Materials: food, fuel, clothing, office supplies, etc.
     4000 -   Rent, insurance, etc.
     5000 -   Fixed costs: interest, retirement.
     6000 - Property: equipment, furniture, tools, vehicles, plants, animals, buildings, etc.
     7000 -   Debt payment.

Sometimes this system is divided by programs or other categories. The degree of subdivision will depend upon the administrative level where it is being presented or used: the higher up, the more general it will be. At the PA level the budget should be divided into the greatest detail possible.

3.2 The date for preparing and turning in budgets should be known by officials at the PA level so that they can present their proposals on time. Sometimes one must be thinking of the following year's budget before having received funds for the actual fiscal year. This means that the administrators must project what will be accomplished in one year in order to program for the next.

The concept should be discussed of requesting double of what is really needed so that the PA receives sufficient funds with which to operate. This is a common tactic and it has its justification. Nevertheless, one should be careful that whatever is requested is justified and that the PA be able to responsibly spend the budget that does arrive.

3.3 All PA should maintain an accounting system. Normally this system will be established based upon the requirements of the respective governmental system.

Describe the elements of a basic accounting system. In essence the person in charge of accounting must control and register two

        things: monies received and expenditures made.

To accomplish this, an accounting book, or simply a good quality
        notebook, should be obtained. In this all monies received or
        expenditures made should be chronologically registered with the
        date, the source of income or reason for the expenditure, and the
        amount, each in its correct column. Also it is important to keep
        a register of the expenditures or incomes by category or program.
         Give some examples.

Emphasize the importance and obligation to keep receipts or some other
        evidence for the expenditures made.

3.4 Despite the small budgets and scarcity of funds, it is common for a
        PA to not spend all of its assigned funds. Discuss this with the
        participants and propose solutions for this problem.

The origins of this problem may be: poor budget preparation; the money
        that comes exceeds what was requested for category or line-item;
        poor distribution of funds on the part of the central government
        (sometimes funds are assigned too late in the year to be spent, or
        certain sections of the budget are cut, making it more difficult
        to spend the funds received); bureaucratic impediments to the
        expenditure of funds; or simply a slow administration of funds.
        At the PA level, there are two things that can be done to
        alleviate these problems: thoroughly understand well the
        administrative procedures to be followed in the expenditure of
        funds (presenting bid forms, appropriate signatures, etc.) and
        have these ready to speed the release of funds.

3.5 Concerning the audit that is done of the funds of a PA, each country
        is different. Explain to the participants how their system
        functions and what is expected of the official in charge of
        financial affairs. At a minimum there must be an up-to-date
        accounting system, that is in order and with documents that
        support the expenditures made.

ACTIVITIES:

1. Using an operational plan of a PA, ask the participants to prepare a
budget for one of the programs in the plan, including materials,
equipment, and personnel. Compare the results.

2. List a series of 20 or 30 expenditures and two or three monies
received, with dates, but out of order. Ask the participants to prepare
a chronological accounting, by category of expenditure, using the
national accounting system.

Lesson 11

MANAGEMENT OF CONCESSIONS

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1.   Explain the function of concessions in a PA.

2.   Explain how to integrate a concession into a PA.

3.   Enumerate the rules by which a concessionaire should operate.

REFERENCES

Moore, 1984, Ch. 10 and 11; MacKinnon et al, 1986, p. 224.

PRESENTATION:

1.1 <u>What is a concession?</u> It is a medium/long-term economic activity
        conducted within a PA by the private sector under agreement with
        the PA administration. With regard to public use, it is oriented
        toward offering a service to the visitors, and it should benefit
        both the concessionaire and the PA.

There are also concessions for the exploitation of natural resources.
        Although these will not be treated directly in his lesson, many of
        the concepts presented here would be applied also to this type of
        concession.

Generally concessions exist for relatively long periods of time (5 to 25
        years) so that the concessionaire has sufficient time in which to
        recuperate his investment, which at times can be quite large,
        depending upon the service provided, or activity to be carried
        out.

They can involve the construction of hotels, warehouses, wharves, and
        even ski slopes. Generally there is an effort to avoid the
        development of large infrastructures (hotels, restaurants, etc.)
        as the negative environmental impacts often can not be justified
        within the PA, especially those with more restrictive conservation
        objectives. Nevertheless, in those PAs distant from cities or from
        other tourism facilities, sometimes it is necessary to carefully
        permit this type of infrastructure. It is important that a PA
        system clearly define which activities and what types of
        constructions can be done by the concessionaire, and which should
        be the responsibility of the PA administration. The present
        tendency is to allow the private sector to provide those tourism
        activities which are potentially profitable and which involve
        constant administration and maintenance. This is because the
        limitations of personnel, funds, and technical capability in the

PA surpass the capabilities of the administration to assume this sort of responsibility. It is also a way to show that the PA can produce tangible economic benefits.

If the management category of the PA, as well as other circumstances, lend themselves to concessions, this can be a magnificent way to establish a good relationship with the surrounding communities. Also, by carefully putting into practice different conservation activities, the neighboring community can quickly become a collaborator in the protection of the PA. Unfortunately, the local community frequently does not possess the necessary conditions nor experience to implement the quality of service required for a tourism concession. This can sometimes be overcome with the collaboration of better trained operators or agencies who may agree to help the local people to implement the tourist operation or concession.

1.2 The determination of whether or not there will be concessions in a PA, and if so, under what circumstances, should be the result of very serious consideration given initially at the PA system **policy** level, which should then be supported by an appropriate legal framework. PA **management plans** should then provide the details needed to implement concessions, if they are needed. Concessions are usually extremely sensitive issues, due to the amounts of money that can be involved, the potential for environmental impact, and the potential for favoritism in the selection of concessionaires.

1.3 <u>Services</u>: Concessions most frequently provide:

- hotel services
- restaurant or cafeteria services
- market or food store services
- equipment or pack animal rental
- outdoor food vendors
- guided bus, boat, or horse tours
- book shops
- souvenir shops
- full-service camping areas

1.4 <u>Selection</u>: The national PA system should have an established policy concerning the type of concessions that may be permitted and under what conditions. The selection of a concessionaire is done in various ways: sometimes they are elected based upon bids offered by interested parties, and other times they are selected by prioritizing small, local businesses in order to strengthen relations with neighboring communities. However it is done, legal guidelines usually exist for orienting the process, and they should be followed.

2.0 Each concession is established under an agreement signed between the PA (or PA system) and the concessionaire. The agreement spells

out all of the rules that the concessionaire must abide by
including legal, economic, quality and quantity of service
offered, etc.

Legal: The agreement must define the duration of the contract and under
what conditions the concession can be renewed. It should mention
the reports that the concessionaire must deliver to the PA
concerning his operation. It should explain under what conditions
the PA administration can suspend the agreement and the operation
within the PA. The infrastructure to be used should be
considered; if the concessionaire expects to use PA buildings then
he should pay more for the right to operate. The issue of who is
to pay for maintenance and repairs of infrastructure when it
belongs to the PA, and in what condition the concessionaire must
leave his facilities, during and after his use of them must be
addressed in the contract. In some situations, concessionaires are
given temporary rights to certain amount of land; in others, only
to operate a service in a given site.

As with any other PA user, concessionaires must submit themselves to
rules and regulations concerning tourism management, e.g. numbers
of tourists, site restrictions, use of guides, entrance fees, etc.
In theory, the fact that concessionaires must agree to these
conditions in order to obtain the concession should make it even
easier to control them in this regard, since non-compliance could
mean cancellation of the contract. In practice, the legal
mechanisms involved in obliging compliance can be so cumbersome
that a concessionaire sometimes can abuse his privileged position
within the PA by not fulfilling his legal obligations.

Economic: The agreement must indicate how much the concessionaire must
pay for the right to operate in the PA. This can be calculated in
different ways. One way is based upon the gross income generated
on which normally a percentage is set of between 1 and 10% for the
PA. When it is difficult to determine a concessionaire's gross
income, a fixed annual fee can be charged or a fee for every
visitor attended to. There should be some mention made of the
prices to be charged. Generally they are higher than in other
places, which can be justified by the fact that tourism is
sporadic or seasonal and to make a profit one must charge more
when the tourists are present. There also is the logistical
problem and the cost of transporting food, equipment, material,
etc. to an isolated area. In many instances, the preparation of an
initial economic feasibility study can help to guide the economic
factors to be decided upon.

In the United States, the National Park Service sets rules with regard
to what may be sold in the PA, and also establishes price ranges
for all services and products. These are usually set by evaluating
equivalent services in the region and then compensating for local
conditions.
Mention should be made of possible audits of the concessionaire's

accounting, i.e. when and by whom.

Quality and Quantity of Service: Together with prices this aspect is
     the most controversial, sometimes causing the most problems with
     concessions. While rules must be defined in the agreement, it is
     difficult to enforce them in the field. It is important that the
     concessionaire does a good job as the quality of service offered
     reflects on the PA administration. The rules for operation should
     be as detailed as possible, and they should allow for the
     possibility of periodic inspections by the PA administration to
     insure that the rules are being met. The agreement should set the
     dates and hours of operation.

Another factor to consider is whether there exists the need to provide
     facilities for different types or economic levels of tourist, from
     the backpacker to the organized luxury groups. Can the selected
     concessionaire meet these needs, or will it be necessary to obtain
     another concessionaire in order to fill the demand existing in the
     PA?

2.1Administrative responsibilities: Each PA administration should have
     some plan for controlling and supervising the operations of the
     concessions in its territory. First, the signed agreement and its
     conditions must be understood. What are the obligations of the PA
     administration? Does it have to carry out periodic inspections of
     the concessionaire's facilities and services? Normally the
     concessionaire should present periodic reports to the PA
     administration. The PA administration and the concessionaire
     should mutually benefit from their relationship, and normally
     there should exist a spirit of collaboration between the two
     parties.

3.1In developing countries, a concessionaire can play an important role
     in PA development, providing an essential service which will make
     the PA a more significant attraction. Additionally, it is not
     uncommon for a concessionaire to be required, as part of his
     contractual obligations, to provide support to PA personnel e.g.
     transportation, food, lodging, which a struggling PA
     administration may be incapable of providing. This type of
     situation has its drawbacks, in that the PA becomes indebted or
     dependent to the concessionaire, making it difficult to
     impartially enforce other contractual obligations with regard to
     quality of service, and environmental impact.

ACTIVITIES:

1. Ask the participants to discuss as a group the advantages and
disadvantages of concessions within a PA. If there are concessions in
their PA, ask that they make suggestions as to how the agreements could
be improved, both for the concessionaire as well as for the PA. If no
concessions exist, ask for suggestions as to where and under what
conditions they might be utilized.

Lesson 12

MANAGEMENT OF GOODS AND PROPERTIES

OBJECTIVE:

By the end of this lesson, the participants should be able to:

1.   Appropriately manage the goods and properties of their PA.

2.Design a system which improves the control of the goods and properties
        in their PA.

REFERENCES: Corfield, 1984.

PRESENTATION:

1.1The management of goods and properties basically consists in knowing:

- what the PA has in terms of structures, vehicles, equipment, and
        materials;
        - where these properties are in a given moment;
        - what condition they are in;
- in the case of non-durable goods, how fast they are being used up.

Normally this is the job of the director of the PA administration. In
        larger PAs, an inventory supervisor may be necessary.

1.2Inventory: In order to control the location and use of the goods and
        properties (including real estate) of the PA, an initial inventory
        must be conducted and it must be kept up to date. An inventory
        should have two principal sections, one for durable goods and
        structures, and another for non-durable goods. Non-durable goods
        are those materials that are consumed and not permanently
        maintained in the inventory.

The durable items should be marked and coded with a number which
        identifies the PA, the year acquired, and the item. For example:
        CEF-120-87 (Century Forest, inventory number, and purchase year).
         Another number or letter could be added to identify the type of
        equipment if the inventory is large and there is the need for
        such. Each item identified in this manner should have a card in a
        special file. On this card all pertinent information should be
        included: name of equipment, acquisition date, price, place of
        origin, actual location or person in charge of its use. Any
        changes in the condition or location of the item should be noted
        on its card. If the equipment is kept in a storeroom, each time
        it is checked out the name of the person, loan date, and any other
        comment about its condition should be registered. A computerized
        system could easily replace the card system.

Nondurable goods, that is those things that are consumed or rapidly
     deteriorate (paper, pencils, fuel, etc.), are not numbered, but
     they still should exist in the inventory. There should be a card
     for each type of nondurable item. On this the person responsible
     registers the quantity as it enters the storeroom and when it is
     dispensed. In this way it is known precisely how many items there
     are in the storeroom and when more must be ordered.

1.3 Special Cases: Certain objects in the inventory require special
     care. Firearms, for example, may need to be registered with some
     government office, and perhaps those employees who will use them
     need permits. The same is true for vehicles, boats, etc. which
     may possibly need to be registered each year.

In the case of buildings and other properties of great value, insurance
     policies should be considered.

In some countries there are special rules concerning the final disposal
     of equipment and vehicles. Discuss these rules with the
     participants. Also discuss what should be done when some
     equipment or vehicle is lost or irreparably damaged. What are the
     procedures to be followed and reports to be filed?

1.4 Precautions: Although the goods and properties of the PA are
     usually government property, PA employees must maintain them as if
     they were their own. As this rarely happens, great precautions
     should be followed in the supervision of the use of these
     properties. Rules should be defined for the use of equipment and
     vehicles that can be easily damaged through negligence. Upon
     delivery of a vehicle or a piece of equipment to an employee for
     his use, one should consider requiring the signing of a document
     which binds the employee to care for the equipment and to return
     it in the same condition as it was taken. The original condition
     of the equipment should be specified in the document. There could
     exist an agreement with the PA director for the employee to pay
     for the loss or damage to equipment which has been assigned to
     him.

ACTIVITIES:

1. Ask the participants to discuss the management of goods and
properties within their PA. How could the situation be improved?

2. Ask the participants to make an outline of the administrative life of
a four wheel drive vehicle. On paper follow the life of the vehicle as
part of PA inventory from its acquisition through its final disposal.

Lesson 13

MAINTENANCE OF PROTECTED AREAS

OBJECTIVES:

By the end of this lesson, the participants will be able to:

1. Correctly describe the role of maintenance in protected area (PA) management.

2. Describe the four types of maintenance.

3. Prepare a maintenance program for a PA.

4. Identify the major maintenance problems to be found in a PA.

5. Describe and carry out basic trail maintenance.

6. Explain why timely maintenance of public areas is important to PA management.

7. Explain and carry out the maintenance needed to keep basic PA equipment and transportation in operating condition.

REFERENCES

Corfield, 1984: Ch. 1, 2, 5, 6, 9, 16; MacKinnon et al, 1986, p. 219; PARKS Magazine, V.8, N.4; V.8, N.3; V.6, N.2; V.5, N.3; V.5, N,2; V.5, N.1; V.5, N.1; V.1, N.2. Thorsell, 1984; US Peace Corps, 1977.

PRESENTATION

1.1 Begin the presentation with a discussion of situations in which deficient maintenance has hindered the PA operations and activities. Ask participants to give examples from their PAs. Give a definition of maintenance: "Assuring that all facilities, infrastructure, and equipment are clean, safe, and operational". This definition can include almost all aspects of a PA: exhibits, roads and trails, ranger housing, offices, backpacks, chainsaws etc. In some situations, a Maintenance Program is in charge of all new construction as well as routine maintenance. In theory it is a program, or at least a subprogram, along with the many others that a PA should have. In reality, most PA systems give it very low priority, especially with regard to funding, in spite of its obvious importance. It is common for equipment, vehicles and even buildings to be lost for lack of opportune maintenance. The literature regarding PA systems is notably deficient in this regard, with the exception of Corfield. The United States National Park Service estimates that at least 40% of a PA's budget should be destined to maintenance. Discuss why maintenance receives such low priority.

1.2 The first and most basic rule of maintenance is "Don't build it if you can't maintain it". Building or purchasing something implies

that the funding and expertise to maintain it will be available in the following years. Give examples of this: p.e. a building constructed with attractive materials which require maintenance costs impossible to achieve with normal budgets.

1.3 Why should we maintain?

-A clean, well-maintained PA environment motivates users to keep it that way; if they find it to be dirty and unkempt, they will find no reason to not leave trash, graffiti etc. themselves. Additionally, the aesthetics or appearance of a PA leave a lasting impression upon its users; this can heavily influence how they feel about the PA in general, including future political/economic support they might provide.

-The safety and well-being of the visitors and the employees depends upon effective maintenance being carried out.

-Good maintenance facilitates all of the work carried out in a PA. The time spent on timely maintenance is much less than that which would be spent dealing with the problems caused by the lack of maintenance.

-Good maintenance protects the investment; it is more economical than to not maintain and to have to rebuild or repurchase later on.

2.1 Present the four types of maintenance:

a. **Housekeeping**, is basic daily activity and involves simply keeping things clean and orderly. Examples are washing vehicles at the end of the day, keeping toilet facilities and other public areas clean, sweeping offices, washing windows, etc.

b. **Preventive maintenance** involves regular inspections and testing of equipment to detect potential problems and prevent them before they occur. This will require a maintenance program or schedule, together with records of maintenance inspections and repairs.

c. **Breakdown maintenance** is carried out when equipment or system breaks down due to lack of preventive maintenance, accidents or vandalism.

d. **No maintenance** usually results in total deterioration and waste of the investment in facilities and equipment.

2.2 Maintenance should be a separate item within any programming of funds, personnel, and equipment. In many developing, this rarely happens. The program should be included in the PA Management Plan. The specific functions of the Maintenance Program will depend upon the organization of the PA, but could involve trail and road construction, building construction and maintenance, vehicles, equipment, and inventory control. It is in the PA's operational plan (annual work plan) (see Ed) where the necessary activities and personnel are detailed with regard to ensuring that required maintenance is carried out.

3.1. At the level of a Management Plan, maintenance usually receives a rather general treatment. Most PA's should have a detailed

Maintenance Program, based on the Management Plan. As a first step in preparing this Plan, the actual responsibilities and objectives of the Maintenance program must be decided. Will it be in charge of construction? Of building exhibits, signs etc? Of buying spare parts? New equipment? Or just routine maintenance?

3.2 Explain the possible components of a Maintenance Program:

a) An inventory of all that exists within a PA which requires maintenance;
- infrastructure: roads, trails, constructions, signs;
- equipment and vehicles
- support infrastructure: septic tanks, electrical systems, potable water systems.

b) Coordination between maintenance and other programs, e.g. protection and interpretation, in order to fully understand the needs that exist.

c) Establish maintenance schedules e.g. paint houses every three years; complete maintenance of vehicles every 3 years.

d) Prepare a budget; according to technical norms, determine the total cost for materials and define the necessary equipment and time needed for the required maintenance.

e) Program the time period in which each maintenance task should be carried out.

f) Define the needed personnel, both in terms of numbers and expertise.

g) Then, maintenance personnel must learn to live with the budget allotted to them; in case funds are lacking to carry out required maintenance, the following should be considered:

- ask that personnel from other programs cooperate in fulfilling maintenance schedules;
- request help from municipalities or other local civic groups for possible support in terms of funding, personnel, and loaned or donated equipment;
- organize social events in order to obtain the participation of volunteers in priority activities, and which require a good deal of manual labor, e.g. trash collection, trail construction. (see E3e).

4.1 PA structures and the support systems should be subject to both permanent housekeeping maintenance (daily sweeping, waxing of floors etc) as well as preventive maintenance (changing of water filters, periodic cleaning and other routine upkeep of diesel engines etc.

4.2 With regard to buildings, participants should be made aware of the most typical problems, many of which are climate related:

- **roof**: loose tiles, roof panels; leaks or other signs of humidity noted on ceilings; roof supports/beams in deteriorated condition.
- **walls**; supports or boards in deteriorated condition; signs of humidity; insect damage; lack of paint or other protective covering.
- **floors**; scratched or loose boards; supporting beams bent or in bad condition; uneven boards which might cause accidents.
- **foundation, floor supports**; bad condition due to insects, humidity or uneven settling.
- **windows**: should open and close smoothly; broken glass panes.
- **hazard identification**: slippery or uneven stairs or walkways; lack of, or broken handrails; bare electrical wires; unfenced wells, water discharge/treatment areas etc.

4.3 Support systems for PA structures and personnel must also be subject to review:

- **electrical systems**: old or deteriorated wires/contacts; installation according to appropriate codes; inappropriate "repairs" made by unqualified personnel.
- **water systems**: leaking pipes and faucets; inadequate pressure; toilets which don't function properly; improperly or non-treated water supply.
- **heating system**: unsafe or inefficient; inappropriate/unsafe fuel storage; correct location of heating device.
- **sewerage system**: unpleasant odors or water discharge; contamination of adjacent watercourses.

5.1 Explain the importance of a PA's circulation system (roads, trails, sidewalks etc.) for achieving management objectives.

- channeling users to points of interest, and those where PA management wishes users/visitors to go.
- facilitate access by PA personnel and researchers to critical areas which require special attention.
- facilitate visitor management.

5.2 The location and routes of trails and roads is key, and should be part of an integrated planning process. Some considerations:

-Do not hurry these decisions; consider all the alternatives.
-Think about the obligatory points which must be touched by the proposed road/trail, and then define the intermediary points, taking into consideration the type of soil, slopes, critical habitats, endangered species, and other engineering considerations, as well as points of public interest.
-Consider carefully where it is desired that the public be able to visit, and where it is NOT desired that users be allowed to penetrate. To open a trail or road implies that a large adjacent area is also opened.

5.3 Describe the technical standards which should be used with regard to slope, allowable curves, width, type of surface, drainage etc. for the different types of access:

- paved highways (asphalt, concrete)
- gravel roads

- dirt roads
- intensively used trails
- extensively used, more rustic trails
- bicycle trails
- elevated trails over water or swampy areas
- sidewalks.

The design and maintenance of public ways can effectively define how they will be used by the public. A road with many sharp curves or steep slopes will not receive the same use that a more moderately designed road will. A paved road will receive more use than an unpaved one. The hardening (surface improvement) of a heavily used trail will probably increase its use, and at the same time reduce off trail impacts caused by users who previously had attempted to find easier footing, by leaving the established route.

5.4 Take the group of participants to work on trail maintenance, showing them how to properly utilize water bars, bridges, drainage pipes, stair construction, and trail relocation to avoid erosion and other deterioration problems. (See E13a).

6.1 Describe the major problems associated with the maintenance of **public areas**: picnic and camping areas; swimming beaches; bathrooms/toilets, etc.

- vandalism
    - cleanliness
- ensuring proper operation (bathrooms, potable water etc.)
    - trash
    - defecation in improper places
- environmental impact (damage to vegetation, animals etc.)

6.2 A maintenance program should be visible not only in its results but in its execution; for example, trash collection should be done during public use hours so that visitors can see the PA at work.

6.3 Explain the problem of hazards in public use areas, and the need to identify and eliminate them. For example, trees that are about to fall down in a camping area, poisonous vegetation, cliffs near a picnic area.

6.4 Discuss some methods for avoiding problems and thus reducing maintenance:

- strategic location of trash containers
- frequent trash collection (according to amount of use.)
- informational and orientational signs
- interpretive programs
- visible presence of PA employees
- strategic location and frequent cleaning of bathrooms
- routine maintenance of infrastructure (paint, damage repair)
- placement of barriers, fences or other non-intrusive means of controlling visitor movement.
- closing of certain places where excessive use occurs for restoration purposes.

Show slides of some of these problems and solutions.

7.1 One of the most serious and difficult maintenance problems is public bathrooms. They are very necessary in order to avoid unsanitary and unaesthetic conditions, yet generally they suffer from inadequate maintenance. As a result, visitors receive a bad impression of the PA, people prefer to use inappropriate places to relieve themselves, and sources of infection and watercourse contamination are created.

Bathrooms are generally placed in high-use sites. They should be designed so that they can be easily cleaned and drained in case of water overflow. The capacity of the bathrooms should be calculated based upon the use of adjacent installations (camping and picnic areas etc.). Septic/sewerage systems should be designed to adequately take care of the highest projected use of the bathroom facility.

7.2 There are different types of toilets which can be used in public bathroom facilities, depending upon the particular climatic situation and amount of public use: latrines; chemical toilets; traditional water-flush toilets; latrines whose operation is based on the decomposition of human waste into compost which contains no toxic pathogens; biogas toilets, in which sewage is deposited in a container where special bacteria transform it into clean water.
Discuss the advantages and disadvantages of each.

7.3 In those situations where a site does not have toilet facilities, a pamphlet should be designed to instruct users what to do when a toilet is needed:

- Do not defecate near trails or watercourses;
- Make a small hole, about 15 cm. deep, and after using it, cover it well.
- Ensure that toilet paper is also covered up in the hole, or else add it to your trash bag, and dispose of it in an appropriate place.

8.1 Ask the participants about the equipment that are most used in their PAs. Then go into detail about maintenance considerations for designated equipment. Equipment can generally be divided into 3 categories:

Workshop tools: hammers, saws, planes, chainsaws, machetes, shovels etc.
Field equipment: backpacks, tents, sleeping bags, camp stoves
Others: first aid kits, radios for communication, work animals.

8.2 Present general norms and rules for maintenance of each type of equipment.

-For workshop tools, they should be routinely sharpened, handles kept in good condition; these tools should be kept in well-defined

locations, and under the control of designated individuals. Tools with motors should be routinely cleaned, and electrical wires/cables inspected and repaired when defects are encountered.

- Field equipment is frequently in the possession of personnel, who have them on loan from the PA; each person should be aware of the proper actions needed to maintain these items in good condition, and be responsible for carrying them out. e.g. dry and air sleeping bags after each use; report any damage incurred.

-Work animals should be treated with special care, since they are generally expensive, very useful, and more fragile than most people believe. A small manual should be prepared, including rules for maximum weight allowed to be carried, number of hours per day and week they may be used, food they should receive, etc.

-Radio communication is important to most PAs. Particular attention should be placed upon proper radio use and operation, and how to prolong their lives. The proper use and installation of antennas should also be covered.

8.3 Another important point is that the location of equipment should be well-defined, i.e everything should have its place, and a person who is directly in-charge of their use and maintenance. A control system should be developed is essential in order to avoid losing valuable equipment; there should be forms for monitoring the movement and maintenance of each major piece of equipment, and a person in-charge of this responsibility.

9.1 Explain the basic functioning of diesel and gasoline engines, to serve as a basis for their maintenance. Participants should be able to dismantle and then assemble a typical engine of each type, as well as describe precisely how each one works.

9.2 Discuss basic maintenance needs of 4 wheel drive vehicles, chainsaws, electric generators, outboard motors, water pumps, and other types of motors based upon participants needs.
9.3 With regard to maintenance procedures, the following should be emphasized:

-The PA should have for each motor or vehicle a sheet which describes its basic information: manufacturing company, model, type of motor (diesel, gasoline) number of the motor, and other specifications.

-The PA should establish a routine maintenance program for each motor/vehicle, according to manual instructions.

-The PA should have for each motor and vehicle a card upon which all maintenance records should be kept. If possible, this information should be computerized.

-The driver/operator of motors/vehicles should carry out daily checks of certain important systems.

ACTIVITIES

1. Have the participants prepare a maintenance plan for the PA where the course is being held. Make sure that PA personnel are available for interviews.

2. Ask participants to prepare tentative maintenance programs for the PAs that they represent. This activity could constitute a practical exercise to be carried out after the course. The finished product could be returned to the instructor(s) for their review.

3. Take the participants on an inspection of a PA's buildings, and evaluate the maintenance situation. Ask the participants to prepare a report on the visited installations.

4. Take the participants on a tour of a PA and note the variety of trails and roads, as well as the deficiencies and good points of their maintenance and design.

5. Ask each participant to present a situation in which trail/road design or maintenance has, or could, influence visitor management.

6. Take the group to a PA and observe and analyze how the public areas are used, and maintained. Divide the group in small groups, with each group making observation and recommendations regarding how to improve maintenance.

7. Have the group analyze how a public toilet facility is used, counting the users during a period of high use, calculating the amount of water used, capacity of the septic system, wear and tear on the installation, etc. and then calculate the frequency of, and type of maintenance which should be carried out, as well as the estimated cost.

8. Have the participants practice carrying out appropriate maintenance and use of equipment that they most encounter.

9. Participants should practice the routine maintenance of the more typical motors and vehicles encountered in the PAs. Small groups with instructors (who may be in some cases some of the participants with recognized ability). All should be able to carry out the basic adjustments, changes and repairs. This activity should take a minimum of two days.

Supporting Document E13a

<u>TRAIL CONSTRUCTION</u>

(Taken from PARKS Magazine, V. 1, No. 2, 1976)

In most national parks it is generally impractical and undesirable to develop extensive foot trails of an elaborate nature. Simple but well marked tracks through wild country, or hardened paths for routine occasional use by men and horses normally will serve their purposes quite adequately.

There are, however, certain trail locations where development to a fairly high uniform standard should be considered. Park managers will quickly identify these locations as those where heavy and usually short-distance use is normal—as between an auto parking area and a popular overlook, for example. Well constructed trails will be safer to use, and usable by more people. They will provide better protection of the areas crossed and require less maintenance. Ideally, these trails should look as if they had always been there, an integral part of the landscape.

It is always a wise precaution to review proposals for any development where excavation and construction are involved with experts who can assess the possible effects of the planned work on the environment. Where damage may occur to wildlife and its habitat, to historical or archaeological areas, to special botanical values, or to other irreplaceable resources, the planned project should, of course, be canceled or modified to preclude such unacceptable impacts.

The following notes, drawings and guidelines on the design and construction of trails were adapted by the editors for PARKS Magazine from the Park Practice Program publication, *Design*, issued for the last quarter of 1975. These remarks apply primarily to temperate regions.

A basic step in constructing a trail is to "line out" or mark the width along the path from start to finish. See sketch 1. Both sides of the planned trail should be staked, the distance between them depending on the steepness of the land and anticipated uses. On hillsides with one-to-one slopes, or slopes of steeper grades, a good width on solid earth would be about 1.25 m (4 feet). See sketch 2. Where no slope exists, line out in accordance with sketch 3.

Stakes should be well-placed so that there is no question about where the trail is to be cleared and excavated. This is particularly important on curves. When the entire trail has been staked you can begin to clear the area of brush and small trees, but remove only those which absolutely must be sacrificed for the minimum recommended trail width.

As for the linear grade of the trail, about 15 percent should be regarded as the maximum.

If handicapped or elderly people are expected to use the trail, gentler grades of no more than 5 percent should be used, and there should be no obstacles such as stairs, stumps or other impediments. Rest areas with places to sit should also be installed at intervals.

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Excavation

A narrow work path is cleared along the line formed by the outside stakes and excavated back about 50 cm (18 inches) See sketch 1. This path establishes the line for excavation of the remainder of the trail and its grade. If alterations need to be made, less time is lost and less damage done than if the entire trail were graded. The next step is to excavate to the full width.

The slope of the banks must then be considered. See sketch 4. The top of the slope, point "A", should be marked or staked on the ground and the slope cut straight from "A" to "B". The slope below the trail is then finished with fill and feathered down to the natural grade.

There are two primary objects in sloping banks: (1) it is a particular aid to the control of erosion in that it establishes slopes that are more nearly natural, thus enabling vegetation to catch quickly and cover the new cut and fill surfaces; (2) it reduces the possibility of damage through the action of frost and rain. Sketch 5 shows the action of frost on a poorly constructed trail. The combined action of water and frost at "A" and "B" loosens the material which drops to the trail, in some cases to such an extent that the trail becomes impassable.

Sketch 6 illustrates an ideal trail section, well finished, with banks and trail surfaces properly sloped and corners of cuts and fills properly rounded.

The question of how far to cut back a slope (or bank) is often a problem. Where the trail crosses a gently sloping hillside the bank may be taken back on a 2-to-1 slope, that is, 60 cm back for each 30 cm in height. A 1.5-to-1 slope is good, and a 1-to-1 slope should be regarded as the maximum, although there may be exceptions. Care should be taken not to remove too much established plant growth by grading too far up steep banks.

It is sometimes difficult to keep a slope uniform along the trail when the bank varies in height. If the slope is to be 2-to-1, measure the height of the bank, then measure back twice this distance from the vertical face of the cut, and set your slope stake. These stakes should be set from 1.5 to 3 meters apart to maintain a smooth, uniform slope.

Wall construction

A natural slope is preferable to wall construction but walls are necessary in many situations. Great care should be taken in their construction. See sketch 7. To assure solid construction and good appearance the following rules should be followed in the selection and setting of rock. Start the construction with proportionately larger rock at the bottom of the wall; grade the size to smaller rock in the center section and again increase the size toward the top of the wall. The top course of the wall should be of rock sufficiently large to be solid. The following method of wall construction has been used with good results.

1.   The outside edge of the base of the wall is carefully staked along the route of the trail.

2.   Vertical batter boards as a guide to the slope of the wall during construction are set at intervals along this line at the proper slope. It has been found advisable to allow about 5

cm (2 inches) of clearance between the batter board and the wall surface. Care should be taken in placing the batter boards to see that the top of the wall is located to give the proper width of trail when the job is finished.

3. After the batter boards are set, excavation is started. Wherever possible, walls should be built on a natural rock foundation; if this is not present, excavation should be made to solid earth, below the frost line, before any wall construction is begun. Never build walls on filled earth bases.

4. Where the trail is built on earthfill back of the rock wall, the wall should be built to the following dimensions: the base of the wall should equal to one-half of the height. The front face of the wall should be battered about 23 cm (9 inches) to the meter (39 inches) in all cases. The back of the wall should be built in steps starting at the bottom and finishing at the last course with a width of wall at least 45 cm (18 inches). See sketch 7.

5. Particular care should be given to locating the beginning and ending of the wall. Wherever possible the wall should begin and end in some natural formation, leaving no sharp ends exposed above the natural surface. Where this is not possible, arrangements should be made for planting with native materials to obliterate the ends of the wall, as in sketch 8.

Sketch 9 shows a typical walled section where the entire trail width is obtained without going into the side slope and creating a large scar. This is particularly useful in very steep hillsides and in places where outcroppings of rock must be avoided.

Sketch 10 illustrates a type of wall used where it is necessary to drop below the line of the trail to find firm foundations for wall construction. The slope between the top of the wall and the trail grade is built similar to the fill slope on the trail in ordinary circumstances. Care should be taken to provide for drainage above the wall.

Sketch 11 indicates a type of wall that is not practical as it can be washed out or turned over by frost action. It is merely a rock veneer and cannot be depended upon to retain a fill where there is pressure against it.

Sketch 12 indicates a wall on the cut side of the trail serving to retain loose earth and rock above the trail floor. This may be justified in a few exceptional cases. As a rule, however, wall construction above the bed of the trail should be avoided, as well as any laid-up work above a trail such as veneer construction to eliminate a hole in the upper bank where a stump has been removed. Where it is necessary to stabilize a bank above a trail it may be done by placing the rock in such a manner that it gives the appearance of a natural outcropping. This area should be planted in a natural manner, using native plant materials, down to the trail edge.

Where trails pass close to large trees and the location is kept below the tree, the type of construction shown in Sketch 13 should be adopted. This will make it possible to build the trail to the proper grade and location without injury to the tree roots.

Trail Width

The anticipated intensity of use will determine the required trail width, of course, but 1.25 m (4 feet) is probably adequate for most trails. This width should not be measured out to a sharp edge which is not substantial. It should be measured from the outside of the trail where the fill slope starts to round over, to a point just out from the base of the cut slope, allowing for rounding out at point "A". See sketch 14.

Where there is a wall on the lower side of the trail, the width should be measured from the inside of the wall. The top of the wall should not be included in the width of trail.

Where there is a steep dangerous dropoff below the trail, the trail width should be increased to 2 or 2.5 m (7 or 8 feet), exclusive of wall width. If pack animals or horses are permitted on the trail there should be at least 30 cm (I foot) clearance beyond each side of the trail. This distance may be increased where there is a dangerous condition below the trail. Tree branches that overhang the trail should be removed to permit passage of horseback riders. See sketch 14.

Drainage

No factor in trail construction is more important than proper drainage. Many sections of good trail are damaged and destroyed by erosion which could have been prevented. All drainage should be planned well ahead of construction. The method of carrying surface water off of each trail section should be determined, along with the location, type, size, and construction details of all drainage structures.

Three general drainage conditions are encountered in trail construction: **sheet water, water concentrating in natural basins, side drainage**, and **water in natural channels**.

Sheet water. Where water comes to a level section of the trail from an uphill slope it usually does not concentrate in drainage channels, but flows across in a sheet. In rare cases it is permissible to concentrate sheet water by cutting hidden ditches across the hillside, with an open ditch bringing the water to a culvert under the trail. The approved practice is to pitch or tilt the trail bed about 4 cm to the meter (1/2 inch per foot) so as to carry sheet water across the surface with the least concentration, and thus with the least danger of erosion.

Water concentrating in natural basins. Foot trails may go uphill and down, or cross ridges which shed water, and hollows which collect it. These hollows may concentrate water from a considerable area. The bottoms of these hollows, touching the trail, may be flat and wide, or steep and narrow. This topography calls for drainage structures, and the shape and area of a hollow dictate their location, type and size.

Surface water should not be forced to concentrate in channels to a greater extent than it does naturally. To compel it to back up behind culverts in new locations is to invite destructive erosion and unsightly ditches. Several small culverts should be used rather than one large

one. The trail should also be raised enough to impound a rush of storm water until it can flow through the culverts, without cutting new channels in the drainage basin or across the trail.

In gullies, nature has already determined the type of structure to be employed, a culvert big enough to carry all the water that comes down. The gully has already established a temporary balance between the scour of the stream and its bed. This balance should not be disturbed, so the floor of the culvert should be at the level of the gully bed. Then the elevation of the trail, compared with the elevation of the gully bed, may dictate a wide, shallow culvert, or a deep, narrow one. But the wider the culvert the easier it will take water, and the less danger there will be of destructive cutting on the discharge side.

In many places where a small culvert seems to be needed it might be better to build a low-water crossing, which is merely a depressed section of the trail paved with flat stones.

Side drainage. Sometimes it is necessary to drain a trail surface to the inside, against a bank, providing a catch basin at the end of the culvert. Draining a surface in this way should be avoided if possible, but where it is necessary the side ditches should be paved with flat stones to prevent undermining. See sketch 15.

The only particular requirement for this type of culvert is to carry the catch basin well into the bank to keep it away from traffic. The back wall of the catch basin should be carried far enough up the slope to prevent erosion around it.

Water in natural channels. Established channels determine the location of culverts, and the amount of water to be moved can be estimated with reasonable accuracy. Any depression, even one coming from a small spring, is the established drainage channel in that area. This can be proved by the absence of erosion and the presence of cover on nearby surfaces. The amount of run-off at flood stage can be estimated by lines of drift left by high water, scouring at the bases of trees, root systems exposed by scouring, and other signs.

The culvert must be large enough to carry flood water, and its floor must be at the level of the channel bed. These two factors determine the size and shape of the structure. Where there is any choice, the culvert should be wide rather than deep. In some situations a bridge rather than a culvert will be required, but bridge construction cannot be treated in this brief article.

If the drained slopes are bare, and erosion is to be retarded until cover grows, a catch basin can be built at the intake end of the culvert, with dry walls built high enough to form an impounding basin behind them, where the flood water can deposit its silt before seeping into the culvert. But in such a case special care must be taken to protect the culvert with wing walls, so that impounded water will not find a passage along the walls of the structure and eventually wash out the trail.

Types of culverts. Culverts may be preformed of concrete or steel, or made of timber, or stone using dry or mortar joints as prescribed by plans, general instructions or local conditions.

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In stone construction the ends of the walls should be flared, as a usual
practice, to hold the fill above and to prevent scouring by flood water.
Care should be taken to keep inside surfaces uniform and smooth to
prevent debris from catching. A culvert should extend 50 cm or so (a
foot or two) beyond the edge of the trail on each side, and the trail
widened to the head walls of the culvert. The bottom level of the
culvert should slope downward along its length not less than 1 cm in 30
(3/8 inch to the foot).

Waterbreaks

A waterbreak placed at intervals across trails should be extended
far enough into the bank on the upper side of the trail to prevent water
from cutting around it. It may be necessary to cut a notch into the bank
to accomplish this, tamping the dirt back afterward. Both ends should be
anchored behind rocks or trees, or firmly staked in place. See sketch
16.

The pitch of a waterbreak, or the angle at which it lies across
the trail, is very important. A definite relation between the slope of
the trail and the pitch of the waterbreak must be established by
experience in each location. This relation depends upon the nature of
the soil, and it may vary greatly on different sections of the trail. On
one section there may be a stiff clay which does not wash. On another
stretch there may be alluvial soil which will wash badly.

As one of two extremes, take a section in tough clay on a flat
slope. Here there is very little danger of washing, and the breaker can
lie on a steep pitch carrying off all of the water quickly. If it were
laid on a flatter pitch, there would be danger of silt depositing behind
the breaker which would put it out of use.

At the other extreme, consider a section in alluvial soil on a
steep slope. Washing will occur here on the slightest incline, so the
breaker must lie almost straight across the trail. If it is given a more
pronounced pitch the water will hit the breaker, turn, and wash a
cross-ditch. The breaker log may be washed out too, and the water will
go on down the trail, making an additional load for the next breaker to
carry off.

The spacing of breakers cannot be determined by any rule, but
there are three particular locations where they should be placed: (1)
where there is a depression or wash, the breaker should be set below;
(2) on sharp curves, the breaker should be set at the uphill entrance of
the curve; and (3) at changes in the trail grade, the breaker should be
set just above the break in grade.

No harm is done if some excess water goes over a breaker that is
carrying a full load off to the side. It is better to set them so that
this occurs in heavy downpours than to pitch the breakers so that
excessive scouring occurs alongside the logs. If careful study is given
to the behavior of breakers in different soils, and on different slopes,
it will be possible to reach a reasonable balance between scouring, as
one extreme, and silting up, as the other.

In sketch 16, "A", "B", and "C" indicate three methods of setting
breakers. "A" is the correct method with the grade below the breaker
finishing flush with the top of the log. When setting, it is better to
fill rather full back of the breaker and then tamp the soil well to
prevent settling and the consequent exposure of the breaker. The grade

above and below the breaker should feather nicely into the grade of the trail and not leave a "bump" as shown in "B". When breakers are set in this manner they are secure and not visible when one looks up the trail.

"C" indicates a method which is not desirable. It is not as secure, is more noticeable and creates an obstruction to stumble over.

The following are frequently encountered conditions that require careful study to secure proper drainage.

On ground where there is no appreciable cross slope, the trails often are incorrectly built as shown in "A" of sketch 17. Turf is cut from the trail floor and raked off to the sides, making piles that confine water to the trail and wash it out. On such locations, the proper method of construction will usually be to work out shallow, rounded depressions, not ditches, at the sides, and the good soil from these excavations used to slightly raise the level of the trail forming a dry, well drained surface in wet weather. In some cases it will be necessary to gather additional fill from another section to raise the trail floor. Drawing "B" in sketch 17 indicates the correct method of construction in this type of topography.

Water should be directed away from these drainage depressions wherever conditions will permit. Sketch 18 indicates types of construction used when trails follow old road or railroad grades.

"A"—This sketch indicates the method used in "through cut" sections. It is not a desirable solution, however, and should be avoided wherever possible.

"B"—This shows a condition frequently encountered where there is a seepage of water for some distance from the bank above the trail which will keep the trail continually wet if the water is not disposed of satisfactorily. Here the trail is raised and the seepage caught in a rock fill which should extend along the trail for the distance that the seepage exists, and from there connect with one or more culverts. Mounds of earth similar to those shown in "C" should be graded off.

Securing firm trail foundation
Trails should not be built on top of peat or beds of leaf mold. When this condition is encountered the entire depth of soft material should be excavated to make a solid base that is well drained and will remain solid. The leaf mold and peat removed should be used as topsoil along other parts of the trail and for planting operations.

Trail finishing
How far should one go on trail finishing? Generally, refined grading is not practical. Most trails will probably receive a relatively small amount of maintenance. The best answer to this question is that trail finishing should be carried to the point where erosion will be discouraged and natural plant growth will be encouraged. Such finishing can be justified from the practical standpoint. All trails will require occasional maintenance to keep them in good condition, and finishing them to hold upkeep to a minimum is one of the guiding factors in good trail construction. When banks are not properly sloped, walls not well built, and drainage not properly provided, constant maintenance will be necessary and the cost of upkeep will increase.

Lesson 14

**EVALUATION OF THE ADMINISTRATION AND MANAGEMENT
OF PROTECTED AREAS**

OBJECTIVES:

By the end of this lesson, the participants should be able to:

1. List the factors to consider in the evaluation of the administration
    and management of a PA.

2. Carry out an evaluation of a management project in their PA.

REFERENCES: Mackinnon et al, 1990.

PRESENTATION:

1.1 Generally there is little formal evaluation done of the
    administration and management in a PA. Since the job of
    administrating a PA is so complicated and extensive, there is
    little time available for doing evaluations. Nevertheless, a good
    administration includes a periodic, if not constant, evaluation of
    the results being obtained. In some cases much time and money
    have been wasted in projects and activities which would not have
    occurred if evaluations had been done opportunely. The real value
    of evaluating programs or management projects is that it allows
    one to learn and to build from one's own experiences, both
    successes and failures, and to readjust so as to meet one's
    objectives as efficiently as possible.

1.2 The Management Plan and the operational work plans of a PA set the
    standards by which to measure the advances or setbacks of the
    administration and management of a PA. In these planning
    documents can be found the objectives and goals to be reached
    along with the activities, projects, etc. designed to help each
    those objectives. Any activity done by a PA should have clear
    objectives and goals understood and measurable by its personnel.

1.3 There are various benefits to be derived from an effective evaluation
    of the management of a PA:

- to determine if the policy and management objectives of the plan are
    being met and if they are realistic;
- to judge if the human and financial resources provided are sufficient
    for meeting the desired results;
- to report the advances to higher officials, including those who
    support the management program and those who are interested in its
    implementation;
- to provide a clear vision of the benefits derived from a protected
    area at the local, regional, and national levels;
- to contribute to future management programs, or to improve the
    existing program;
- to help evaluate the contribution of the PA to national and
    international conservation objectives.

1.4There are different ways to evaluate the effectiveness of the management and administration of a PA:

Autoevaluation. This consists of:

- the evaluation of ones own work, which can be done by anyone including the head PA administrator. The Supporting Documents to this lesson can help in this effort.

- formal evaluation, done by the officials of the PA who dedicate one or two days to evaluate a specific project or program, or the general progress of the PA. These types of sessions should be programmed at least once a year, and if possible, they should be used to evaluate the past operational plan as part of the process of developing the next plan and corresponding annual budget.

Evaluation by the Central Offices. Although it is not common for the central office to carry out formal evaluations of individual PAs, the officials in these offices will form their own opinions based upon the reports they receive as well as from the opinions and comments they hear from inspectors, auditors, scientists, and other visitors to the PA. In this fashion comparisons are made among the different PA in the system, and sometimes, budgetary priorities are determined.

Independent Evaluations from Outside Experts. The evaluation of the administration and management of a PA by individuals who have no official link to the PA has the advantage of being free of prejudices and thus can often better make judgements with an open mind. Nevertheless, sometimes they can be insensitive to local situations.

Local Advisory Committee. Forming a Local Advisory Committee for a PA can be useful in aiding in the evaluation of the effectiveness of the area management. The committee can include users, concessionaires, members of other agencies, and individuals from neighboring communities. Periodic meetings are essential and provide a useful forum for promoting local agreements. Nevertheless, there does exist the danger that these committees will tend to reflect special interests or personalities, or that they will get mired in the details of administration of the PA and lose their objectivity.

ACTIVITIES:

1. Ask the participants to prepare an evaluation of some project in which they have participated, using the Supporting Documents to this lesson as well as the following points in developing their report:

- Does the project have well defined goals or objectives?
- Are the objectives measurable?
- Are the objectives obtainable within the available time?
- If they are not obtainable, what is the reason: Are they not
  realistic? Is there lack of personnel, of funds, or of
  administrative support?
- Is the project in agreement with the Management Plan? With the

    Operational Plan?
- Does the project have specific procedures and directions?
- Is the personnel trained to carry out the necessary tasks?
- Has there been the necessary supervision?

Supporting Document E14a

QUESTIONNAIRE FOR RATING THE EFFECTIVENESS
OF THE PROTECTED AREA MANAGER

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

_____Are the area manager and staff sufficiently familiar with their
area that they can readily notice significant changes in
resources?

_____Have existing problem areas been identified and action taken to
correct them?

_____Are environmental impacts being minimized during projects or
activities?

_____Are on-the-ground activities being conducted in a manner compatible
with the objectives of the area?

_____Have special efforts been made to ensure that public use does not
damage the area's resources?

_____Have special studies or monitoring programmes been identified and
programmed?

_____Is a large-scale base map available for the area?

_____When in the field do management personnel carry adequate reference
material to aid in the performance of their job?

_____Is an annual work plan used to guide the operation of the area?

_____Do managerial staff organize their work activities to ensure that
the objective of the work plan will be realized?

_____Do management procedures provide a system of checks and balances to
ensure that on-the-ground work is accomplished according to
plans and specifications?

_____Are safety training and accident prevention given high priority in
all activities?

_____Are important documents of value to management retained on file?

_____Is a management plan for the area available? If not, is one in
preparation?

_____Does the area manager use the experience and training of key staff

in problem solving and making important decisions?

_____Does the area manager delegate authority to selected staff in order
        to spend more time on higher-level work?

_____Does the area manager make himself readily available to, and
        maintain good working relations with, employees at all
        levels?

_____Is outstanding work performance duly recognised in employees' work
        performance ratings? Does poor performance result in
        appropriate action?

_____Does the area manager exemplify a proper work ethic, attitude, and
        deportment?

_____Are training opportunities made available to employees to improve
        job satisfaction so that they may have opportunities to
        qualify for positions of higher responsibility or pay?

_____Do employees have written job descriptions, so that they understand
        their duties?

_____Do duty assignments reflect employee qualifications?

_____Are jobs planned to use personnel effectively?

_____Are the rangers and guards smartly turned out and well disciplined?

_____Are stores and equipment properly accounted for and maintained?

_____Are all personnel receiving the pay and allowances due them on a
        regular monthly basis?

_____Are field staff provided with basic necessary equipment (boots,
        blankets, poncho, mosquito net, etc.)?

_____Does the manager have a good relationship with local government
        officials, chiefs, headmen, and local people?

Supporting Document E14b

THE USE OF CHECKLISTS IN EVALUATING MANAGEMENT

(Taken from: "Managing Protected Areas in the Tropics" by
Mackinnon, J.and K.; Child, G; and Thorsell, J; published by
IUCN, 1986)

The use of an evaluation checklist provides a systematic method
for obtaining a relatively objective evaluation of the effectiveness of
the administration and management of a protected area. Since management
effectiveness is measured against the objectives of the particular
category of protected area, any checklist must be derived from these
objectives. When related to the policy and management plan for a
specific protected area, the checklist has the benefit of standardizing
the approach to all levels of management and time frames, e.g. as a
basis for monthly, quarterly or annual reports. Such checklists are also
of use to Headquarters for comparing progress between different
protected areas.
        Periodic evaluations of this type are useful to the individual
officer for assessing his own performance over the reporting period and
for informing his colleagues and superiors of the progress he has
achieved. They are also an insurance for the individual and his team
against allegations, by higher authority, that they are misdirecting
their efforts, as unless a periodic report brings a return order from
Headquarters for corrective measures, they are entitled to assume the
tacit approval of their actions. This in turn obliges supervisory
personnel at different levels in the hierarchy to evaluate the progress
of their subordinates' work at regular intervals, providing the basic
machinery for the continual reassessment of the effectiveness of the
management programme and its various components. They are then in a
position to initiate corrective action and meet their obligations to
report to the national authority for protected areas, so that the nation
can be informed as to the state of protection of its natural heritage.
        The list below has been used by IUCN's CNPPA to indicate the type
of questions that a protected area manager should consider in evaluating
the effectiveness of the management of his area.

1.   Clearly defined specific objectives to guide management, this
     area:
a)   has written objectives specific to the area.
b)   has only broad objectives.
c)   lacks specific objectives at present.

2.   Legislation, this area:
a)   is fully protected by the national or provincial legislation and
          has a compatible set of regulations specific to the area.
b)   is protected by national legislation but does not have a set of
          regulations specific to the area.
c)   is inadequately protected by national legislation and lacks local
          regulations.
d)   is sufficiently protected by national legislation and does not

require local regulations.

3.   Basic resources information, this area has the following:
a)   Inventory of mammals
b)   inventory of birds
c)   inventory of other vertebrates
d)   complete inventory of plants
e)   partial inventory of plants
f)   vegetation map
g)   inventory of invertebrates
h)   geological map
i)   soil map
j)   climatic data
k)   hydrological data
l)   topographic map
m)   aerial photographs
n)   bibliography of publications

4.   Basic ecological information, this area has the following:
a)   studies of wildlife population dynamics
b)   studies of population status and trends of key species
c)   information on relationships between wildlife and the habitat
d)   studies of predator-prey relationships
e)   information on the carrying capacity of the habitat for key
          species
f)   information on disease reservoirs among the wildlife
g)   studies on ecological succession
h)   information on fire history and its effects

5.   Watershed management, this area, (check more than one if
     necessary):
a)   protects a watershed or watersheds considered to contribute to the
          welfare of downstream human populations (e.g. drinking
          water, irrigation, flood control).
b)   protects a watershed or watersheds considered to contribute to
          downstream ecological process (e.g. estuarine and coastal
          fisheries).
c)   because of its importance to human welfare, is left unmanipulated
          (in a natural state).
d)   is lightly manipulated, through natural means (e.g. fire control,
          reforestation).
e)   is manipulated through engineering works (checkdams, streams
          channelisation, terracing).

6.   Genetic resources, this area:
a)   has a number of species of plants/animals of potential or actual

benefit to humanity and these receive special attention in
management decisions.
b)   probably has a number of species of plants/animals of potential or
actual benefit to humanity, but there is little available
data about them so they receive little special attention.
c)   has little data available but genetic resources are still given
special consideration in management decisions.
d)   is managed on the basis of overall intrinsic values of nature so
genetic resources are not given specific attention.
e)   is managed to preserve biological diversity and genetic
conservation incidental to this.

7.   Management plan, this area:
a)   has an approved management plan which is being implemented and
monitored.
b)   has a management plan but it has not been
accepted/approved/implemented.
c)   has a management plan in preparation.
d)   lacks a management plan at present.
e)   lacks a management plan and local circumstances do not call for
one at this time.

8.   Zoning, this area:
a)   has a zoning plan which effectively controls human impact and
development relative to carrying capacity.
b)   has a zoning plan which partially controls human impact and
development relative to carrying capacity.
c)   does not yet have a zoning plan, but such a plan is being
prepared.
d)   does not have a zoning plan.
e)   does not have a zoning plan, nor is a plan required at present.

9.   Boundaries, this area:
a)   has physically and narratively demarcated boundaries which
effectively define the area.
b)   has demarcated boundaries in certain key areas and this is felt
adequate.
c)   has some boundaries demarcated, but these are felt insufficient.
d)   lacks demarcation of boundaries.
e)   lacks or partially lacks formal demarcation of boundaries but this
is deemed appropriate for the current situation.

10.   Ecologically sufficient boundaries, this area:
a)   encloses an entire ecosystem, so is fully self-sufficient.
b)   comprises the upper part of a watershed, but has no control over
the lower parts.
c)   comprises the lower part of a watershed, but has no control over
the upper parts.

d)   comprises only a fragment of a total ecosystem, requiring
           intensive management to maintain natural functioning.

11.   Protection of natural resources, this area:
a)   is fully and effectively protected from resource exploitation.
b)   is protected at a level appropriate to area objectives.
c)   is used only by local people for their own needs.
d)   suffers from illegal harvesting of vegetation, illegal grazing, or
           poaching of animals.
e)   permits exploitation of selected resources.

12.   Research, this area at this time:
a)   has a strong, well-integrated programme of basic and applied
           research which provides support to the management
           objectives.
b)   has only basic, academic research which provides indirect input to
           improved management.
c)   has ad hoc research which may provide support to management
           objectives.
d)   has no research, either basic or applied.
e)   has no on-going or planned research programme and local
           circumstances do not call for one at this time.

13. Formal education, this area:
a)   has adequate educational facilities or extension programmes and is
           well used by local/national educational institutions.
b)   is used by local/national educational institutions for planned,
           supervised field trips but there are few local facilities.
c)   is used by students for informal, unsupervised field trips.
d)   is seldom used for educational purposes.

14.   Informal education, this area has the following visitor
       facilities:
a)   Leaflets
b)   Maps
c)   Marked trails
d)   Signs
e)   Guide service
f)   Information centre
g)   Audio-visual programmes
h)   Public transportation
i)   Hides

15.   Tourism, this area:
a)   is important for tourism and has all necessary facilities for
           present levels of visitor use.
b)   receives so many tourists that the reserve staff has little time
           for other management activities.
c)   receives many tourists, but facilities are inadequate.
d)   is of only minor importance for tourism at present.
e)   does not include tourism as an objective.

16. Political support (check more than one if necessary):
a)   the central government has made a commitment to attain the
          conservation objectives of the area.
b)   the regional government has made a commitment to attain the
          conservation objectives of the area.
c)   the local people support the protection of the area.
d)   lack of political support is a major problem.
e)   insufficient support (or active opposition) by local people is a
          major problem.

17. Local participation, this area:
a)   has a local advisory committee or otherwise involves local people
          in decision-making.
b)   involves at least some officials of local government.
c)   involves local people only informally.
d)   does not involve local people at all.

18. Benefits to local people, this area:
a)   brings real benefits to the local people in terms of watershed
          protection, employment opportunities, buffer zone
          development, economic subsidy, or other related
          developments.
b)   brings some benefits to the local people.
c)   brings virtually no benefits to the local people.

19. Budget, this area:
a)   has sufficient budget to attain its objectives as stated in
          management plan.
b)   receives a budget which is insufficient to allow the management
          plan to be fully implemented.
c)   receives a budget which allows only basic maintenance and
          staffing.
d)   lacks a budget.

20. Maintenance, this area:
a)   has a budget for maintenance and this is sufficient to keep
          equipment/facilities in reasonable working order.
b)   has a budget for maintenance but this is insufficient to keep
          equipment/facilities in reasonable working order.
c)   does not have any budget for maintenance but maintenance of
          equipment/ facilities is still acceptable.
d)   has no budget for maintenance and equipment/facilities suffering
          as a result.

21. Personnel and training, this area:
a)   has sufficient trained personnel to attain the specified
          management objectives.
b)   lacks sufficient personnel and access to training programmed
c)   has no personnel or training opportunities.

22.   Equipment, this area:
a)   is sufficiently well equipped to attain its management objectives.
b)   needs more vehicles/boats.
c)   needs more uniforms/equipment for rangers.
d)   needs more housing/guard-posts/ headquarters buildings.
e)   needs more survey equipment
f)   needs more medical/first aid equipment.
g)   needs more communication equipment.
h)   needs more office equipment.

23.   Role of external support, this area (check more than one if
      necessary):
a)   is sufficiently well managed and funded that no outside support
           has been requested.
b)   has received/is receiving external support.
c)   receives additional support from within the country.
d)   needs outside support, which is being sought.
e)   needs outside support but such support is not being sought.
f)   has voluntary workers/honorary officers helping in management
           projects.

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