National Park Service
U.S. Department of the Interior
April 2001

THE NATURAL RESOURCE CHALLENGE IN ALASKA

The National Park Service's action plan for preserving natural resources.

The Natural Resource Challenge (NRC) is a budgeted action plan aimed at effectively balancing resource preservation with visitation and facilities development in National Parks. Our mandate is "to conserve the scenery and … the wild life therein and to provide for visitor enjoyment in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Each and every member of the Park Service must work together to meet that goal.

INVENTORY – Alaska parks are organized into four ecosystem-based networks. Each park and network has a designated Inventory and Monitoring (I&M) lead, and the region has an I&M Steering Committee. Permanent coordinators and data managers will be hired for each network over the next couple of years.

All four Alaska networks will conduct inventories of vertebrates and vascular plants over the next four years. This year's inventory work includes:

- **small mammals** fieldwork in Yukon-Charley Rivers NPr, Wrangell-St. Elias NPP, and Western Arctic Parklands;
- **freshwater** fish fieldwork in Wrangell-St. Elias, and **marine fish** in Glacier Bay NPP, Sitka NHP, and Klondike Gold Rush NHP;
- **plants** fieldwork in Glacier Bay NPP, Denali NPP, Western Arctic Parklands, Gates of the Arctic NPP, and Lake Clark NPP; and
- **birds** fieldwork in Western Arctic Parklands.

The inventories will be conducted through a combination of NPS and contracted projects. The Northwest and Southwest Alaska Networks are hiring Biological Inventory coordinators to oversee those programs.

The I&M Program is developing a series of **amphibian** flash cards and field survey forms. In the absence of fieldwork targeting amphibian inventory, these flash cards will be given to researchers in the field working on inventories for the other taxa listed above. Those researchers will opportunistically gather information on amphibians through the course of their other inventory efforts. The flash cards are beig developed in conjunction with Glacier Bay NPP, but it is hoped that they can be used by researchers in all Alaska parks.

Bibliographies and expected species lists will be finalized in June 2001 for all parks. Some parks have decided to invest further and to expand the compilations of existing data. These efforts are targeting taxa that will not receive as much field support in a given network.

Ecological maps at the subsection level will be completed in FY01. These are used to stratify the landscape for sample selection and extrapolating inventory results. They are also used by the Landcover Mapping Program and the water resources inventory.

Additional field inventory will be conducted in FY02 and 03, with final reports, GIS layers, and databases produced in FY04.

The Alaska Water Quality Inventory is based on a regionwide approach, and has three components:

1) *Water Literature Review for Alaska National Parks:* 1000 references that can be

sorted by park and by resource topic. The database will be available in CD format and uploaded to NRBIB.

2) *Water Resource Concerns/Impacts in Alaska:* analysis of water concerns and impacts taken from a 1988 database and from a new database compiled in 2000. Comparisons will be made across time and space. The final report will include frequency lists and comparative graphs.

3) *Hydrologic Landscapes in Alaska National Parks:* stratification using GIS to describe eight major hydrologic landscapes in Alaska parks. Statistics are used to determine variance and magnitude of stratifying factors.

These three inventory products will assist park staff in planning water field inventory and eventually the water Vital Signs Program.

Other projects are continuing parallel with the inventory program. For instance, researchers are studying the distribution of spawning populations of **sockeye salmon along the Aniakchak Wild River**. The project is wrapping up this year. Researchers have identified spawning locations and populations that will be used as a basis for long-term monitoring in the future. The information is particularly important because these fish populations are subject to commercial harvest outside the park boundary and subsistence harvest within.

MONITORING – The **Central Alaska Network** (Denali, Wrangell-St. Elias, Yukon-Charley Rivers) has received FY01 funding for Vital Signs monitoring from the I&M Program and from the Water Resources Division. The remaining networks will be funded for the next three years.

The Central Alaska Network is in the planning stages of its program. It has established a board of directors and adopted a charter. A technical committee is forming and strategy meetings are underway. A network coordinator and data manager will be recruited by early summer 2001. Plans call for a scoping workshop in February 2002 and finalizing a monitoring plan by January 2003.

Pilot monitoring studies and synoptic surveys will be carried out during and immediately after the monitoring plan development. For example, water quality surveys will be carried out in summer 2001 in conjunction with fish inventory activities.

The **Denali LTEM Program** completed the *"Conceptual Design of the Long-term Ecological Monitoring Program in Denali National Park & Preserve"* (Oakley & Boudreau) and submitted it to the National I&M Advisory Committee last year. One of the intents of this design is to define the strengths and weaknesses of the program. This year researchers will revisit some areas that may need improvement. For example, the LTEM Coordinator will be working with park leads on protocol design, revisiting objectives, sampling designs, and reporting. Denali NPP is collaborating with the USGS-Biological Resources Division in completing the protocol for monitoring vegetation change at the landscape scale.

Meanwhile, the Denali LTEM Program is gearing up for this year's field season, in conjunction with the Alaska Bird Observatory, the University of Alaska Fairbanks, and the Institute for Bird Populations.

Water Vital Signs FY01 funding for Alaska will be used in Wrangell-St. Elias NPP to initiate field inventory of water bodies. The fieldwork will occur in collaboration with the freshwater fish inventory in the park. The park fishery biologist and the regional hydrologist are coordinating this effort. They plan to include

rural residents in collecting very important, yet simple, water resource vital signs information. For example: date of freeze-up and breakup; lake ice thickness; water level; height of major flooding; water color; wind speed and direction; and date of salmon return.

RESOURCE PLANNING – Denali NPP is preparing a **backcountry management plan**, and the draft is due this summer. In March, Denali NPP published a newsletter to give the public a preview of some of the alternatives to be analyzed in the draft plan. The draft plan will be the first application of a set of management zones that were developed by a regional backcountry working group. The zone types are intended for use in other park backcountry plans to provide consistency between plans and to more clearly provide a regional spectrum of opportunity for backcountry users.

Gates of the Arctic NPP and Glacier Bay NPP have hired planners and may begin their backcountry planning next fall or winter. Other parks are preparing for planning by gathering visitor use and resource data and assembling necessary resources.

Katmai NPP is in the process of developing a **water resources management plan**. The plan is considered the blueprint for park water resource management and is the first of its kind in Alaska. The plan will assist in the development of a parkwide strategy for managing waters as well as provide the information that park managers and policy makers require to protect, utilize, and enhance water resources. It will allow the park to build a comprehensive, integrated, and durable management program that will position the park to address water resource issues for years to come.

The water resource management planning process will encourage other stakeholders to participate with the NPS during and after plan development. Many of the issues identified extend beyond NPS boundaries; thus, it is important to recognize that multi-agency communication and coordination are essential to successfully managing Katmai's water resources. The plan will be completed by November 2002.

COLLABORATION AND PARKS FOR SCIENCE – the primary focus for these two challenges has been through the Inventory and Monitoring programs. The I&M activities are increasing the level of science in our parks, and they are providing a basis for extensive collaboration. The Alaska parks have been working cooperatively with the University of Alaska; the US Geological Survey – Biological Resources Division; the Natural Heritage Program; the Alaska Bird Observatory; University of Alaska Museum, Fairbanks; and others.

Through a partnership with Alaska Department of Fish and Game (ADFG) and the Bristol Bay Native Association, a two-year research project is underway to count **salmon escapement along the Alagnak Wild River**. The park has not had high quality escapement data on that entire system. Within the same drainage, the Kvichak River salmon populations are in trouble with very low returns. The Alagnak River is managed by ADFG as part of the same system, and yet the Alagnak escapement well exceeds the minimum goal. Park managers hope to learn more about escapement and salmon production through this research project.

Wrangell–St. Elias NPP is participating in a new collaborative non-profit organization, the **Wrangell Institute for Science and Education** (WISE). WISE members are local residents and organizations concerned with enhancing learning opportunities. Prince William Sound

Community College and the Copper River Watershed Project are among the other partners involved in this endeavor.

PARKS FOR LEARNING – The first learning center in Alaska is the **Ocean Alaska Science and Learning Center** (OASLC), in which Kenai Fjords NP is partnering with the Alaska SeaLife Center of Seward. OASLC is dedicated to understanding and preserving the marine ecosystem, connecting Alaska's national parks through research and education. Eventually the OASLC will become the hub, supporting various research projects that study national parks in Alaska with marine resources and from which the public can learn about park research and science-based resource management.

The overall goals of OASLC include:

- providing adequate scientific information to manage resources.
- explaining resource issues in terms understood by wide audiences and in ways that encourage participation through both direct interaction and distance learning programs.
- providing support, opportunities and foster partnerships for research projects that address marine issues in Alaska' s national parks.

The OASLC staff is currently working to make the learning center operational. Plans for FY01 include support for ongoing coastal research, and planning for an annual science symposium. Products include a promotional video, a brochure introducing the learning center and outlining how researchers can apply for support, and an educational website highlighting coastal black bear research in Kenai Fjords.

Parks for Learning activities are proceeding in other parks that do not have learning centers. Sitka NHP has started a **Nature Watch Program** that brings students from local middle and high schools into the park to participate in hands-on science. Students, with the help of personnel from NPS and other cooperating agencies, monitor the state of local watersheds through stream surveys, biological inventories, water chemistry analysis, measuring stream flows, recording types of streambed materials, identifying juvenile fish, and mapping river channels.

Through these student efforts, cutthroat trout have been documented in the Indian River – a species that was not known to breed there. Sampling is also providing NPS resource managers with information on key rearing locations along the river for salmon, trout, and char.

Glacier Bay NPP is providing **local Native communities a unique opportunity for learning**. Hoonah is a predominantly Tlingit village on Chichagof Island that has strong ancestral and cultural ties to Glacier Bay. Last year, 62 students from Hoonah High School boarded a vessel and sailed into their ancestral homeland in Glacier Bay, many for the first time. They were accompanied by five teachers along with the school principal, tribal members, scientists, and park staff. This very structured day focused on joining western science with Native ways of understanding the environment. The topics taught reflected the students' natural and cultural heritage: Native Ways of Knowing, Tlingit Place Names/Geography, The Geological and Biological History of Glacier Bay, and Glacier Bay as an Ancestral Homeland and National Park.

This May, the Hoonah elementary students will take a similar park-sponsored journey into the Huna Tlingit homeland. This year's trip will expose these younger students to ways in which

the bay provides and will include age-appropriate activities. Among the possibilities will be sessions on artistic expression, navigation, food sources, spiritual connections, and similar topics that emphasize Tlingit cultural relationships with the natural world. Teachers will make the final selection of these topics and design a curriculum that will explore the connection between Native understanding of the bay and Western knowledge.

ENVIRONMENTAL STEWARDSHIP – The **Environmental Audit Program** is proceeding on schedule. The HAZMAT coordinator for the Pacific West Region led the completed audits last summer at Kenai Fjords NP, Lake Clark NPP, and Wrangell-St. Elias NPP, and will lead the new audits this summer for Denali NPP, Western Arctic Parklands, Yukon-Charley Rivers NPP, and Gates of the Arctic NPP. The audit work will be contracted.

The preliminary findings of the audit program reveal that Alaska regional operations are primarily on target. The majority of issues uncovered are not presently causing environmental damage, but are more procedural in nature, such as labeling requirements. Parks are in the process of correcting their operations.

The Planning, Design and Maintenance Team has a new member who will be taking over management of the audit program for the Alaska Region. He will be accompanying the audit team this summer to learn the process first hand.

Sitka NHP has coordinated the community of Sitka in participating in the **National Marine Debris Monitoring Program**. Sitka NHP, local schools, and volunteers conduct two beach surveys monthly. Surveys provide Sitka with community awareness and clean beaches and the Center for Marine Conservation with data to determine marine debris status and trends.

Glacier Bay National Park's Audit Team for Sustainability is the recipient of the 2000 **National Park Service Park Operations and Education Environmental Achievement Award**. The team proved that recycling, energy conservation, environmental purchasing, improving air quality, and pollution prevention can be accomplished in even remotes Alaska.

Glacier Bay Maintenance Division is developing a sustainability program to demonstrate how alternative energy and waste disposal solutions can work. This project has particular relevance locally, as the gateway community of Gustavus is struggling to dispose of solid and hazardous wastes and has no disposal method for sewage waste. The park is negotiating a cooperative agreement the local community to share in shipping and processing of recyclables. The park is also looking into authority to assist the community in processing sewage waste under this agreement. Some other recent initiatives to increase efficiency while conserving energy and minimizing generated waste include:

- Retrofit of all park lighting with installation of compact flourescents and electronic ballast replacement, resulting in over 10 KW reduction. Part of this project included replacement of mercury containing flourescents and recycling of old mercury-containing tubes.
- Replacement of three furnaces with high efficiency units, resulting in a fuel consumption drop of 40% in one building alone.
- Purchase of all 4-cycle or diesel boats/engines for new or replacement use. The park is committed to phasing out all 2-cycle engines in the next few years.
- Replacement of electric dryers, water heaters, and ranges in park housing with high- efficiency propane units.
- Use of non-toxic cleaning products from list of preferable products as determined in Yellowstone and Yosemite NP studies.

AIR QUALITY – The Air Resources Division (ARD) is soliciting input from the regions and parks for how to **implement air quality strategy of the NRC**. ARD has funding to expand its national monitoring network and to put experts directly into the field to support monitoring stations. The implementation will be centrally managed through ARD; however, the process for determining the fund allocation uses a consensus-based approach.

The Alaska region has been very active in this process. ARD has sought information on each region's top priorities for air quality monitoring. These priorities are to be reviewed by both ARD and the regions to determine the top priorities for an integrated national monitoring network. Through the efforts of regions like Alaska, ARD is considering expanding not only the number of locations but also the types of monitoring conducted. This is particularly important to Alaska where the arctic and subarctic environments may require different tests from other parts of the country.

ARD will also be providing support to perhaps 30-50 monitoring locations to ensure the implementation of an effective national sample design. Support in a few cases will include air resources personnel stationed in field locations. Regional recommendations were to have been made by March 23, ranked by contributors before the George Wright Society meeting, and reported to NRAG in early May 2001. ARD will make a final decision on expanded air monitoring after Denver University completes its assessment of air monitoring by all parties in the U.S. in summer 2001.

Glacier Bay NPP rangers will conduct observations on **visible emissions from cruise ships** again this year, using EPA Method 9 procedures to check for compliance with state and federal regulations. The NPS has conducted emissions readings on marine vessels in Glacier Bay since 1991. Rangers receive specialized training and must be recertified every year for these seasonal observations. The goal of the

program is to read the stack emissions from each cruise ship at least twice a season.

NPS did not have a specific opacity regulation before 1996. From 1991 through 1996, emissions readings were conducted under a cooperative agreement with the Alaska Department of Environmental Conservation. Park ranger staff were certified as Visible Emissions Evaluators to monitor stack emissions under the state's visible emissions compliance program. In 1996, NPS promulgated a regulation articulating marine vessel emissions standards for Glacier Bay (36 CFR 13.65 (b)(4)). The NPS regulation, developed in conjunction with the park's vessel management plan, essentially mirrored portions of existing regulations. It is intended to mitigate the potential environmental effects of passenger vessels as part of a parkwide pollution minimization effort.

WATER RESOURCES – Water resource studies are underway in parks across the state, thanks to competitive funding awarded by the NPS-USGS Partnership and the NPS-WRD programs. Projects include:

- wetland mapping, limnology study, geochemical study of a mineralized watershed, and tributary runoff studies at Lake Clark NPP;
- urban impact runoff study of Indian River at Sitka NHP;
- study of heavy metal distribution in Cape Krusenstern NM;

- water resource management plan at Katmai NPP; and
- study on the effect of climate change on aquatic systems in Noatak NPr;
- watershed data analysis of Kobuk, Kandik, and Nation rivers in Kobuk Valley NP, Gates of the Arctic NPP, and Yukon-Charley Rivers NPr.

FOUNDATIONS OF STEWARDSHIP – The Alaska Region is continuing to expand its **recruitment strategy** so we can attract a diverse and highly qualified staff. We have had success through a direct recruiting relationship with universities around the country. Alaska has recently added the University of California, Irvine to its existing list of university partners: Southern University, Tuskegee University, Saint Mary's, University of Alaska Anchorage, University of Alaska Fairbanks, Sheldon Jackson College, and University of California, Riverside.

The Alaska Region hired eight students from Southern University last year, offering positions to four SCEP students, three of whom accepted. A fourth student from Riverside accepted a Career Seasonal, Subject-to-Furlough position at KLGO. There were seven summer seasonal students hired from Tuskegee last year with four interested in returning to work in Alaska again this summer season. The partnership with St. Mary's University produced a return student for the summer last year. In addition, students were hired from both the INSTEP Program and the Workforce Recruitment Program at UAA.

At the end of the season, the return of students to their perspective Universities allows them to assist in our recruitment efforts. They share their experiences and help to educate others of the value of working in Alaska and of considering the National Park Service as a career. It is through the unified effort and support of all concerned which will perpetuate our continued success for the coming summer season.

The Inventory and Monitoring Program coordinator is working closely with the regional science advisor to expand the I&M recruitment strategy, targeting universities with strong natural resource programs. The I&M Program will be offering positions from the technician through full-professional levels. We believe this presents an attractive career progression to students completing both graduate and undergraduate degrees. Recruiting from these universities can provide us with individuals having the technical skills and scientific background needed to provide effective resource stewardship.

NONNATIVE SPECIES – NPS and USGS – BRD are studying the **extent of exotic vascular plants** in Alaska national parks. The study includes assembling and reporting existing information on exotic plant species that occur in all Alaska units, and performing field surveys in five high priority parks: Denali NPP, Wrangell-St. Elias NPP, Kenai Fjords NP, Sitka NHP, and Katmai NPP.

Exotics were found along roads and campgrounds in all five parks. The common dandelion is the most prevalent exotic in these parks, although several other species of trees, shrubs, herbs, and grasses were found. So far, research results show exotics in disturbed areas throughout all of these parks, but they also reveal that exotics have not become established in more remote locations without construction, trail, or mining disturbances. All parks require eradication and monitoring efforts of some level, and the study points out the clear need for careful preconstruction revegetation planning plus monitoring during and after construction.

In several parks, the areas of invasion and the numbers of species are such that monitoring and eradication projects undertaken in the near future could dramatically reduce the potential spread through these parks. For instance, in Kenai Fjords NP, the common dandelion is the only abundant exotic within along the Exit

Glacier Road; however, along the road outside the park six more species are prevalent. Routine monitoring and eradication may be adequate to keep these species outside the park. Only a few exotic taxa were found in Katmai NPP predominantly around the Brooks Camp area. An eradication program could prevent a large expansion of exotics into new construction areas.

The extent of invasions in Denali NPP and Wrangell-St. Elias NPP is greater. Along the road corridors and mining areas several species have become well established. Further study of some areas is needed, and an ongoing eradication program is necessary to keep these species from spreading to other areas of the parks.

NATIVE & ENDANGERED SPECIES – Alaska's national parks provide important habitat for threatened and endangered species. Of the 21 species listed as endangered or threatened in Alaska, as many as **15 are present or expected to be present in Alaska's national parks**. All 15 are migratory. The fact that all other listed species winter in ecosystems different from where they breed, not only makes monitoring them difficult, but also requires international cooperation for their recovery.

Katmai NPP and Lake Clark NPP may harbor some of the largest known wintering populations of Steller's eiders. Steller's eiders breed in northern Russia and in Alaska on the central coastal plain primarily near Barrow. The number of nesting birds in Alaska is estimated to be only 2,000 of the 220,000-bird world population. However, at least 150,000 Steller's eiders winter in Alaska's shallow near-shore marine waters from the eastern Aleutian Islands to the Lower Cook Inlet.

In southeast Alaska, Glacier Bay NPP provides not only critical habitat, but also an important area for research on fin and humpback whales and Steller sea lions. Unfortunately, even in areas as remote as Alaska's national parks, the pressure of increased human visitation is being experienced.

Marked **increase of vessel operations** within Kenai Fjords NPP has resulted in conflicts between humpback whale cows and calves foraging in the fjords and recreational boats and tour vessels. Twice tour boats have collided with humpback whales. In one instance a 120-foot boat traveling at a speed of 20 knots hit a humpback. To help avoid similar incidences, Kenai Fjords NP is partnering with the U.S. Coast Guard and the National Oceanic and Atmospheric Administration (NOAA) to hold an **annual Tour Boat Owners Workshop** in Seward, Alaska. The workshop format helps ensure that the 60 to 80 attending operators not only receive a consistent message on adherence to NOAA's marine mammal guidelines, but also that park visitors are afforded the opportunity for a quality wildlife viewing experience.

Some **recent successes** for the recovery of Alaska's threatened and endangered species include the delisting of the American peregrine falcon in 1999 and the delisting of the Aleutian Canada goose in March of 2001. Most recently, critical habitat for the spectacled eider is now designated in four areas of Alaska. Designation as critical habitat ensures that actions permitted, funded, or conducted by federal agencies do not diminish the value of habitat critical for the survival and recovery of the eiders.