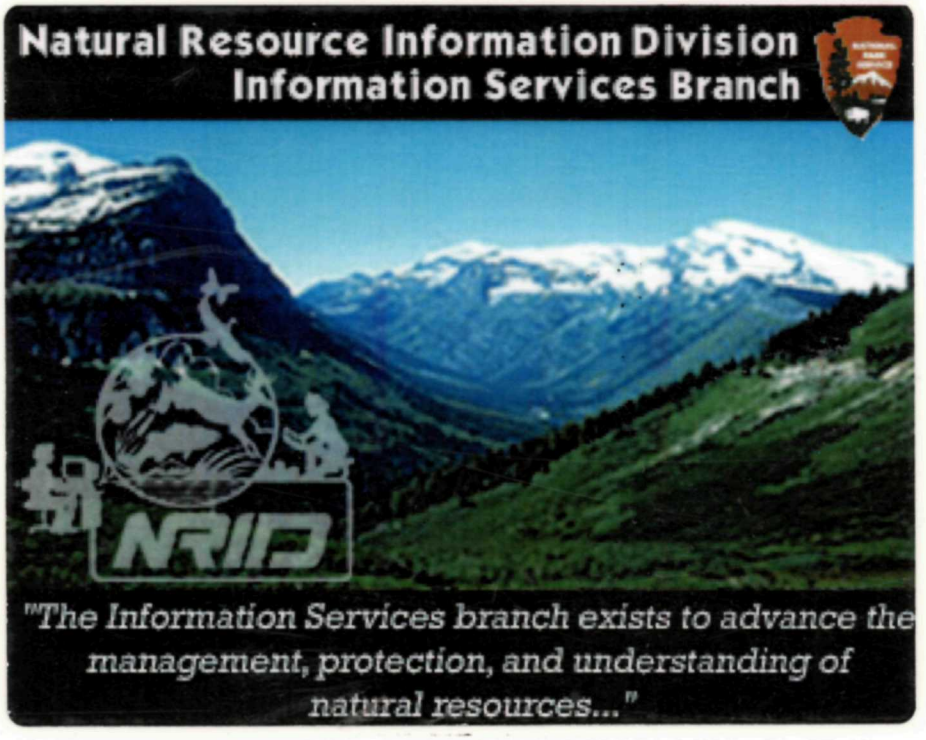
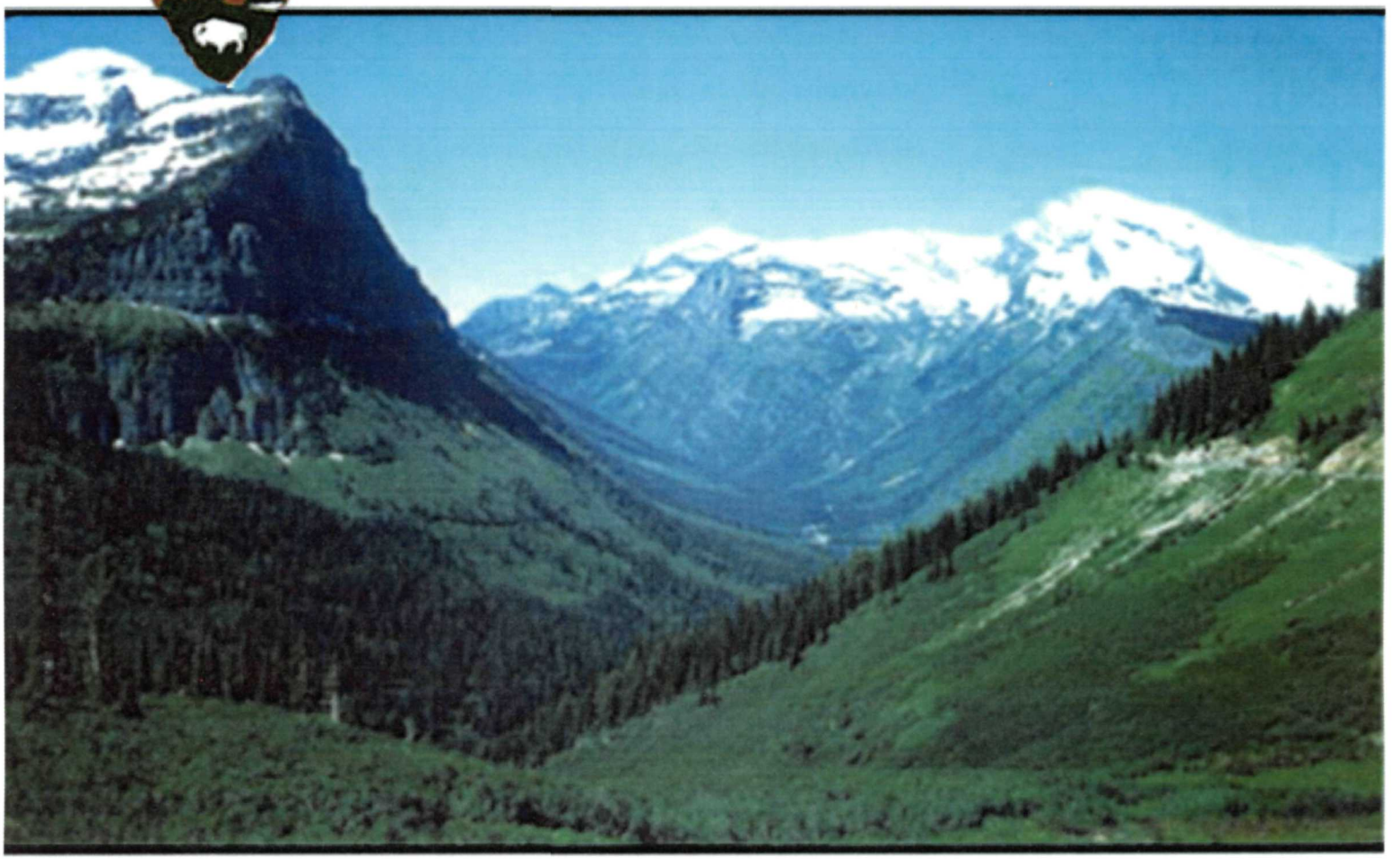

Natural Resource Information Division
Information Services Branch
NRID
"The Information Services branch exists to advance the management, protection, and understanding of natural resources..."

# Natural Resource Information Division
# Information Services Branch



*The Information Services branch exists to advance the management, protection, and understanding of natural resources in parks and associated ecological communities.*

InsideNPS
Information Gateway for NPS Employees

National Park Service
U.S. Department of the Interior



# Natural Resource Stewardship and Science

http://www1.nrintra.nps.gov/

**The Basics**

Home

**Mike Soukup, Associate Director**
**Abby Miller, Deputy Associate Director**

## Natural Resource Related NEWS

Prepublication version of *Ecological Dynamics on Yellowstone's Northern Range* is available for online reading

## FEATURE - The Natural Resource Challenge

Natural Resource Challenge

Natural Resource Challenge Brochures

Approval of Proposals for Future Learning Centers

## ACTION ITEM

FY 2003-FY 2004 Servicewide Comprehensive Call - Natural Resource Guidance

Project proposal submissions are due to the Washington Office May 1, 2002.(Parks should follow due date guidance issued by their respective region.)

Organization and Contacts

Natural Resource Stewardship and Science Monthly Report

Natural Resource Stewardship and Science Strategic Plan

Natural Resource Stewardship Awards

**Division / Organizational Units**

Air Resources Division

Biological Resource Management Division

Environmental Quality Division

Geologic Resources Division

Natural Resource Information Division

Natural Resource Program Center

Social Science Program

Water Resources Division

# Natural Resource Information Division

http://www.nature.nps.gov/

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**In Depth**

NRID Brochure
Natural Resources Intranet
Useful Information for visiting us in Fort Collins

The Natural Resource Information Division (NRID) is part of the Natural Resource Program Center, administered by the Associate Director for Natural Resource Stewardship and Science. It maintains offices in Fort Collins and Denver, Colorado, and Washington, D.C., and consists of three branches.

**Our Mission is:**

Generation and dissemination of information that advances the management, protection, and understanding of natural resources in the national parks and associated ecological communities.

Natural Resource Information Division Mission

The Inventory and Monitoring Branch documents the status and trends of natural resources in America's national parks. As such, the branch oversees inventory and monitoring programs throughout the National Park Service, including assisting parks, regions and other NPS offices in the acquisition of natural resource inventory and monitoring information and its application in management decision-making and resource protection.

The Systems Management Branch provides and administers servicewide databases to meet the needs of natural resource program managers. It also develops and maintains data processing tools and procedures to help park staffs manage natural resource information consistently.

The Information Services Branch develops and communicates information for the preservation, management, and understanding of park natural resources. Informational materials and services are geared to reach the public, park staffs, and NPS partners, which includes education, interpretation and public outreach programs.

The Office of the Division Chief, through the Natural Resource Web Manager, coordinates and manages NPS natural resource web activities. This includes overall coordination of NatureNet and the Natural Resources Intranet, leading the interdisciplinary Natural Resource Web Team, and coordinating guidance and policy recommendations on natural resource web publishing.

**Program Areas**

Information Services
Information Systems Management
Inventory and Monitoring Program
Natural Resource Web Management/Development

**Current News**

Gregory Has Enriching Experience at Denver Airport (02.21.2002)

# Information Services

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## Mission


(NPS photo)

To communicate information and messages on natural resource topics, issues, and management activities with the *public, co-workers, affiliates,* and partners. To provide information services and guidance for managers of park natural resources, conservation and environmental constituencies, educators, and the scientific community. To advance the management, protection, and understanding of natural resources in parks and associated ecological communities.

**Functions**

Education Outreach
Interpretive Liaison
Learning Center Clearing House
Natural Resource Year in Review
Park Science
Publication Coordination
Meet the Staff in Detail

## Roles and Functions of the Branch

- Provide guidance to promote and establish state-of-the-art trends and techniques for communicating natural resource topics, issues, and management activities with the public.
- Produce *Natural Resource Year in Review* and *Park Science*, and coordinate national publication series and miscellaneous natural resource publications.
- Coordinate Learning Center functions and programs, environmental education, and natural resources interpretation activities and programs for NRSS.
- Establish liaison with the Division of Interpretation to foster mutual communications activities.
- Develop a presence and partnerships with national educational organizations.
- Develop and maintain partnerships to enhance management of information services.

## Goals of the Branch

- Assist parks in interpreting their specific natural resources to visitors.
- Develop an NPS plan and partnerships for broad interpretation of natural resources in parks.
- Find alternative means for telling natural resource stories in parks including by video and virtual experiences.

# Education Outreach

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## Education Outreach


(NPS photo)

The Information Services Branch is actively involved with coordinating natural resource presentations at various national educational conferences, working with the Parks as Classrooms program, and assisting with Learning Center clearinghouse activities.

The Branch will also be engaged in analysis of education and outreach programs, and will be assisting in future evaluation of NPS natural resource education programs and initiatives. A number of servicewide training programs focusing on communicating natural resource subjects and issues will be sponsored by the Branch.

Some of these workshops will coincide with affiliated organizations, including the Geological Society of America, the National Science Teachers Association, the National Association for Interpretation, and the George Wright Society. Information on these workshops will be posted in advance.

Nina Roberts (Nina_Roberts@nps.gov) serves as the Natural Resource Education Specialist for the Branch, and will be assisted by a research associate from the University of Colorado. Please contact Nina for further information on educational support services provided by the Information Services Branch.

# Interpretive Liaison

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## Interpretive Liaison

(NPS photo)

The Information Services Branch is engaged in assisting with natural resource interpretive services nationwide, and works closely with the Washington Office Branch of Interpretation.

The Information Services Branch is actively involved with coordinating natural resource interpretive presentations at various NPS workshops and conferences, working with the Parks as Classrooms program, and assisting with Learning Center clearinghouse activities.

A number of servicewide training programs focusing on communicating natural resource subjects and issues will be sponsored by the Branch. Some of these workshops will coincide with affiliated organizations, including the Geological Society of America, the National Science Teachers Association, the National Association for Interpretation, and the George Wright Society. Information on these workshops will be posted in advance.

Lynne Murdock (Lynne_Murdock@nps.gov) serves in the Natural Resource Interpretive Liaison position, and works out of the Washington Office Branch of Interpretation. Please contact Lynne for further information on support services provided by the Information Services Branch.

# Learning Center Clearing House

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## Learning Center Clearing House


(NPS photo)

The National Park Service's newly established research and education Learning Centers have been a vision in the making for several years. The goal of these Learning Centers is to facilitate park research, to ensure managers can make science based decisions about resource issues. In 2001 the Natural Resource Challenge included funding which allowed for the first five centers to open their doors to scientists, students and the community. An additional eight Learning Centers were funded in 2002. Ultimately, it is hoped that there will be upwards of 32 Learning Centers throughout the National Park Service.

Below are some Learning Center PDF files for you to look at:

1: Learning Center: Connecting the Public, Scientists, and Resources

2: Learning Center: 2001 Highlights

3: Purchase Knob: The Appalachian Highlands Science Learning Center

4: Pacific Coast Learning Center

5: Continental Divide Research and Learning Center

6: Ocean Alaska Science and Learning Center

7: Atlantic Learning Center

If you are unable to view the PDF files, you may get the free Acrobat Reader here.

# Natural Resource Year in Review

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## Natural Resource Year in Reviews

The Natural Resource Year in Review are reports that summarize and analyze the year in natural resource stewardship and science in the national park system.

Below you can click on the partial images to go to their respective web pages.

2000 Year in Review


1999 Year in Review


1998 Year in Review


1997 Year in Review


1996 Year in Review


...or you can visit the main page for more information.

# Publication Coordination

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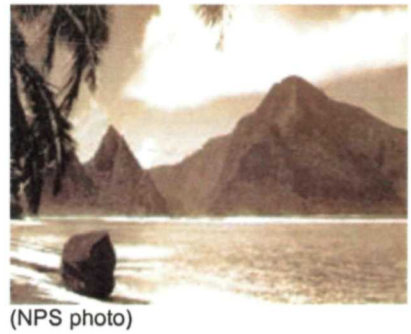
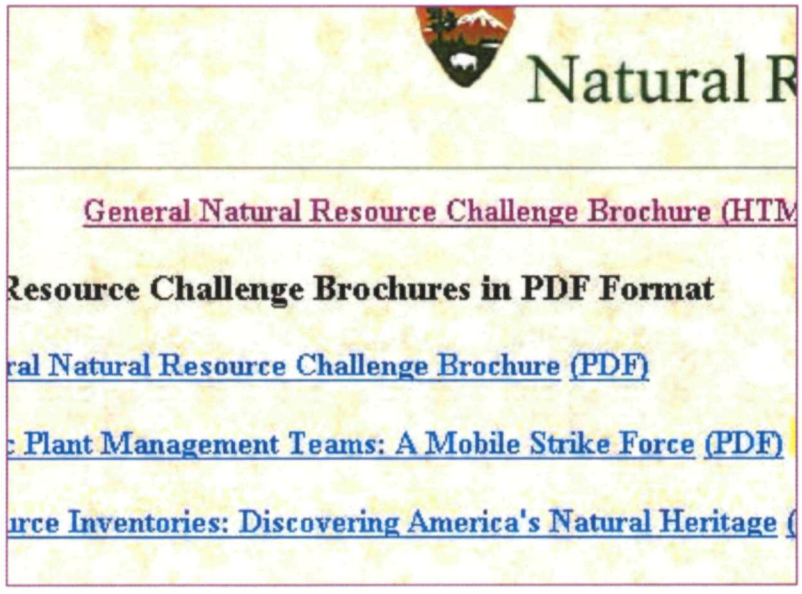
## Publication Coordination


(NPS photo)

The Information Services Branch, as a component of the Natural Resource Information Division, oversees and assists with a number of publications. In addition to producing periodic issues of Park Science and Natural Resource Year In Review, the Branch assists with production of various technical reports, surveys, and briefing papers for the Associate Director for Natural Resource Stewardship and Science.

Carrie Ellen Gauthier (Carrie_Gauthier@nps.gov) is the Branch's Publications Development Specialist, and works within the Associate Director for Natural Resource's office. Please contact Carrie Ellen for general information on publication services provided by the Information Services Branch.

Below is a snapshot of the Natural Resource Challenge website




To visit the website, click the image or below: http:// www.nature.nps.gov/challenge/brochures.htm

# Park Science

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**What is Park Science?**
Park Science is a research and resource management bulletin of the National Park Service. It reports recent and ongoing natural and social science research, its implications for park planning and management, and its application in resource management. Articles describe both experiments that relate to resource conservation and the application of science in resource management practices. Semi-technical in nature, Park Science is edited for the lay reader.


(NPS photo)

**Who is the publisher?**
Park Science is published by the National Park Service, Natural Resource Information Division. The Director of the National Park Service is Robert Stanton, and the Associate Director for Natural Resource Stewardship and Science is Michael Soukup. The editor is Jeff Selleck.

**How often is it published?**
Park Science on-line (ISSN-1090-9966) is published on-line two times annually, usually in the winter and spring. Additional issues, including thematic issues that explore a topic in depth, are published on occasion. All back issues, article submission guidelines, and other useful information related to the publication can be viewed and downloaded from this website.

**Who manages the publication?**
Park Science is managed by an editor, Jeff Selleck of the NPS Natural Resource Information Division, who runs the day-to-day affairs of the publication, including planning, writing, editing, layout and design, and printing contract administration; an editorial board is responsible for general guidance and technical review of article submissions. Funding is provided by the NPS Associate Director for Natural Resource Stewardship and Science through the Natural Resource Preservation Program (NRPP). Elizabeth Rockwell of the Natural Resource Information Division is a contributing editor for the Information Crossfile department.

...to read more about Park Science, please visit the Park Science website.

# Meet the Staff in Detail

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## Meet the Branch Staff

### MIKE WHATLEY

Information Services Branch Manager
Duty stationed in Fort Collins, CO

970.225.3541
mike_whatley@nps.gov

BS Environmental Resources, MS Wildland Resources Science. More than 30 years with NPS beginning as an intern then working in law enforcement before moving to interpretation, public affairs and resource management.

Plans, coordinates, implements and formulates policy for natural resource management information guidelines and procedures, assessment and reporting on the condition of natural resources in parks, and Servicewide strategies for management and dissemination of natural resources information. Manages programs involving the planning, development, and dissemination of interpretive, educational and training materials and courses. Manages department partnerships across government, non-profit and public sectors.

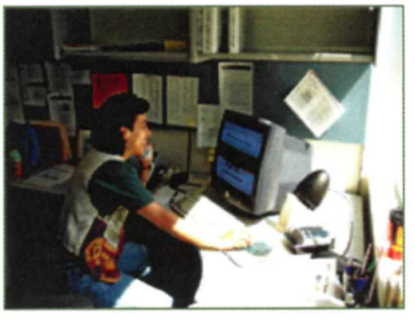
### CARRIE ELLEN GAUTHIER

Publications Development Specialist
Duty stationed in Washington, D.C.

202.208.4624 Room 3025
carrie_gauthier@nps.gov

BA English/Journalism, MBA candidate. Worked as a journalist and photojournalist for magazines, newspapers, and town newsletters before joining NRID in 2002.

Writes, edits and designs publications and electronic presentations for agency, departmental and congressional briefings and for public information release on a variety of natural resource topical areas. Conducts research and interviews for assignment information. Produces fact sheets, briefing papers, press releases, and press kits, coordinates report preparation, and assists with NRID digital photo gallery.



### NINA ROBERTS

Education Specialist
Duty stationed in Fort Collins, CO

970.267.2115
nina_roberts@nps.gov

MS Outdoor Recreation, PhD candidate in Natural Resources Education

Coordinates natural resource educational outreach programs within the NRPC, both curriculum-based and informal. Assists park education specialists with planning and development of natural resource education materials. Develops and reviews policy, guidance, and handbooks. Works with the Parks as Classroom and Learning Center coordinators, and as a liaison to national education and science organizations. Coordinates evaluation of education program effectiveness.

**B. LYNNE MURDOCK**
Interpretive Liaison
Duty stationed in Washington, D.C.

202.565.1221 Room 7321
lynne_murdock@nps.gov

BS Resource Management, MS Earth Sciences. Began as a seasonal park employee, moving to permanent staff in 1986. Worked in interpretation in several parks including as a district interpreter before joining NRID in 2002.

Serves as the Servicewide coordinator on natural resource interpretation, fostering information exchange between parks and divisions and facilitating public information programs. Works with interpretive and natural resource training coordinators, web coordinators, and education specialists to ensure accurate resource information. Serves as the NRSS coordinator for the Learning Centers. Produces interpretive materials for the web and for park distribution.

**JEFFREY SELLECK**
National Series Publication and Production Editor
Duty stationed in Denver, CO

303.969.2147
jeff_selleck@nps.gov

BS Political Science. More than 10 years with NPS including interpretation in 3 national parks.

Manages development and production of Park Science and Natural Resource Year in Review for print and the web, and production of various series and miscellaneous publications. Conducts peer reviews and edits manuscripts. Manages contracts for design and layout of natural resource series. Develops quality control standards for natural resource information products. Provides publications expertise to NPS including GPO printing and circulation.

**JAI TATUM**
Electronic Media Specialist
Duty stationed in Fort Collins, CO

jai_tatum@nps.gov

BS candidate in Communications/Computer Science. Five years experience at the park level with NPS, including web and graphic design for interpretation, and GIS and publication development with natural resource management.

Provides technical assistance to Information Services Branch operations, including preparation and installation of web materials, PowerPoint and Flash presentations, production of interactive CDs, visual image storage and retrieval, production of fact sheets and brochures, and development of spread sheets and other document formats. Assists other Natural Resource Program Center (NRPC) branches and operations, including providing data entry for GIS, *Synthesis* and other functions.

# Views of the National Park Service

Natural Resource Information Division
National Park Service
U.S. Department of the Interior

***Views of the National Park Service* is developing a virtual experience for Tonto National Monument (AZ) that shows the connections between the natural resources of the Sonoran Desert ecosystem and the cultural resources of the Salado.**

*"As stewards of the world's finest system of national parks, we have the responsibility to widely share our knowledge about park resources in order to enhance the public's ability to learn from, and to enjoy, its national parks. ."*

— NPS Natural Resource Challenge web site (http://www.nature.nps.gov/challenge/nrc.htm)

## Overview

The concept of *Views of the National Park Service* (*Views*) was initiated in the Spring of 2000 to present National Park Service (NPS) information and messages in an educational and interactive format. This project is intended to help interpreters present the many stories associated with national parks and to allow the public to explore sites of interest that might be inaccessible.

*Views* consists of two complementary components. The first of these, knowledge centers, presents general information and principles on a variety of natural resource themes. These knowledge centers also contain park-specific case studies. Knowledge centers provide a means of connecting national parks that share these natural resource themes.

The second component of *Views* is a series of virtual experiences which provides multimedia gateways to park-based educational experiences. They will help park interpreters and education specialists reach a greater number of people, including park visitors that do not have time to take a ranger-led tour, students in classrooms (local and distant), handicapped visitors who can not reach remote park sites, or members of the public unable to visit the park. The virtual experiences also allow interpreters and educational specialists to re-create historical natural and cultural landscapes. The ability to experience vanished landscapes will provide new understanding of the past.

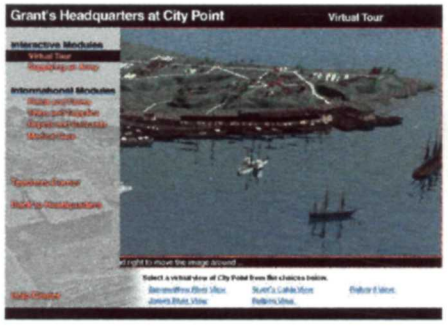
Staff in the WASO-Natural Resource Information Division (NRID) coordinates the project. To ensure high-quality information, subject matter experts from WASO divisions, central offices, and parks are recruited to help design and build the knowledge centers and park-based virtual experiences. The project philosophy is that park educators, interpreters, and resource staff should select the material, the stories, and the best methods for presenting information from their park. This ensures park buy-in, bolsters WASO-park cooperation, and prevents duplication with existing park-based interpretive tools.

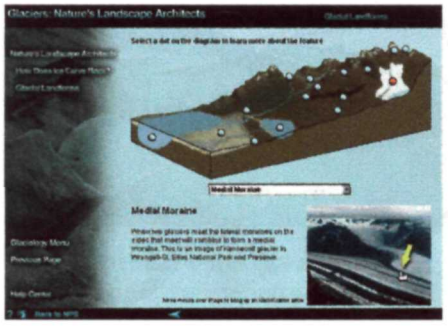
## Goals

The overall goal of *Views* is to provide the NPS with a powerful interactive tool for the enhancement of interpretation and education programs. Major objectives of the project include:

- **Highlight NPS stories**
  There are many interpretive messages found throughout the national park system that can be used to educate people about history, cultures, and the environment

- **Connect parks by natural resources**
  Parks can be connected through such common natural themes as volcanoes, glaciers, and invasive species.




**(Top) Explore re-created scenes of historic landscapes no longer in existence. Here users can explore the Civil War supply depot of City Point in the virtual experience of Petersburg National Battlefield**

**(Bottom) Learn the basics of natural resource themes found throughout the national park system in knowledge centers like the one on glaciers.**

- **Integrate natural and cultural themes**
  *Views* can help show the relations and interdependencies between natural and cultural resources in the national park system

- **Flexible use**
  Designed to be used in classrooms, visitor centers, homes, and on the Internet

- **Future expansion**
  Designed in a modular format to facilitate connections with current and future resources.

## Features

*Views* is designed to be an interactive program for use in interpretation and education programs. Here are some of the features found within the program:

- **Virtual experiences**
  Virtual experiences allow park staff to carry their message out to a greater audience. Virtual experiences can take people to the site, immerse them in an interpretive story they want to learn about, and explore connections to other national parks.

- **Knowledge centers**
  The foundation of the NPS is built upon a collection of natural, cultural, and historical themes. A tapestry of ecosystems can be explored throughout the national parks, each providing its own story about the natural world found on this planet. Knowledge centers provide a means to explore these themes and see how national parks can collectively educate the public.

- **Innovative multimedia presentation**
  Material can be portrayed using many different innovative techniques. Video and audio clips can be presented, panoramic images can show scenic areas and allow users to interact with the environment, and scenes that no longer exist can be re-created.

- **Modular design**
  Each part of *Views* is designed to be modular. This allows future knowledge centers and virtual experiences to be added and allows teachers/interpreters to select those modules that complement their curriculum. Also, links can be made between the parts of Views to integrate the data into one presentation.

- **Multiple platforms**
  The program is designed to be run using any web browser, so any computer platform can access *Views*. This program can be put on a CD or on the Internet, so educators can use the program in classrooms, visitors can take the program home, and interpreters can use it in kiosk or on the Internet.

These features are evolving daily, so more detail under each feature can be expected. We are always looking for additional help or feedback, so feel free to contact us.

## Contact us

**Bruce Nash** - Project Manager
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**Dave Krueger** - IT Specialist
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(303) 969 - 2033

**Erika Waite** - SCEP
erika_waite@nps.gov
(303) 969 - 2684

## Web address

(NPS NatureNet)
www2.nature.nps.gov/synthesis/views

(NPS Intranet)
www2.nrintra.nps.gov/synthesis/views

# Invasive Species Knowledge Center

Natural Resource Information Division
National Park Service
U.S. Department of the Interior

**Bent's Old Fort National Historic Site and the Arkansas Valley Correctional Facility (Ordway, CO) have a partnership where convict labor is used to remove dense stands of tamarisk.**

*"The invasion of exotic species is one of the most serious threats that parks face today and if exotics are not actively and aggressively managed, the National Park System is at risk of losing a significant portion of its biological resources."*

— NPS web site on exotic species (http://www.nature.nps.gov/wv/exotics.htm)

## Overview

The National Park Service (NPS) is charged "... to conserve the scenery and the natural and historic objects and the wildlife therein... as will leave them unimpaired for the enjoyment of future generations (NPS Organic Act of 1916)." Invasive species are a threat to that mission due to their ability to alter native habitats by disrupting the organisms and processes that normally occur there.

The Natural Resource Information Division (NRID) and the Biological Resource Management Division (BRMD) have teamed up to create a knowledge center on invasive species. This knowledge center explores the questions of what is an invasive species, what are the different ways they negatively impact NPS lands, and how the NPS is dealing with invasives.

This knowledge center was designed by members of BRMD to include these major themes: Overview of invasive species, impacts of invasive species, stories of invasion, management actions, prevention, partnerships, and restoration efforts. The idea is to provide basic information about invasive species, expand on specific case studies of invasives, and show how various partnerships have cooperated to prevent, control, and eradicate invasive species.

Work began on this knowledge center in January of 2002.

## Features

The Invasive Species knowledge center provides basic information on the problem of invasive species, as well as case studies of invasives and how different parks are dealing with them. Here is a list of some of the different features:

- **Overview of invasive species**
  A collection of information on what are invasive species, when (and how) they impact an area, where they originated, how many exist, and why it is important to care about them
- **A multitude of impacts of invasives**
  Many different economic-, ecologic-, and health-orientated reasons on why it is important to deal with invasive species
- **Stories of invasion**
  Case studies of different invasive species that impact the health of the ecosystems found within the national park system
- **Management actions**
  Various different ways resource managers deal with invasive species, as well as the broader issues which affect their management decisions. Some examples which are presented are: prioritization of which invasive to deal with first, what are the possible results of different control methods, and who needs to be involved in controlling the invasive
- **Partnerships dealing with invasives**
  Partnerships are key to successful prevention, control, and/or eradication of invasive species. This section highlights some of the partnerships the NPS have developed



**(Top) Learn about the Exotic Plant Management Teams (EPMTs) created by the Natural Resource Challenge.**

**(Bottom) Learn the basics of invasive species to get a better understanding of how they are impacting the national park system.**

- **Restoration efforts**
  The ultimate goal of managing invasive species is to return the invaded ecosystem back into a natural one before invasion. This can be done passively by controlling the invasive or actively by replanting and reintroducing native species

These features are evolving daily, so more detail under each feature can be expected. There are web links throughout the knowledge center that link to areas of expertise when additional information is desired.

## Partners

The invasive species knowledge center is being developed with the help of a variety of different people and organizations. NRID and BRMD express special thanks to:

- **NPS Exotic Plant Managment Teams**
- **Saint Croix National Scenic Riverway**
- **Bent's Old Fort National Historic Site**
- **James Madison University**
- **Haleakala National Park**
- **Theodore Roosevelt National Park**

We're always looking for more partners, so if you are interested in helping with this project please contact us!

## Uses

The invasive species knowledge center can be used in a variety of applications. Teachers can use knowledge centers to educate students about invasive species and introduce students to the national park system. Parks can use the knowledge center as a primer on invasive species before going into detail about the specific invasive species tht are impacting them. Everyone can use this knowledge center to learn why invasive species are important to deal with, how they can impact everyday life, and what they as individuals can do to make a difference.

## Views of the NPS

*Views of the NPS* (*Views*) is an interpretation and education program being developed by the Natural Resource Information Division to promote natural resources themes and present them to the public.

*Views* has virtual experiences of specific national parks that tell their unique stories, and knowledge centers that cover natural resource themes. *Views* strives to connect individual national park based on these themes, as well as show how these themes relate to cultural resources and history.

*Views* is being developed in a modular format that can be taken to schools on a CD, placed in visitor center kiosks, and accessed on the internet.

## Contact us

**Bruce Nash** - Project Manager
bruce_nash@nps.gov
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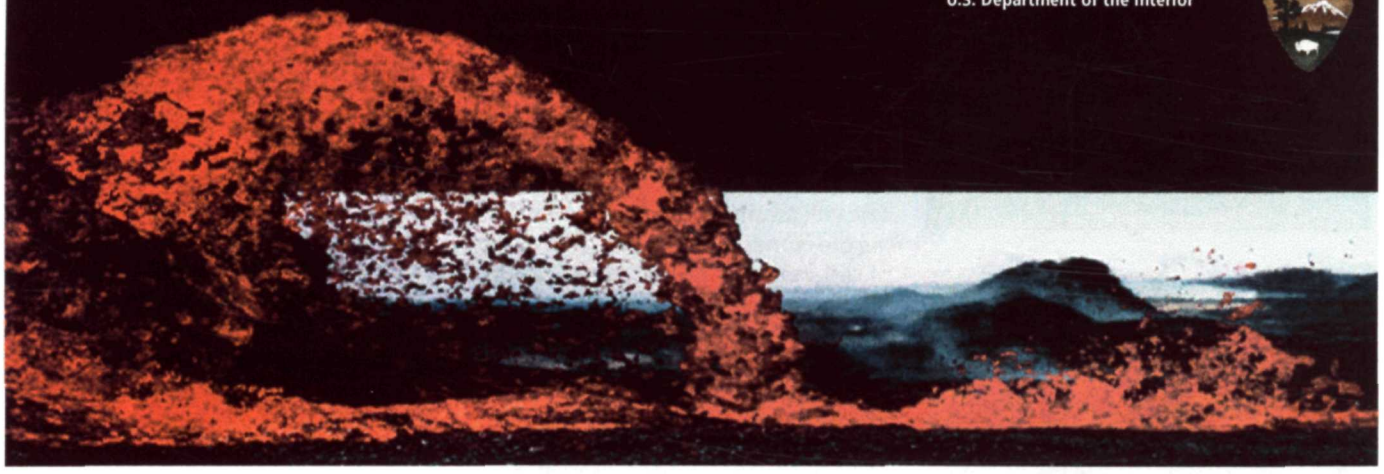
## Web address

(NPS NatureNet)
www2.nature.nps.gov/synthesis/views

(NPS Intranet)
www2.nrintra.nps.gov/synthesis/views

# Volcanism Knowledge Center

Natural Resource Information Division
National Park Service
U.S. Department of the Interior



**Spectacular views from eruptions at Hawaii Volcanoes National Park in Hawaii inspire curiosity about the Earth and the power of volcanoes.**

*"We had circles and serpents and streaks of lightning all twined and wreathed and tied together, without a break throughout an area more than a mile square, and it was with a feeling of placid exultation that we reflected that many years had elapsed since any visitor had seen such a spendid display."*

— Mark Twain on visiting Kilauea in 1866

## Overview

It is through the process of volcanism that land is added to the Earth, and the planet's surface is constantly changing. There are many units in the national park system that encompass volcanic features. Central to interpretation at these parks and geology education in classrooms is the understanding of volcanism.

The Natural Resource Information Division (NRID) and the Geologic Resource Division (GRD) have teamed up to create a knowledge center on volcanism. This knowledge center explains what volcanoes are, how they are formed, where the are found, and the features and landscapes they create. Also, the knowledge center explores the various eruptions and hazards associated with volcanoes, and introduces users to the monitoring and forecasting techniques used by geologists .

This knowledge center exposes users to the processes and products of volcanism. It allows users to thoroughly explore the science of volcanoes, and see the results of volcanoes of the past and present in National Parks. Parks face issues such as destruction of roads and buildings by active lava flows in Hawaii Volcanose National Park and mining of lava rocks from cinder cone volcanoes in Capulin Volcano National Monument.

Work began on this knowledge center in Spring of 2001.

## Features

The volcanism knowldge center is an interactive and exciting way to teach the concepts associated with volcanic activity. Here are some of the features:

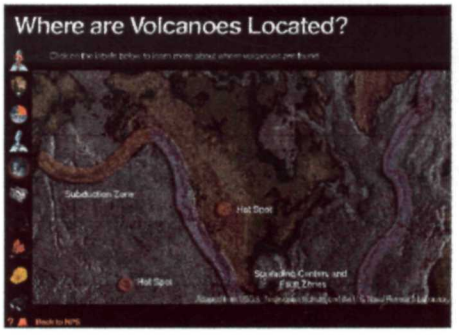
- **Overview and Types of Volcanoes**
  These introductory sections allow users to click on an image of a volcano to learn about it's structure. Users can learn to visually identify and differentiate between shield volcanoes and stratovolcanoes.

- **Volcanic Rocks and Landforms**
  Not everyone can see an erupting volcano, but most people are able to see volcanic rocks and landforms such as old lava flows, craters, or geothermal features created by volcanic activity. These sections explain the formation of volcanic landscapes and the types of rocks produced by volcanoes.

- **Volcanic Eruptions and Hazards**
  In two sections packed with vivid images of erupting volcanoes and the hazards they create, users can learn the differences between effusive and explosive eruptions, and see the hazards associated with lava, volcanic gases, landslides and pyroclastic flows.

- **Monitoring and Forecasting**
  This section deals with the science of volcanology. Small case studies on the different types of monitoring, such as remote sensing, emissions, and seismology, are covered.

- **Case Studies**
  Throughout the knowledge center, case studies from various parks are used to illustrate concepts of volcanism.


**(Top) Choose from the main menu a volcanism topic to explore**

**(Bottom) Explore a map of the world to see where volcanoes form. Learn about hot spots, subducion zones, and spreading centers.**

These features are evolving daily, so more detail under each feature can be expected. There are web links throughout the knowledge center to link users to more extensive information or to park web pages.

## Partners

The volcanism knowledge center is being developed with the help of a variety of different people and organizations. NRID express special thanks to:

- **Hawaii Volcanoes National Park**
- **NPS Geolologic Resources Division**
- **University of Denver**
- **USGS Alaska Volcano Observatory**
- **USGS Hawaii Volcano Observatory**
- **USGS Cascade Volcano Observatory**

It is the teamwork between NRID and parks and also other NPS offices that allows the knowledge centers to be so broad and complete. The volcanism knowledge center is still in development, so if you would like to see features added or changed, please contact us in the NRID. We are always looking for new partners.

## Uses

The knowledge center on volcanism was developed for several uses. First, it can be used in interpretation programs at parks with volcanic features. Visitors will have a much richer experience of a park if they have basic exposure to the natural resource themes of that park. This knowledge center can also be used to emphasize connections between units of the national park system. There are numerous parks that contain volcanic features, yet many of these are confronted with simmilar resource management issues. Also, the volcanism knowledge center is designed modularly, so teachers can used it in its entirety or in part to expose students to the concepts of volcanoes. The case studies from different parks give students real examples of volcanoes and the landscapes they create to generate greater understanding of the process of volcanism as it has operated in Earth's past and continues to operate today.

## Views of the NPS

*Views of the NPS* (*Views*) is an interpretation and education program being developed by the Natural Resource Information Division to promote natural resources themes and present them to the public.

*Views* has virtual experiences of specific national parks that tell their unique stories, and knowledge centers that cover natural resource themes. *Views* strives to connect individual national park based on these themes, as well as show how these themes relate to cultural resources and history.

*Views* is being developed in a modular format that can be taken to schools on a CD, placed in visitor center kiosks, and accessed on the internet.

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# Glaciology Knowledge Center

Natural Resource Information Division
National Park Service
U.S. Department of the Interior

**Views of Kennicott glacier in Wrangell-St. Elias National Park and Preserve in Alaska. Learn all about glaciers in this interactive knowledge center.**

*"Like great rivers of ice, glaciers have sculpted mountains and carved out valleys, and they continue to flow and shape the landscape in many places today."*

— National Snow and Ice Data Center (http://nsidc.org/glaciers/information.html)

## Overview

Glaciers are powerful sculpters of the natural landscape in which they are found. These flowing bodies of ice can carve wide valley, transport massive volumes of sediment and boulders, and create large moraines.

The Glaciology knowledge center delves into basic questions of what is a glacier, where are they found, how do they form, and why do they sculpt the surrounding landscape.

The knowledge center also examines all of the different types of landscapes that can result from alpine and continental glaciation and shows examples of these features from different national parks.

National parks are also brought together to show how glaciers have affected several parks in similar ways. Also, each park details some of the unique glacial features that may be found within their borders.

Work began on this knowledge center in August of 2001.

## Features

The Glaciology knowledge center provides basic information on glaciers and some of the different aspects of glacial morphology and study. Here is a list of some of the different features:

- **Overview of glaciers**
  An exploration into the many facets of glaciers. What is a glacier? What are the different types of glaciers? How does a glacier form? What causes a glacier to move? Where are glaciers typically found?

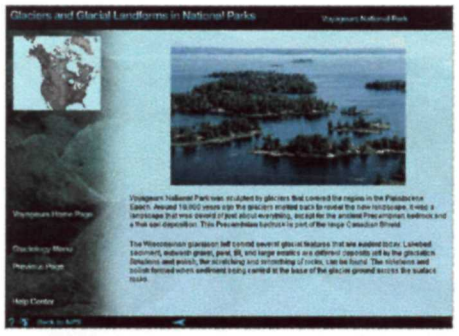
- **Glacial landforms and landscapes**
  Learn about how ice is capable of carving rock, then learn about the different depositional and erosional landforms that can result from alpine or continental glaciation

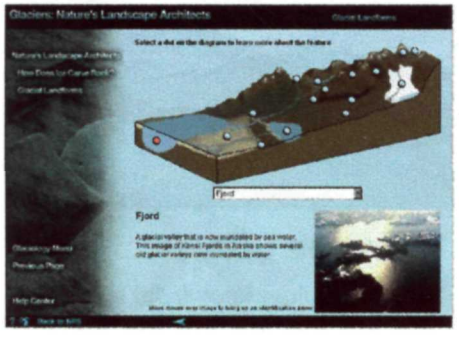
- **National parks and glaciers**
  See how many different national parks hold glaciers or show signs of past glaciation.

- **Past glacial coverage (future)**
  Learn about past glaciation events that impacted large regions. Find out some of the theories behind global warming and cooling

- **Glacial monitoring (future)**
  See the different techniques used to study glaciers and monitor how they change over time

- **Challenge your understanding (future)**
  A section devoted to seeing how well you understand glaciers. Also provides teaching standards, class exercises, and ideas for bringing glaciers into the classroom




**(Top) Learn about the different ways glaciers and glacial landforms are represented in our national parks.**

**(Bottom) Learn about the different aspects of glaciers, like the many different landforms that can result from alpine glaciers.**

These features are evolving daily, so more detail under each feature can be expected. There are web links throughout the knowledge center that link to areas of expertise when additional information is desired.

## Partners

This knowledge center is currently being developed with the help of the Geologic Resources Division of the National Park Service.

We're always looking for more partners, so if you are interested in helping with this project please contact us!

## Uses

The Glaciology knowledge center can be used in a variety of applications. Teachers can use knowledge centers to educate students about glaciers and introduce students to the national park system. Parks can use the knowledge center as a primer on glaciers before going into detail about the specific features of or landforms resulting from glaciers. Everyone can use this knowledge center to learn more about glaciers and where glaciers and glacial landscapes are found throughout our national parks.

## Views of the NPS

*Views of the NPS* (*Views*) is an interpretation and education program being developed by the Natural Resource Information Division to promote natural resources themes and present them to the public.

*Views* has virtual experiences of specific national parks that tell their unique stories, and knowledge centers that cover natural resource themes. *Views* strives to connect individual national park based on these themes, as well as show how these themes relate to cultural resources and history.

*Views* is being developed in a modular format that can be taken to schools on a CD, placed in visitor center kiosks, and accessed on the internet.

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# Pu'uhonua o Hōnaunau

**National Historic Park • Hawaii**

Natural Resource Information Division
National Park Service
U.S. Department of the Interior

## A Virtual Experience

**Pu'uhonua o Honaunau National Historic Park is located on the island of Hawaii, about 22 miles south of Kailua Kona.**

*"The place of refuge (pu'uhonua) at Hōnaunau was the most continuously acitve, perhaps the largest, and certainly one of the most important pu'uhonuas in the Hawaiian Islands."*

— Pu'uhonua o Hōnaunau National Historic Park Master Plan, 1977

## Overview

The National Park Service (NPS) is charged "... to conserve the scenery and the natural and historic objects and the wildlife therein... as will leave them unimpaired for the enjoyment of future generations (NPS Organic Act of 1916)." Preservation and protection of historic cultural sites such as the landscapes and archaeological treasures at Pu'uhonua National Historic Park (NHP) will provide for visitors a gateway into traditional Hawaiian ways of life.

The Natural Resource Information Division (NRID) has teamed up with the University of Denver, the NPS Pacific Islands Support Office, and the staff at Pu'uhonua o Honaunau NHP to produce a virtual experience of the park. This program gives users opportunites to experience the beautiful scenery of the park, and also learn about the natural and cultural resources that shape the story of ancient Hawaii.

This virtual experience was designed by NRID to incorporate the major themes of interpretation at the park. There is an overview of the park's history and resources, brief sections on natural and cultural resources, and three distinct virtual trails with interpretive stops through the park.

The process of building this virtual experience was begun in the spring of 2001. Over the 2001 summer, imagery and information were collected at the park for incorporation into the project.

## Features

The virtual experience of Pu'uhonua o Honaunau NHP was designed to complement the interpretive program at the park, both to enhance the experience of visitors at the park, and to provide an educational tool for classrooms. Here are some of the topics covered:

- **About the Park**
  A brief section about the history of the park - establishment, acreage, primary resources, and attractions

- **Tour the Royal Grounds**
  Users navigate through this tour via an interactive map. In this section, information on the lives of the ruling chiefs, the *ali'i,* of Honaunau is presented.

- **Explore the Pu'uhonua**
  Interactive guided tour of the place of refuge. Also develops the concepts of the Hawaiian sacred law or *kapu* system and the practices of offering asylum.

- **The 1871 Trail to Ki'ilae Village**
  This section provides access to another aspect of the park that is frequently missed by visitors due to time constraints and limitations of physical ability. The 1871 Trail is part of an historic trade route. Along the way, travelers can learn about geologic and archaeological features.

- **Natural Resources**
  The natural landscape and available resources influence the culture that develops in an area. Learn how the Hawaiian resources affect life on the island, and also some current environmental issues faced at the park.



**(Top) Navigate to the various parts of the virtual experience via an interactive index page.**

**(Bottom) Expand the available information by clicking on additional links at each stop along the virtual trails.**

- **Cultural Resources**
  The park is rich in cultural resources, and these enable visitors to learn about the past of Honaunau and the culture of the people that thrived there.

## Uses

This virtual experience is designed to be versitile and compatible with interpretive programs at the park, or classroom curricula. The html format of the program makes it possible to run it on a CD or over the internet. Having the virtual experience available in the park visitor center will help to give visitors a larger, more informed sense of the park. It can also open up areas of the park , such as the 1871 Trail or the interior of the Pu'uhonua that others may not be able to reach. Teachers can use the virtual experience in their classrooms to bring to life history and ancient Hawaiian cultural practices such as government, the *kapu* law system, and the concept of refuge or *pu'uhonua*. The virtual experiences will also be available online to allow students and the general public access for use in research or recreation.

## Views of the NPS

*Views of the NPS* (*Views*) is an interpretation and education program being developed by the Natural Resource Information Division to present both natural resource themes and the unique stories of each national park system unit to visitors, students, and the public.

*Views* has virtual experiences of specific national parks that involve users in the stories of individual parks, interlacing the natural and cultural resource themes that combine to create the park's signifigance. In addition to Pu'uhonua o Honaunau National Historic Park, virtual experiences are being created for Petersburg National Battlefield (VA), Tonto National Monument (AZ), and Timpanogos Cave National Monument (UT). *Views* also incorporates knowledge centers that introduce and enhance understanding of natural resource themes such as volcanism, glaciology, paleontology, hydrology, ecology, and invasive species. One important goal of the *Views* project is to empahsize the connections between individual national parks based on natural and cultural resourse themes. It is also important to connect natural and cultural resources, and how interactions between them shape the stories of the nation's parks.

*Views* is being developed in a modular format that can be taken to schools on a CD, placed in visitor center kiosks, and accessed on the Internet.

## Partners

The support, cooperation and collaboration of many people has made the development of this virtual experience possible. Many thanks to:

- **Pu'uhonua o Honaunau National Hitoric Park Resource Managers, Interpreters, and Volunteers**
- **NPS Pacific Islands Support Office**
- **Hawaii Volcanoes National Park**
- **University of Denver**

## Contact us

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(NPS NatureNet)
www2.nature.nps.gov/synthesis/views

(Pu'uhonua o Honaunau)
http://www.nps.gov/puho
*The park does not yet have a link to the virtual experience, but it will in the future.*

# Natural Resource Challenge: Learning Centers

National Park Service
U.S. Department of the Interior

*Learning Centers have been a vision in the making for several years. The goal of these Learning Centers is to facilitate park research to ensure managers can make science-based decisions in resource issues. In 2001, the Natural Resource Challenge included funding for the first five centers to open their doors to scientists, students, and the community. Achievements for the Centers' first year of operation are highlighted here.*

## Highlights

## The Vision Behind Learning Centers

Don McGowan

**Students collect beetles during an intensive 24-hour inventory**

Learning Centers are places where science and education come together to preserve and protect areas of national significance. Each center will offer a place for researchers to stay, involve the education community in resource management projects, and form concrete partnerships to insure sustainability. Information gathered by researchers will be used by superintendents to make resource decisions, and by educators to expand their use of parks to teach science. As a main priority, Learning Centers will also leverage resources to reduce the accumulation of infilled funding requests.

*Five pilot Learning Centers were funded for fiscal year 2001. Each of these centers is strategically placed at key areas across the country. The hope is that a system of 32 learning centers nationwide will eventually be established.*

## National Learning Center Forum

Over 50 people from across the country attended the 2-day National Learning Center Forum held at Point Reyes National Seashore. There was representation at all levels including Denis Galvin-NPS Deputy Director, John Reynolds-Pacific West Region Director, and Nora Mitchell from the Conservation Study Institute. Participants attended from all Learning Centers including those which had received funding, and those that were proposed for the following fiscal year. Partners from the Alice Ferguson Foundation, North Cascades Institute, and the Denali Foundation were also present.

This forum was the first opportunity to discuss the common goals of all the Centers. Strategies being used at the new centers to integrate science, education, and stewardship were presented. Specific research, education, and partnership efforts were also discussed to serve as potential models for all current and proposed Learning Centers.

## Natural Resource Challenge

**The National Park Service's Action Plan for Natural Resources**

The National Park Service (NPS) is undertaking a major five-year action plan to advance the management and protection of natural resources in the National Park System. Called the Natural Resource Challenge (or simply the Challenge), this enterprise is focusing energy, commitment, and resources on the NPS mission to preserve and protect our natural heritage for the American people.

Blair French, University of Alaska Fairbanks

**Gathering information on black bears to aid in management decisions.**

| Learning Center FY01 | Location |
|---|---|
| Purchase Knob: The Appalachian Highlands Science Learning Center | Great Smoky Mountains National Park |
| Pacific Coast Learning Center | Point Reyes National Seashore |
| Continental Divide Research and Learning Center | Rocky Mountain National Park |
| Ocean Alaska Science and Learning Center | Kenai Fjords National Park |
| Atlantic Learning Center | Cape Code National Seashore |

# Purchase Knob: The Appalachian Highlands Science Learning Center

***At "Purchase Knob: The Appalachian Highlands Science Learning Center" in Great Smoky Mountains National Park, staff are working towards full integration of scientific research and education, where each function works to maximize the other. Currently, the existing house at Purchase Knob is being renovated with offices, a lab space for scientists to process specimens, an activity pavilion and rest rooms for visiting school groups.***

Students sampling moss for a Tardigrade Inventory.

## Creating Opportunities to Bring Science and Education Together

In the Learning Center's first year of operation, 39 out of 155 permit holders in the Smokies interacted with an educational group. Twenty different scientists were able to extend their stay at the park by spending the night at Purchase Knob.

One remarkable example of an integration of research and education involved Dr. Paul Bartles of Warren Wilson College in Asheville, NC. He is studying Tardigrades (microscopic "water bears") at high elevation sites in the Smokies. Tardigrades can be found living on mosses and lichens. On two of his collecting trips at Purchase Knob, we arranged for a summer camp of at-risk 8th grade students to learn his techniques and assist in collecting Tardigrades.

These 72 students were visibly excited to be involved in "real" science; they had an opportunity to view Tardigrades under microscopes, discovering a world none of them knew existed. One student commented that he was going to be more careful about where he sits now that he knows there are "all those little things everywhere".

## All Taxa Biodiversity Inventory Moves Forward

Over 100 scientists in the Smokies are collecting data towards a massive effort to inventory all species of life in the park called the All Taxa Biodiversity Inventory (ATBI). Where feasible, the Science Coordinator and the Education Coordinator at the Learning Center are working to integrate education into this research.

## Citizen Scientists

Public participants are also involved in the efforts of the ATBI. "Citizen Scientists" are community members that have been trained in research methods to help forward the All Taxa Biodiversity Inventory. This program is run by Discover Life in America, the non-profit that operates the ATBI. Currently, 70 volunteers have donated 2,400 hours.

## Students Help Collect Research Data

Over 700 students contributed 28,080 hours of research time in Learning Center activities throughout the Park. These students, most in middle and high school, helped discover almost 200 species that are new park records.

Through inventory and monitoring, students are providing distribution information to park managers on hundreds of more species. In addition, new curriculum is being developed for middle school field trips that will involve participants in monitoring salamander populations, assessing the effects of ozone on plants and inventorying soil micro-invertebrates.

## Teachers Updated on Latest Research Methods

Several teacher-training workshops were held including a weeklong seminar in which 24 North Carolina public school teachers were immersed in high elevation research education. 109 Teachers received 130 hours of training in research methods that can be used in their classroom.

Don McGowan

NPS Collection

**Students involved in various ATBI activities such as a beetle blitz (above) and searching for Tardigrades extracted from moss samples (left).**

# Pacific Coast Learning Center

***The recently established Pacific Coast Learning Center at Point Reyes National Seashore is a field station for collaborative research on coastal ecosystems. The center supports coastal research, the accumulation and synthesis of research information, and the transmission of results to managers, students, and the public. To achieve these goals, the field station provides critical office space, housing, computer information systems, laboratory facilities, reference library, and specimen collections to students and scientists.***

## Outside Research Programs Increase Dramatically

The Learning Center recently helped to increase the number of active research permits at Point Reyes National Seashore by 40% (non-park researchers working in the park increased from 50 to 70 during the first year of the center's operation). It is estimated the Center facilitated over $500,000 of research by outside organizations. Research permits for all sites within the San Francisco Bay Network are expected to increase as the Research Catalogue and Learning Center website becomes fully developed.

## First Jobs for High School Students

Two local high school students spent eight weeks this past summer as Biological Science Aids. These students worked 40 hours a week assisting over a dozen researchers with natural and cultural resource management projects. They were able to assist with projects such as vegetation transects, water quality sampling, and electro-fishing. In a final report authored by both the students, they commented that this job allowed them to "see a large perspective of what goes on behind the scenes at the park" and it was also "a great chance to see how much time and effort goes into keeping up such a beautiful place."

NPS Collection

**The historic Hagmaier Ranch has been adapted for use as the Pacific Coast Learing Center.**

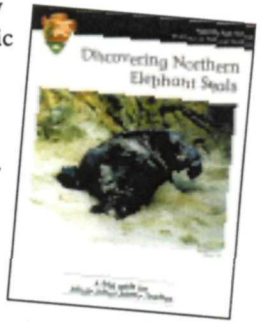
## All Taxa Biodiversity Inventory Begins Development

Learning Center resources are facilitating the early stages of an All Taxa Biodiversity Inventory (ATBI) in Tomales Bay in collaboration with nearly a dozen research groups and individuals. This is a community-based endeavor to preserve, protect and restore the ecological integrity of Tomales Bay and raise public consciousness on effective stewardship of coastal lands.

NPS Collection

**Students document historic fence lines.**

## Science Projects




One of the primary goals for The Pacific Coast Learning Center is to facilitate research on coastal ecosystems. With that in mind, the Learning Center has been collaborating with local conservation and fishing groups to propose nearshore marine protected areas. The Learning Center also facilitated several other projects including Snowy Plover monitoring and a joint Spotted Owl research project with Golden Gate National Recreation Area. In all cases, learning center resources will leverage non-park resources to perform studies.

# Continental Divide Research and Learning Center

***The new Center at Rocky Mountain National Park (RMNP) had four goals for 2001: 1) increase management related research within the park and network; 2) improve the science information about the park reaching the general public; 3) increase the amount of matching dollars supporting RMNP research; 4) develop a research volunteer program. All four of these goals were achieved and programs are now in place to accomplish even more in fiscal year 2002.***

## Matching Dollars Increase Dramatically

During the Learning Center's first year, matching dollars and in-kind contributions for the Rocky Mountain National Park research program soared from ~$100,000 to ~$800,000. About $550,000 was contributed by the Learning Center's partners. An additional $800,000 was raised to support renovation of the historic McGraw Ranch. The Ranch will provide accommodations for researchers and research volunteers when it opens in 2003.

## New Volunteers Recruited through Learning Center

An advertisement in a local newspaper was used to recruit Field Research Assistants for help with an inventory and health study of park amphibians. The ad brought in a dozen new volunteers who enthusiastically looked for frogs and frog eggs in remote streams and lakes. Volunteers also assisted with the first comprehensive survey of glaciers in the park, helped radio tag beaver, and kept an eye on a backcountry study of lake acidification. Volunteers experienced first-hand the ups and downs, literally, of working on field projects in Rocky Mountain's steep terrain. The park benefited from their donated time and from increased community understanding of science-based management. Plans to expand the use of volunteers on research projects in 2002 have been made.

**The Learning Center sponsored a survey of RMNP's glaciers.**

**Volunteers gathered information on amphibian health.**

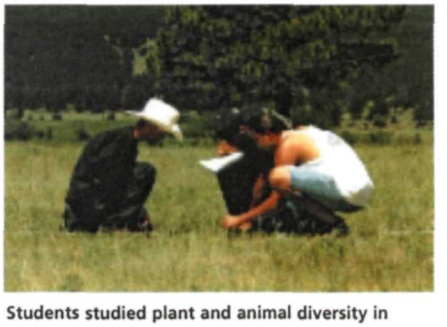
## Rocky Research and Resources Day

A one-day mini-science conference was held to educate local residents about issues within Rocky Mountain National Park. Sixty people from surrounding communities attended as researchers reviewed their projects and results.

## School Programs Provide Real Life Experience

Two programs initiated through the Learning Center helped students develop a real-life understanding of the scientific method:

- Sixty high school students participated in a field trip with a researcher who studies the geochemistry of high elevation watersheds.
- Two high school students enrolled in a National Science Foundation enrichment program were hired as research assistants.



**Students studied plant and animal diversity in park meadows.**

## Historic Archives Protection

Seventeen graduate students from a library science program sorted, cleaned, and annotated historic records as a part of their coursework in a weeklong archives practicum. They were also able to create a database detailing the contents of historic photo albums and repair several rare books. This same course will return to Rocky Mountain next year as well as send a team to Grand Teton National Park.

# Ocean Alaska Science and Learning Center

***The Ocean Alaska Science and Learning Center is based in Seward, Alaska at Kenai Fjords National Park and the Alaska SeaLife Center and is a partnership dedicated to understanding and preserving the marine ecosystem connecting Alaska's coastal National Parks through research and education.***

Alaska SeaLife Center NMFS permit: 881-1443

**Stellar sea lion and research trainer at the Alaska SeaLife Center.**

## Marine Mammal Declines Studied

Western populations of Steller sea lions are listed as endangered in four of the five National Parks within the Southwest Alaska Network which provide critical habitat for this and other marine mammal species. A large, international, and multi-year research project has begun to investigate the dramatic decline of marine mammals over the past two decades (approximately 80% decrease in Steller sea lions and harbor seals). This project is based at the Alaska SeaLife Center, a core Learning Center partner, where scientists are studying diet, disease, habitat, predator/prey relationships, and toxicity.

## Science for Research and Education

- Researchers from the University of Alaska Fairbanks are trapping and radio collaring black bears to assess habitat use along the coastline of Kenai Fjords National Park. Students are also able to participate in this research via Project MASTER, a web-based education program that focuses on satellite and radio telemetry research (www.alaskasealife.org/master). Teacher workshops are providing training to optimize the use of this program and to bring marine research into classrooms across Alaska.
- Remote cameras focused on Steller sea lion colonies send live digital footage to researchers and provide public education. Data collected from these cameras are helping to answer researcher questions about behavioral ecology and provide the public with real-time access to endangered Steller sea lion's lives.

## Housing Provided for Researchers

Several researchers studying international Steller sea lion declines were provided housing through the Learning Center. This included a visiting Russian scientist from the Kamchatka Institute of Ecology and Nature, Far East Division Russia Academy of Science.

## Learning Center Co-Sponsors National Ocean Science Competition

Every year, high school student teams compete in the National Ocean Science Bowl to showcase their marine knowledge and teamwork skills. The competition includes presenting research papers, answering challenging questions, and participating in a coastal management simulation. The Learning Center co-sponsored the competition this year with the University of Alaska Fairbanks, Institute of Marine Science.

National Ocean Science Bowl
Hank Pennington, Pennington Photography

**Coastal management team simulation.**

# Atlantic Learning Center

***The Atlantic Learning is a pioneer program of the Highlands Center at Cape Cod National Seashore. The research facility and educational classroom will serve as a cornerstone for the campus and provide a solid science anchor for the envisioned community of artists, educators and scientists.***

## Science Program Development

The Atlantic Learning Center (ALC) is currently working to establish partnerships with regional research institutions for project development and future occupants or tenants of the facility. Some of the projects generated from the established partnerships are:

- Brown-tailed moth distribution and ecology, University of Massachusetts
- Lower Cape historic landscape investigation, Harvard University
- Horseshoe crab surveys, University of Rhode Island
- Genetic diversity of coyote populations, Middlebury College
- Gulf of Maine ocean observation system, University of Maine
- Historic landscape investigation, Harvard University

This publication was produced by the National Learning Center Commitee, January 2002

**Susan Sachs,**
Great Smoky Mountains National Park

**Lisa Matlock,**
Kenai Fjords National Park

**Judy Visty,**
Rocky Mountain National Park

**Lauren McKean,**
Cape Cod National Seashore

**Christie Anastasia,**
Point Reyes National Seashore

**Special Thanks to:**

**Abigail Miller,**
Washington Support Office

**Don Neubacher,**
Point Reyes National Seashore

NPS collection

**The Atlantic Learning Center facility is the former North Truro Air Force Station.**

The ALC is also currently developing a "Research Catalogue" of desired natural resource projects. ALC scientists will work closely with the Inventory and Monitoring (I + M) prototype program to enhance protocol development through interaction and review.

## Education Program Development

The Parks as Classroom coordinator has established several educational programs in association with the ALC. The park I + M program has delivered interactive lecture presentations and led field study programs for over 2,400 people from the general public to school groups and educators. The ALC was also associated with three university level field and classroom courses in ecology, geomorphology and mammalogy.

The University of Rhode Island (URI) is currently developing a field biology methods course that will be offered through the ALC in association with park I + M programs.

## Facility Progress

Contracts for interior demolition and design for rehabilitation of two buildings at the former North Truro Air Force Station, a visiting researcher wet/dry laboratory, and an educational classroom facility have been awarded and work is currently underway.

## Project Support

- Intel Corporation donated furnishings and laboratory equipment, such as ventilation hoods, stainless steel racks, laboratory work benches, desks, and chairs.
- The National Renewable Energy Laboratory pledged $25,000 through the Federal Energy Management Program to help design the most sustainable facilities possible.

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# Community Outreach Strategy
# For
# U.S. Virgin Islands National Monuments in the Sea

This outreach strategy seeks to address and overcome many old impediments to effective stewardship of marine resources in National Park System units in the Virgin Islands. The new Virgin Islands Coral Reef National Monument and the expanded Buck Island Reef National Monument provide opportunities to identify common ground among concerned local and national communities and the National Park Service and to build effective stewardship on those shared goals. This strategy identifies four elements that begins with a search for common ground, frames an essential message to share, recognizes critical audiences, and identifies potential delivery tools for the message. Leaders of the National Park Service intend for this strategy to help forge a stronger bond between them and concerned local and national communities regarding stewardship of National Park System units in the Virgin Islands. It will begin with the National Park Service reaching out to various individuals and groups with a message about the National Park Service mission, goals, and concerns that will lead to expressions of interest and concern by the communities. They expect that this will, in turn, develop into a broad and ongoing discussion of common interests, shared goals, and opportunities for cooperation and collaboration.

By implementing this strategy, the National Park Service expects to:

1. Better understand local community concerns and expectations regarding shared stewardship.
2. Identify common interests and goals for stewardship among local and national interests and National Park Service responsibilities derived from law and policy.
3. Increase community awareness of National Park Service mission, goals, and core values, and to connect with concerned citizens sufficiently to engage them in shared stewardship.
4. Plant seeds to grow the next generation of park stewardship.
5. Restore integrity and resilience of damaged resources and sustain unimpaired parks.

## I. Common Ground

The major purpose of this outreach program is to overcome many of the obstacles that have prevented effective conservation of marine resources in national parks in the past (see attached list). Community acceptance and commitment to shared goals form the bases of the most effective conservation programs. This strategy begins with a search for common ground among local and national communities and the National Park Service's mandate to preserve parks unimpaired for the enjoyment of future generations. The agency's mission requires it to know and understand the condition of parks and how they function; to restore integrity and resilience of impaired parts of parks, to protect parks and mitigate threats to parks; and to connect people to parks so they can experience their heritage. Collectively searching and identifying common ground will help develop and strengthen communication and trust among communities and the National Park Service.

All of the groups identified here (Section III) have interests that overlap with National Park Service responsibilities in the Virgin Islands. No group is expected to change their interests to increase the common ground. Rather, the goal of this effort is to discover, identify, and acknowledge the areas of common interests to better achieve shared stewardship of common heritage.

## II. Message

The National Park Service needs to craft a specific message to facilitate the search for common ground. The message needs to be simple and straightforward. It needs to address concerns for fairness and equitability in the allocation of resources and opportunities. It should include a brief, clear statement of concerns about resource conditions and opportunities, and avoid assigning blame for current conditions. When appropriate, it should also incorporate National Park Service core values of shared stewardship, excellence, integrity, tradition, and respect. Four major elements of the message are:

A. People are connected to the sea in many ways. (ecological connectivity exercises)

B. The National Park Service preserves common heritage, in the sea this concept bay be captured by a phrase such as *Fish Forever.* The National Park Service wants to preserve ocean heritage and pass it on to future generations unimpaired for their enjoyment. In other words, we want to give our children the same opportunities to enjoy the sea that our parents gave us. To do that, we must find ways to have *Fish Forever.*

C. The new and expanded national monuments in the Virgin Islands preserve heritage. Former marine protected areas in the Virgin Islands and elsewhere have generally had limited success in sustaining ocean communities for a wide variety of reasons, typically related to fishing. Better knowledge of marine ecology and broad community support for more effective ocean conservation assure a better outcome with current efforts.

D. Community support and involvement can assure fair and effective management of the national monuments.

## III. Audiences and Potential Participants

Many sectors of local, national, and international communities have direct connections to the new and expanded national monuments. Each group constitutes an audience for the message and potential partners in shared stewardship, and each may be reached through a variety of means. Among the most important sectors identified for this outreach are the 26 listed alphabetically below. The proposed delivery tools for each sector are indicated by a number from section IV:

Boating – sailing and power communities (2,5,7)
Charter boats (1,2,3,5,7)
Church Groups (6)
Civic groups, e.g., Rotary Club, Lions Club, Boy Scouts (2,6,7)
Concessionaires (1,2,3,7)
Cruise ship companies (5,7)

Eastern National Park and Monuments Association (7)
Ferryboat, seaplane, and airline companies (2,3,7)
Fishermen – commercial and subsistence (1,2,3,6,9)
Fishermen – recreational (1,2,3,6,9)
Hoteliers and real estate companies (5,7)
Island-based hard industries e.g., distilleries, refineries (7)
Natural local leaders (1,3,6)
Non-Governmental Organizations, e.g., The Ocean Conservancy, [non-environmental group?] (2,3,6)
Park and other NPS professionals, regional and national (2,8,9)
Media professionals (print & electronic) local and national (1,6,7,8)
Schools, especially science teachers and students (3,5,8)
Scientific community (2,3,5)
Taxi associations and other park business partners (1,2,3,7)
Travel agencies (1,2,3,5,7)
U.S. public off-island (2,3,4,5)
U.S. Virgin Islands Congressional Delegate and other elected officials (1-4, 6-9)
Virgin Islands Chamber of Commerce & local business community (2,3,7)
Virgin Islands government officials (1,2,3,4,6,7,8,9)
Virgin Islands residents (1,2,3,5)
Water sports organizations, e.g., Fin men, dive clubs, PADI, NAUI (2,7)

## IV. Delivery Tools

Just as many segments of the nation have connections to the national monuments, effective communities with these diverse publics requires equally diverse and specifically crafted means of connection. The following tools have been used effectively in similar outreach programs, and can be matched and mixed to ensure adequate coverage and interaction with the various communities.

1. Town meetings
2. Print media
3. Electronic media (radio, television, video tape, DVD)
4. Letters of support to decision makers
5. Internet web sites
6. Personal interviews and conversations
7. Formal and informal meetings (government officials and others)
8. Site tours
9. Workshops to share experiences with people from other regions

## V. Outcomes

As a result of implementing this strategy:

1. The National Park Service will know and understand how local communities view and value National Park System sites and National Park Service stewardship programs.
2. Local communities will know and understand National Park Service mission, goals, and core values and how they relate to efforts to preserve local and national heritage.

3. Concerned citizens will share stewardship, generate local and national support, cooperate, and collaborate for conservation.
4. The next generation of park stewards will be able to better represent local and national interests and enjoy the support of these diverse communities.
5. Damages resources will be restored and the integrity and resilience of unimpaired parks will be sustained.

VI. Next Steps

A. Match audiences and sectors with delivery tools

B. Identify products and time frames for deliveries

- Immediate action: Check with Corky Mayo regarding refining and matching message, products, and audiences as a prototype for other ocean parks and as a model for improving park and local community relationships.

C. Identify resources needed to implement the strategy

D. Acquire a champion for the outreach campaign. (*a champion of concerned citizens for conservation*)

- Immediate Action: Check with Jared Ficker regarding a "Sabbatical in the Park" candidate for Summer 2002.

Old Impediments to Effective Preservation of Nature in the Sea National Park Service Units in the U.S. Virgin Islands

1. Misperceptions about the ocean:
   a. Too big to be affected by people
   b. Out of sight, out of mind
   c. Impossible to see effects of people or to grasp the beauty
   d. Fish wander so much, they can't be protected in a place
2. Threats to the ocean are often beyond the control of park managers, and managers lack the knowledge of legal and other remedies available to resolve conflicts and damage.
3. The burden of proof regarding environmental damage is reversed in the sea; activities in the sea are considered benign until irreparable damage is documented, only then are activities curtailed, whereas on land people must show that what they proposed to do will have little environmental impact before they are allowed to proceed.
4. Marine resources are already so impaired it is difficult to inspire conservation.
5. NPS is overwhelmed by demands for visitor services, thereby causing neglect of resources stewardship until crises occur.
6. Ecological restoration in the sea is more difficult and more expensive than on land – therefore often considered lower priority.
7. Ocean issues are often contentious and controversial, especially fishing – so change is passionately resisted and poorly supported.
8. Competition among federal and local (Virgin Islands) government officials.
9. Park legislation often contains conflicting directions to both preserve parks unimpaired and allow traditional and customary exploitation.
10. Lack of knowledge regarding the extent and nature of human effects and of cascading ecological consequences on ocean ecosystems.
11. Lack of local community support leads to lack of local political support.
12. Communication regarding marine conservation is not effective:
    a. Wrong people delivering messages to audiences – scientists to general public
    b. Wrong media employed – written (reports) vs. oral (radio and discussion)
    c. Lack of long-term, trust-based relationships among principle participants
    d. Marine parks have no concentrated control points, like roads, at which to contact visitors.