

# NATIONAL PARK SERVICE

# The Natural Resource Challenge



## The National Park Service's Action Plan for Preserving Natural Resources

National parks are places we treasure and honor as individuals and as a nation. As we mark the start of a new millennium, Americans have already set aside 379 national parks. The parks are a priceless heritage for the public to enjoy for all time.

The challenge that lies ahead will be to learn how to preserve parks for future generations. In a changing world, what will keep these parks natural and healthy?

Our knowledge of the nature in parks only scratches the surface. Our lack of information about plants, animals, ecosystems and their interrelationships is profound. Yet, even as we know our understanding is incomplete, we are certain that parks will be greatly affected by the changing world beyond their boundaries. As change comes calling, we will need answers to many questions. We will need lifelines to accurate information.

Applying good science to resource management is our best hope to restore and retain the rich heritage found in our National Park System.

In 1998 the United States Congress passed the National Parks Omnibus Management Act, calling for "a broad program of the highest quality science and information" to enhance management of the National Park System.

In August 1999, National Park Service Director Robert Stanton announced a major new NPS program, the Natural Resource Challenge.



*"The parks are our national treasures. They are becoming ever more valuable as remnants of our nation's heritage. But they may be the last storehouses of another richness—the rich store of information about thousands of species and the processes by which they live together."*

NPS Director Robert Stanton  
August 1999  
Mount Rainier National Park



## STEPPING UP TO THE CHALLENGE

The National Park Service developed a strategy to meet the Natural Resource Challenge. It identifies these actions to sustain the natural resources in our parks:

- Protect native and endangered species and their habitats
- Aggressively control non-native species
- Accelerate natural resource inventories
- Expand monitoring efforts including air and water quality monitoring
- Improve resource planning
- Increase collaboration with scientists and others
- Enhance use of parks for scientific research
- Use parks for learning
- Enhance environmental stewardship
- Assure fully professional staff

The Challenge is already underway. The Service is stepping up to a new level of resource management with a \$14- million increase for natural resource activities in fiscal year 2000.

**An inventory in Great Smoky Mountains National Park revealed two species of amphibians not previously recorded in the park: the eastern spadefoot toad (left) and the mole salamander (right).**



Biologists inventory marine life on the coast of Point Reyes National Seashore.

## ALL ACROSS THE NATIONAL PARK SYSTEM

Scientists and resource managers are taking a fresh look at the National Park Service's natural resource programs and finding ways to revitalize them.

### Taking Inventory and Monitoring Trends

The single biggest undertaking of the Challenge is to expand the inventory and monitoring effort.

Inventories will provide baseline information about natural resources in the parks.

Biologists have identified twelve basic natural resource

inventories needed in some 265 parks. The inventories will initially focus on mammals, birds, fish, amphibians, reptiles and vascular plants. These inventories will almost certainly yield some surprising information.

Monitoring is a way to become familiar with the condition of park resources. Scientists and resource managers in each park will identify the basic indicators of ecosystem health for their ecosystem. They will monitor vital components of the ecosystem such as the presence of pollinators, threatened and endangered species, air and water quality, erosion and slope stability – whatever is necessary to better assess the condition of park resources and reveal important trends.

### Controlling Non-Native Species

One of the biggest threats to the natural ecosystems in national parks is the introduction or invasion of







**Historic McGraw Ranch in Rocky Mountain National Park will be adapted for use as a learning center.**

non-native species. Alien species can invade native ecosystems, disrupt ecological balance, reduce diversity, and destroy natural succession.

Beginning this year the NPS will put new emphasis on exotic plant management. Invasive exotic plants have gained a foothold and are now infesting large areas in many parks. The Service has established four Exotic Plant Management Teams that will begin to control or, when possible, eradicate non-native plant species.

The first four teams will work in the Hawaiian Islands, Florida, the National Capital Region and the Chihuahuan Desert/Short-Grass Prairie.

### **Preserving Resources through Cooperation, Research, and Education**

The Natural Resource Challenge has resulted in many natural resource preservation projects and stepped up the Service's work with threatened and endangered species. It has expanded

the Service's geologic expertise, including our capability regarding geologic hazards and coastal and cave restoration.

New and expanded partnerships are underway too. The NPS is working with other agencies, including the U.S. Geological Survey. Some regions have already established Cooperative Ecosystem Study Units at colleges and universities to provide technical assistance, research, and education support for parks.

New learning centers are envisioned as part of the Challenge. The learning center concept varies from park to park, but the basic idea is to provide laboratory space for visiting scientists and encourage scientists to work in parks and share their scientific knowledge directly with the public.

These learning centers will either be located outside parks or developed on park lands through the adaptive reuse of existing facilities.

The initial learning centers will be in Rocky Mountain National Park, Great Smoky Mountains National Park, Point Reyes National Seashore, Cape Cod National Seashore, and Seward, Alaska, near Kenai Fjords National Park.

### **THE RENEWAL IS BEGINNING**

There are many, many activities resulting from, or being expanded by, the Natural Resource Challenge. Here are just a few examples to illustrate the renewal that is beginning throughout the National Park System.

#### **Grizzly Bear Surveys — getting an accurate picture**

Scientific advances are helping the NPS gather accurate data about grizzly bears in the North Cascades. To determine how many grizzly bears use this habitat, biologists are testing several techniques.

There are many new ways to confirm the presence of grizzly bears without ever seeing one. Analysis of DNA in bear scat and from fur collected off rub trees can provide excellent information including the identification of individual bears. Biologists are placing remote cameras in areas

**Tracking a grizzly bear.**





where there have been fairly reliable sightings in recent years.

### **National Capital Parks – exotic plant management**

An exotic plant management team for the National Capital Region is stationed in Rock Creek Park, where a successful eradication effort is already underway. The integrity of Rock Creek Park and many other eastern deciduous forests is seriously threatened by uncontrolled invasions of non-native plants.

Woody vines like English ivy can overwhelm and kill forest canopy trees. Other vines and shrubs like honey-suckle and bamboo form dense thickets that many species of wildlife cannot penetrate. In Rock Creek Park workers have already tried various methods to remove heavy infestations of exotic plants. Following the precedent in Rock Creek, the team will begin assisting other parks in the region.

### **Chihuahuan Desert/Southern Short-Grass Prairie – exotic plant management**

An exotic plant management team is beginning work this year to eradicate 16 species of invasive non-native plants in eleven Intermountain Region parks ranging from as far south as Amistad National Recreation Area and Big Bend National Park to as far north as Bent's Old Fort National Historic Site.

Tamarisk, one of the primary targets for the team, is a

deep rooted plant that dries up springs, reduces water flow in streams, and is creating big problems for Intermountain Region natural areas. Also known as salt cedar, this invasive plant pulls water and salt out of the soil, concentrates the salt in its leaves, and when the leaves drop, contaminates the soil surface with too much salt for other plants to survive.

### **Boxley Valley – a river restoration project**

The Buffalo National River in the Ozark Highlands of Arkansas is known for canoeing, fishing and other recreational pursuits. In the Boxley Valley, the river meanders through alluvial bottoms that have been farmed right up to the river. The riverbanks are unstable, and bank erosion

increases silt in the river and alters the stream channel.

The National Park Service is working to restore the Buffalo River banks to a more natural pattern. After surveying the river channel, crews anchor revetments of cut cedar trees to halt erosion and help heal the scarred banks. Native hardwoods will be planted along five miles of the River to help bind the soil and restore natural stability to the riparian area.



Stopping river bank erosion (right) to yield a more natural river in the Boxley Valley (below).







Saving the threatened desert tortoise.

### Desert Tortoise — tracking a threatened species

In Mojave NP, scientists are studying the density and distribution of desert tortoise populations. An NPS team is systematically searching for the tortoises over a pre-established series of grid patterns that cover wide areas of the Mojave Desert. They are keeping count, and a number of the tortoises are being fitted with transmitters so scientists can track their movements. The research is furthering our knowledge about this threatened species.

### Hatches Harbor — restoring a wetland

Hatches Harbor, a large salt marsh, is being restored at Cape Cod National Seashore. The 200-acre marsh was diked in 1930, blocking tidal flow and causing the natural salt marsh to freshen. Freshwater common reeds replaced the salt marsh *Spartina* grass, and the value of the habitat for young fish and shellfish was reduced.

Scientists determined that installing four seven-foot wide culverts along the dike could help restore native

grasses and a more natural tidal flow. Adjustable gates are being opened gradually to slowly restore salt water flow to Hatches Harbor. With the gates open, regular tidal flushing will occur and predatory fish will have access to the marsh. One of the benefits of these changes will be a reduction of mosquito breeding to more natural levels.



Trapping a feral hog.

### Congaree Swamp — removing feral hogs

Congaree Swamp National Monument was established to protect the largest and most significant remaining tract of virgin bottomland hardwood wetlands in the United States.

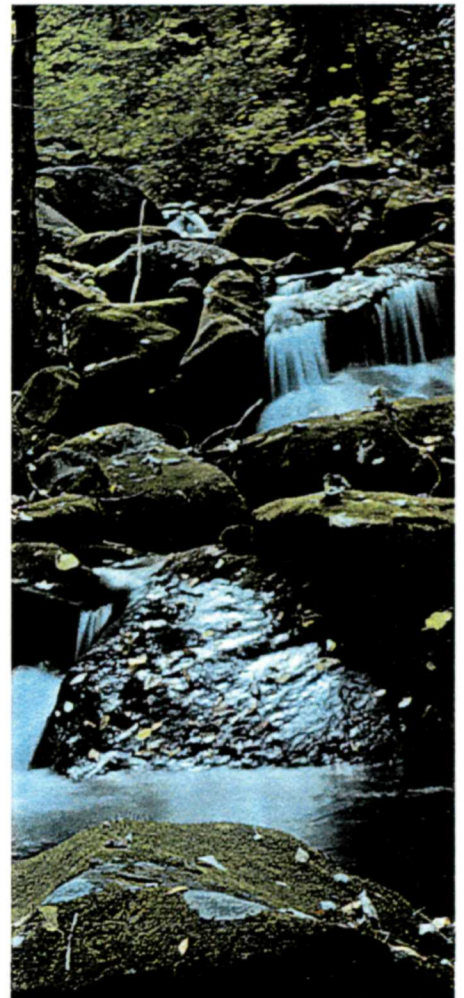
Non-native feral hogs in the park are putting unique resources at risk. Wetland communities, native vegetation, streams, aquatic habitats, and rare and endangered species are subject to severe damage from hog rooting and other behavior.

Funding from the Challenge is helping the park monitor and evaluate feral hog impacts and provide recommendations and alternatives for control and reduction of hog impacts.

### Brook Trout Restoration

Brook trout have lost nearly eighty percent of their natural range in Great Smoky Mountains National Park due to encroachment by exotic fish at low elevations and stream acidification, caused by air pollution, at high elevations. So that native brook trout may replenish themselves in the middle stretches of Sam's Creek, the competing introduced rainbow trout are being moved. A waterfall barrier will prevent rainbow trout access to the middle stretch of the creek in the future.

A waterfall preventing rainbow trout from returning to the middle stretches of Sam's Creek where they were encroaching on native brook trout.





The Natural Resource Challenge is increasing NPS capability in parks all around the nation, from Maine to Florida to Alaska and the Pacific Islands. For more information about the Natural Resource Challenge, visit our web site at [www.nature.nps.gov/challenge/nrc.htm](http://www.nature.nps.gov/challenge/nrc.htm)

#### LEADING THE NATURAL RESOURCE CHALLENGE

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White Sands National Monument

**Karen Wade**  
Intermountain Region



#### In Future Years . . .

The Natural Resource Challenge is an ongoing effort to restore and retain the natural wonders in America's national parks. Initial work on inventory and monitoring, threatened and endangered species, and invasive non-native species control will continue and expand in the years to come.

New emphasis will be added to include vegetation mapping and better air and water quality information. Support for natural resource preservation projects will be stepped up. Learning centers and Cooperative Ecosystem Study Units will enhance learning – in ways that benefit the parks and park visitors.

In the long term, park managers anticipate having the wherewithal to access critical information, initiate better resource management practices and restore our parks' damaged resources so that the people of today and future generations may enjoy them. The Natural Resource Challenge is an action plan to assure our national parks retain their natural beauty and vitality in the 21st Century.







## THE NATURAL RESOURCE CHALLENGE

### What is the Natural Resource Challenge?

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.

The Park Service has become a superb visitor services agency, while practicing a curious combination of active management and passive acceptance of natural systems and processes. Parks are becoming increasingly crowded remnants of natural ecosystems in a fragmented landscape, threatened by invasions of nonnative species, pollution from near and far, and incompatible uses of resources in and around parks. Clearly, the old management style will be insufficient to conserve our natural resources in the 21<sup>st</sup> century.

NPS must protect native species and their habitat and provide leadership for a healthy environment, but our lack of information about plants, animals, ecosystems, and their interrelationships is profound. We need to gather more data, expand our natural resource programs, strengthen partnerships with the scientific community, and share knowledge with educational institutions and the public.



### Who is the Natural Resource Challenge?

Protecting park resources is everyone's responsibility. Only through the combined efforts of all Park Service staff can we effectively meet the challenge. The NRC reminds us that as we each engage in the endless details of our daily work, we must remain ever cognizant of the real reason we are here: to preserve our resources in perpetuity.



Meeting the Natural Resource Challenge means *interpreters* and *rangers* educating the public about the value of the resources and how the public can help us to preserve them. It means *law enforcement* protecting species and habitats from inappropriate visitor activities and promoting proper camping etiquette. It means good *planning* and careful *compliance* with the environmental laws that govern our own activities. It means the *maintenance* division using alternative fuels and best practices for construction. It means revegetating disturbed lands with carefully chosen native species. It means *biologists* and *resource specialists* sharing what they know with all other teams. It means cataloguing information for present and future research. It means cleaning up abandoned mining lands. It means *backcountry rangers* reporting the abundance and location of species to biologists. Meeting the Challenge means all this and more.



## What are the 12 Strategies of the Natural Resource Challenge?

**Inventory** - provide a consistent database of information about our natural resources, including species diversity, abundance, and distribution (GPRA goal Ib1).

**Monitoring** - determine the current condition of our resources and how they change over time. Park networks will pick measurable "vital signs" to use for monitoring change (GPRA goal Ib3).

**Collaboration** - work with other professionals to acquire scientific knowledge and achieve mutual resource goals, including expanding the network Cooperative Ecosystem Studies Units (CESUs) in partnership with USGS and other agencies (GPRA goals IIIa1 and IVb).

**Resource Planning** - manage in accordance with current, park-based plans that protect resources, integrate resource considerations with other operations, and define the park's role in a regional context (GPRA goals Ib1, Ib3, Ib4, and Ib5).

**Parks for Science** - encourage the use of parks as centers for broad scientific research and inquiry. Research should be facilitated in parks where it can be done without impairing other park values (GPRA goals Ib1, Ib3, Ib4, and Ib5).

**Parks for Learning** - widely share our knowledge about park resources in order to enhance the public's ability to learn from and to enjoy its national parks and to inspire a greater public pride in the national parks. Learning centers will be created in each network for educating the public (GPRA goal Ib1).

**Nonnative Species** - improve resource management by identifying, mapping, and evaluating species that threaten native plant and animal biodiversity (GPRA goal Ib1b).

**Native & Endangered Species** - protect and restore native and endangered species so that parks are effective refuges and relatively undisturbed baselines for assessing relative conditions of declining species (GPRA goal Ia2).

**Environmental Stewardship** - comply with all environmental laws, and apply the highest standards of environmental stewardship (GPRA goal IVa9).

**Air Quality** - expand the air quality monitoring network and associated activities to provide improved geographical representation. Identify air pollution sources in parks, and help parks reduce their emissions (GPRA goal Ia3).

**Water Resources** - implement scientific water quality monitoring stations, and protect natural flows and the health of aquatic ecosystems (GPRA goal Ia4 and Ib5).

**Foundations of Stewardship** - to meet all the other NRC challenges and strategies, NPS requires a fully professional staff with the skills to identify resource issues; to obtain, interpret, and apply scientific information; and to solve highly technical and complex policy problems on the ground (GPRA goal IVa).





# THE NATURAL RESOURCE CHALLENGE



## *What is it?*

The National Park Service is undertaking a major effort to improve the management and protection of natural resources found in national park areas. On August 12, 1999, the Director of the National Park Service released an action plan that includes a proposal to double the funding available for natural resource management and also includes actions the National Park Service intends to take to improve natural resource stewardship within its current budget. Non-budget actions are underway, for example:

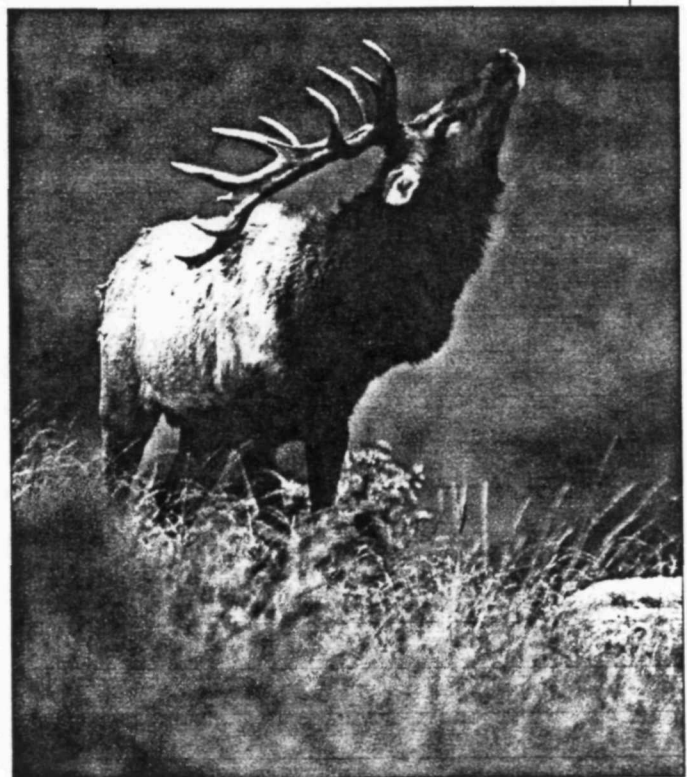
- ☐ Streamlining research and collecting permits
- ☐ Improving the career ladder for natural resource professionals
- ☐ More focus on web pages about natural and cultural resources contained in parks
- ☐ Facilitating research and assistance to parks from university personnel and graduate students

## *Congressional Action*

Congressional action on the FY 2000 budget resulted in \$14.3 million for Challenge-related increases, as follows:

- ☐ \$7.3 million, or about half of the FY 2000 increase, was for basic resource inventories
- ☐ About \$3.5 million was for a native species protection program, including establishment of four exotic plant management teams
- ☐ Nearly \$3 million was provided for priority natural resource projects
- ☐ Experts funded with nearly \$700,000 will help parks preserve fossils, caves and other geologic resources

Both the House and Senate have reacted favorably to portions of the FY 2001 request in their actions to date.



*Natural Resource Preservation Program funds are being used to monitor rare species such as this tule elk.*

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*The National Park Service cares  
for special places saved by the  
American people so that all may  
experience our heritage.*

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## *Proposal for FY 2001*

The Administration's request for FY 2001 includes \$19.3 million for:

- ☐ Monitoring, including water quality monitoring, in five parts of the country
- ☐ Vegetation mapping
- ☐ Air emissions inventories
- ☐ Data synthesis and management tools
- ☐ Restoration and project funding targeted to specific areas
- ☐ Learning Centers to host outside researchers and use them to help educate the public
- ☐ National Park Service participation with other agencies in Cooperative Ecosystem Studies Units on college campuses



*Global positioning in the parks allows staff to create a detailed inventory of resources. Here, vegetation mapping for native and non-native plants is taking place.*

## *Future*

The NPS intends to ask for additional large increases in future budget requests. Areas to be targeted include:

- ☐ Monitoring in areas not proposed for FY 2001 funding, including expanded air quality monitoring
- ☐ Additional exotic species control capability
- ☐ More learning centers
- ☐ Additional project capability



*Banding this northern spotted owl will help biologists monitor the long-term health of the population.*

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*Management of the national parks  
is improved through a greater  
reliance on scientific knowledge.*

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## **FY 2001 Natural Resource Challenge Summary**

### **Vegetation Mapping - \$1.75 million**

- ❑ Digital vegetation maps from aerial photographs and on-the-ground surveys are the highest priority natural resource information for parks.
- ❑ The NPS and USGS cooperate in a Vegetation Mapping Program to produce GIS maps and related data, using USGS funding transferred from NPS when NBS/BRD was formed. At the funding level now contributed by USGS, it will take about 30 years to complete the maps for all parks that need them.
- ❑ With the proposed cost-share by NPS, they can be completed in about 9 years.

### **Vital Signs Monitoring - \$4.2 million**

- ❑ Five networks involving 55 parks were identified for proposed vital signs monitoring funding in FY 2001: 1) North Coast and Cascades; Northeast Coast and Barriers; Heartland; Appalachian and Upper Gulf Coast Plain; and Southern Desert West.

### **Water Quality Monitoring - \$1.275 million**

- ❑ Water quality monitoring will be undertaken in conjunction with vital signs monitoring, but additional stations will also be included.
- ❑ This funding will allow full implementation of the Service's GPRA goal in a portion of the Service's parks. Without funding for water quality monitoring, only limited or qualitative data will be available to measure water quality degradation.

### **Air Emissions Inventory - \$200 thousand**

- ❑ The National Park Service is working closely with State, Regional and Federal entities to improve air quality in parks. In addition to monitoring air quality and seeking to reduce emissions from sources outside parks, it is important that NPS assure that its own air emissions are reduced as much as possible.
- ❑ This will fund one person in the Air Resources Division to work with parks to inventory their emission sources and identify problems and possible solutions.

### **Make Natural Resource Data More Usable - \$1.25 million**

- ❑ To make effective use of new natural resource information by park managers and to make information learned about park resource available to outside researchers and the public, increased capability is need to manage data effectively.
- ❑ This increase would provide expanded expertise and capacity in managing data, in tools to provide data in usable formats, and in educational outreach using natural resource data. Included would be expanded use of the Internet for these functions.

### **Resource Assessments for Planning - \$500 thousand**

- ❑ This increase would provide for 5 pre-GMP efforts annually aimed at synthesizing and compiling natural and cultural resource information for planning.
- ❑ Currently, there is no separate step in the process to assure that available is accessed, synthesized, and made available to planner. As a result, pre-planning data compilation is often not completed by personnel familiar with the data types and data sources or with expertise in all relevant areas.
- ❑ This is an important step in ensuring that decisions are based on good scientific information as it assures that such information is brought to bare in the planning process.

### **Resource Restoration/Protection Act - \$500 thousand**

- ❑ This would assure that damages to resources caused by third parties are properly restored.
- ❑ It allows NPS to utilize existing legal authorities and bring both fiscal accountability and restoration expertise to bare on damage restoration activities.



**California Desert Restoration - \$1.5 million**

- ❑ The California Desert Restoration is an interagency effort involving three parks—Joshua Tree, Death Valley and Mojave, along with BLM and Defense lands.
- ❑ The funding would provide for priority activities to be undertaken by NPS on all these lands: monitoring of desert tortoise populations, control of exotic burros, riparian restoration, and desert water protection.

**Exotic and Threatened & Endangered Species Park Management (park bases) - \$3.4 million**

- ❑ As part of the Challenge-related budget requests in FY 2001, there are 17 park-specific increases that address issues of exotic, threatened, and endangered species.

**Water Resources Project Funding - \$825 thousand**

- ❑ There are currently approximately \$100 million in identified water resource related project needs. In FY 1999, less than \$850,00 in non-water rights project funding was available, along with about \$700,000 for water rights projects.
- ❑ This funding will assist the Service in working cooperatively with States and localities to define water-related values in parks.
- ❑ To effectively cooperate with efforts to avoid court contests over water rights (as well as to effectively represent park interests when court cases are filed), NPS needs good information about the water needs of its resources and its visitors.

**Alaska Project Funding (requested as part of NRPP) - \$550 thousand**

- ❑ This would provide project funding for the Department's Tundra to Tropics initiative.

**Learning Centers - \$900 thousand**

- ❑ The process to select Learning Centers for proposed FY 2001 is nearly complete. In response to a request for proposals, 39 potential Centers were identified. A panel of three superintendents from the Superintendents Council, the Chiefs of the History and Interpretation Divisions and a representative from BRD will make the final recommendations the week of February 22.

**CESUs - \$1.6 million**

- ❑ This would allow full participation by NPS in 10 interagency Cooperative Ecosystem Study Units, including 4 current CESUs and up to 5 selected in February 2000.
- ❑ It would provide for a staff coordinator to facilitate getting NPS research and assistance needs met by university and cooperator personnel, as well as a small amount of project funding to facilitate technical assistance and small projects.



## NATURAL RESOURCE CHALLENGE FY 2000 & 2001 FUNDING STATUS

Funding Elements included in Natural Resource Challenge Action Plan	FY 2000	FY 2001		
	Final Approp - \$	President's Request - \$	House - \$	Senate - \$
Complete basic natural resource inventories, except vegetation mapping	7,309,000			
Vegetation mapping cost-share with USGS		1,750,000	-	1,750,000
Monitor vital signs in networks of parks		4,200,000	4,200,000	3,500,000
Monitor water quality in parks and assess watershed conditions		1,275,000	-	700,000
Inventory air emissions in parks		200,000	200,000	-
Make natural resource data useable for mgmt. decisions and public		1,250,000	1,100,000	-
Synthesize resource information for park planning and monitoring 1/		500,000	-	
Expand NRPP project fund, specialized inventories, training	2,875,000			
Create native/nonnative program and field teams for nonnative species mgt	3,449,000			
Implement Resource Protection Act to restore resources	-	500,000	-	-
Protect geologic resources	696,000			
Restore California Desert	-	1,500,000	-	-
Increase park bases for nonnative and T&E species recovery		3,400,000	2,293,000	3,400,000
Expand water resource protection and restoration		825,000		500,000
Establish learning centers 2/		900,000	-	900,000
Establish CESUs 2/		1,600,000	1,600,000	-
Alaska Natural Resource Projects [not originally in Plan] 3/		550,000	-	-
	14,329,000	18,450,000	9,393,000	10,750,000

"Green Book" relationships below:

1/ Under Construction appropriation as increase to General Management and Strategic Planning (p. NPS-453)

2/ Under Natural Resources Applied Research element of Resource Stewardship activity; (see NPS-73 through 83 & 89)

all other increases, except parts of Alaska Natural Resource Projects, under Natural Resource Management portion of same program.  
(see NPS-73 through 83 & 89)

3/ Split among three elements of Resource Stewardship Subactivity--Natural Resources Applied Research, Natural Resources Management, and Resource Protection. (see NPS-73 through 83 & 89)



8/7/00

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# THE NATURAL RESOURCE CHALLENGE

## Park Vital Signs Monitoring: A Commitment to Resource Protection

Americans expect the National Park Service to preserve and protect the nation's heritage, including living and nonliving features of ecosystems. However, protection of national parks is an extremely complicated and difficult task. Park ecosystems are complex and constantly changing over time and space. Managers must be capable of determining whether the changes they observe in park resources are the result of natural variability or the effects of human activities. To sustain the health of these systems, to diagnose threats to their health, and to mitigate those threats, park managers need to identify and constantly monitor changes in vital signs of parks, just as physicians monitor the vital signs of their patients. The price for protecting our parks is constant vigilance.

As part of the Natural Resource Challenge, the National Park Service is implementing natural resource monitoring throughout the agency. This effort will ensure that all park units that contain significant natural resources will possess the basic resource information needed for effective, science-based managerial decision-making and resource protection.

*Air quality  
monitoring,  
Olympic National  
Park*



Parks have been organized into 32 networks linked by geography and shared natural resource characteristics to facilitate collaboration, information sharing, and economies of scale in natural resource monitoring. The level of funding available through the Natural Resource Challenge will not allow comprehensive monitoring in all parks, but will provide a minimum infrastructure for initiating natural resource monitoring in all parks that can be built upon in the future.

Park networks will design a single, integrated monitoring program to monitor both physical and biological resources such as air quality, water quality, geologic resources, weather, fire effects, threatened and endangered species, exotic species, and other flora and fauna. Most of the funding will come through Park Vital Signs Monitoring funding, with supplements specific to water and air quality monitoring. The Natural Resource Program Center divisions for Air Resources, Biological Resource Management, Geologic Resources, Natural Resource Information, and Water Resources will provide technical assistance to park networks for developing these integrated monitoring programs.

Each monitoring network will be guided by a board of directors made up of park superintendents, the regional inventory and monitoring coordinator, and the network monitoring coordinator, who will specify desired outcomes and evaluate performance for the network's monitoring program. The board will make decisions regarding the development and implementation of the monitoring strategy and will promote accountability for the monitoring program. Initiation of monitoring programs in all 32 networks is planned to be phased in over a four-year period.





*Park Vital Signs Monitoring Networks*  
(September 2000)

## Funded in FY 2001 for Core Park Vital Signs Monitoring and Water Quality Monitoring

### North Coast and Cascades

A network consisting of seven parks located in the Pacific Northwest.

Reference park: Olympic National Park

### Northeast Coastal and Barrier

A network consisting of eight parks located in the New England area.

Reference park: Cape Cod National Seashore

### Heartland

A 15-park network located in eight Midwestern states.

Reference park: Wilson's Creek National Battlefield

### Sonoran Desert

An 11-park network in the southwestern United States.

Reference park: Organ Pipe Cactus National Monument

### Cumberland/Piedmont

A network consisting of 14 parks located primarily in the southeastern United States.

Reference park: Mammoth Cave National Park

## Funded in FY 2001 for Water Quality Monitoring Only and Proposed for FY 2002 for Core Park Vital Signs Monitoring

### Central Alaska

A network of three parks located in interior Alaska.

Reference park: Denali National Park and Preserve

### National Capital

An 11-park network located in the Washington, D.C., area.

Reference park: Prince William Forest Park

### Northern Colorado Plateau

A network consisting of 16 parks located in the intermountain West.

Reference park: Canyonlands National Park

### San Francisco Bay

A network of six parks located in the vicinity of San Francisco, California.

Reference park: Point Reyes National Seashore

### Greater Yellowstone

A network consisting of three parks located in the northern Rocky Mountains.

Reference park: Yellowstone National Park

### Appalachian Highlands

A network of four parks located in the southeastern United States.

Reference park: Great Smoky Mountains National Park

### Mediterranean Coast

A three-park network located in southern California.

Reference park: Channel Islands National Park

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*The National Park Service cares for  
special places saved by the  
American people so that all may  
experience our heritage.*

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The Natural Resource Challenge is increasing NPS scientific understanding in parks all around the nation, from Maine to Florida to Alaska and the Pacific Islands. For more information about the Natural Resource Challenge, visit [www.nature.nps.gov/challenge/nrc.htm](http://www.nature.nps.gov/challenge/nrc.htm).







## Learning Centers: Connecting the Public, Scientists, and Resources

Imagine a place where science and education are combined to preserve and protect areas of national significance. Imagine in the future, a park superintendent making critical resource decisions based on detailed sound scientific knowledge and ecological principles. Also, imagine a park where public understanding and support coalesces around these management decisions because they are defensible and preserve ecological integrity. Finally, imagine a site where parks are nurturing the next generation of scientists, educators, and the public that will guide future management and leaders through the 21st century.

To help create this future, the Natural Resource Challenge includes a commitment to establishing 32 learning centers around the country. Strategically placed in inventory and monitoring networks and tied together electronically, they will facilitate research and help educate the nation about our park resources. They will help to share with the American public the health of the national park system and the regions in which they are located.

After a national competitive process, five initial learning centers are funded. The five locations across the country are located in separate inventory and monitoring networks. Another eight are

planned to be established in the future (see back of page); by 2005, the hope is to create a system of 32 learning centers nationwide.

Conceived as public/private partnerships, these learning centers will support research activities, accumulate and synthesize information, and directly transmit that information and understanding to the public. Each learning center will provide computer access and laboratory, office, and dormitory facilities for visiting researchers. Staffing will be minimal and each learning center will rely heavily on partnerships for both start-up and operational expenses. Equally important, they will promote education and outreach through an education specialist who will work with area park interpreters and partners.

Although developed as a part of the Natural Resource Challenge, the centers are not meant to focus on natural resources only, but on opportunities for parks to become laboratories, libraries for research, and learning centers for *all* park resources.



*Lichen sample being collected for inventorying of species.*

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*The National Park Service cares for special places saved by the American people so that all may experience our heritage.*

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## Initial Learning Centers

- ☐ Atlantic Learning Center, Cape Cod National Seashore
- ☐ Ocean Alaska Science and Learning Center, Kenai Fjords National Park
- ☐ Continental Divide Research and Learning Center, Rocky Mountain National Park
- ☐ Pacific Coast Learning Center, Point Reyes National Seashore
- ☐ Purchase Knob Learning Center, Great Smoky Mountains National Park

## Proposed For FY 2002

The following centers have been approved for future funding requests. Additional centers will be selected in the future.

- ☐ Acadia Center for the Environment, Acadia National Park
- ☐ Center for Teaching New America, Santa Monica Mountains National Recreation Area, with Channel Islands National Park and Cabrillo National Monument
- ☐ Jamaica Bay Learning Center for Applied Research on Urban Ecology, Gateway National Recreation Area, with New York Harbor
- ☐ North Coast and Cascades Learning Center Network, North Cascades National Park, with Mount Rainier National Park and Olympic National Park
- ☐ Sand Dunes Research and Education Center, Indiana Dunes National Lakeshore, with Sleeping Bear Dunes National Lakeshore
- ☐ Urban Ecology Learning Alliance, National Capital parks
- ☐ Old-Growth Bottomland Forest Research and Education Center, Congaree Swamp National Monument
- ☐ Crown of the Continent Learning Center, Glacier National Park



*Historic McGraw Ranch in Rocky Mountain National Park (above) and the Historic Hagmaier Ranch at Point Reyes National Seashore (below) will be adapted for use as learning centers.*



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*Management of the national parks is improved through a greater reliance on scientific knowledge.*

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