



Natural resource inventories in the national parks

Revealing America's remarkable natural heritage



National parks are icons of America's scenic beauty, but the richness and value of our parks far exceed their beauty alone. As science continues to provide insights into the mysteries of nature, we are learning that our national parks contain an unrecognized abundance and diversity of life, representing vignettes of a disappearing wild America. These native ecosystems are tremendously complex and their protection hinges on the identification and effective management of their key components, including living things, natural processes, and landscape features. The National Park Service has embarked on a new era of management that relies on science to improve management decisions and safeguard our natural heritage. An essential component of this strategy is an inventory of the natural resources found in the national parks.

Inventories

Natural resource inventories are being conducted for a range of features, including the presence and distribution of plants, animals, and nonliving resources such as water, landforms, and climate in all parks (see complete list, next page). The goal is to complete basic resource inventories in all national parks with significant natural resources. In order to reach this ambitious goal, the National Park Service has organized 270 parks units into 32 inventory and

monitoring networks. Individual networks link parks that share similar geographic and natural resource characteristics to facilitate collaboration, information sharing, and cost savings. Each network develops systematic approaches for carrying out the inventories in its parks. An important part of the program is producing information that park managers need to ensure the future health of the parks.

With support from biological inventory and park base funding, resource managers at Olympic National Park, Washington, discovered large numbers of an aquatic plant species on the state threatened list at nearly every location surveyed at Ozette Lake. The species has been extirpated from several lakes in developed parts of western Washington. It also occurs in the park at Lake Crescent, but in much lower densities.

We are learning that our national parks contain an unrecognized abundance and diversity of life....



The capture and documentation of a male spotted bat at John Day Fossil Beds National Monument is only the second record of this species in Oregon; the first is from 1974.

Basic natural resource inventories and tools

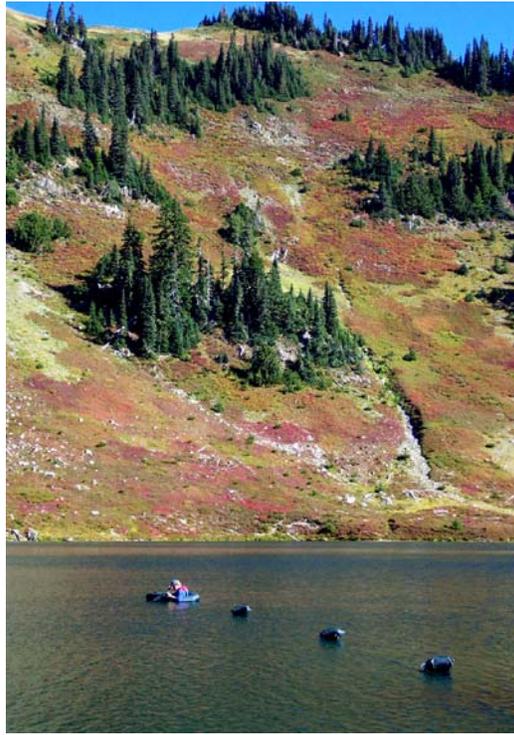
The following natural resource inventories are being conducted in the national parks to provide scientific information for park management:

- Automated Bibliographies
- Base Cartography Data
- Species Occurrence Inventory
- Species Distribution Inventory
- Vegetation Maps
- Soils Maps
- Geologic Maps
- Water Resource Inventory
- Water Chemistry Inventory
- Air Quality Inventory
- Air Quality-Related Values Assessment
- Meteorological Data Inventory

Program details

To ensure that inventories result in the highest-quality and most-useful scientific information, the National Park Service has developed three criteria for inventory efforts. Each inventory must produce “core” or baseline information that park managers need to effectively manage and protect park resources. Additionally, inventories are being conducted in accordance with specified protocols and quality-assurance standards, and data obtained through inventory must be compatible, allowing for synthesis and analysis at broader levels.

Partnerships are a key element of the park natural resource inventory process because they allow the National Park Service to acquire inventory data in an efficient, timely, and cost-effective



Scientists set gill nets in Hoh Lake at Olympic National Park, Washington, as part of a fish inventory.

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Vascular plant inventories at Blue Ridge Parkway, North Carolina, resulted in the discovery of 129 species new to the park.



Platygyra contorta, a species of coral never before recorded in the Territory of American Samoa, was documented as part of an inventory of fish and coral species for the National Park of American Samoa.

manner. For example, the National Park Service is working cooperatively with state geologic agencies to produce geologic maps and assessments. Additionally, park managers recognize that partners expand the expertise and skills available to the parks. For this reason, the National Park Service has partnered with the U.S. Geological Survey to develop up-to-date vegetation maps that will be used for resource management activities, including fire management. In-



A botanist conducts a vegetation inventory at Wind Cave National Park, South Dakota.

ventories not conducted by networks, including partnership efforts with other state and federal agencies, are being coordinated by the NPS Natural Resource Program Center in Colorado.

Recent accomplishments

Baseline inventories are delivering important and fundamental information to park managers about the presence and distribution of plants, animals, and nonliving resources such as water, landforms, fossils, and climate in the parks. Some surprises have been uncovered along the way, from fossils to an amazing number of new species. The scientific and management value of the park natural resource inventories is being realized at park units across the country.

Uncovering Amazing Biodiversity—At Devils Postpile National Monument (California) inventory efforts revealed 191 plant species and 10 bat species that were newly documented. Of the 10 bat species, 5 are listed as federal or state species of special concern. These findings are particularly remarkable because of the monument's small size. At just 800 acres, it is the smallest unit in the Sierra Nevada Network.

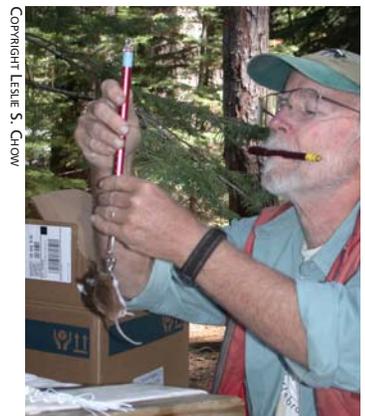
Plant surveys conducted in Cape Krusenstern National Monument (Alaska) documented 305

species that were new to the monument, including 7 rare plants, as well as one plant that was new to North America.

Sharing Information—The state of Minnesota is using information from inventories at Mississippi National River and Recreation Area to relocate threatened and endangered freshwater mussels to stretches of the river that can serve as refuges.

Real-time data from the automated climate stations in Denali National Park (Alaska) are available to park managers from the Denali National Park and Preserve intranet. In FY 2004 the data will be made available to the public via the Internet.

Mammal inventories at Bandelier National Monument (New Mexico) found new evidence for as many as 37 species that were not previously well documented. These findings also shed light on the habitat ranges of some of the animals documented. For example, detecting the American pike, mountain cottontail, yellow-bellied marmot, bushy-tailed woodrat, and southern black-backed vole in the park represents the southernmost populations of these species in the United States.



Jim Patton, curator of mammals at the Museum of Vertebrate Zoology at UC Berkeley, weighs a *Peromyscus maniculatus* specimen collected in the Merced Grove of giant sequoias in Yosemite National Park, California.

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Creating New Management Opportunities—Great Smoky Mountains National Park (Tennessee and North Carolina) has completed surveys that identified Fraser firs that are apparently resistant to the damaging insect, adelgid. This information has the potential to aid in restoration of firs.

Inventory of eastern spadefoot toads in Cape Cod National Seashore (Massachusetts) is helping park managers to develop measures to protect them from road kills. These kinds of accidents have killed large numbers of the most significant population of these toads in the state.

Proactive Management—Geologic mapping at Theodore Roosevelt National Park (North Dakota), which is underlain by lignite, a low-grade coal, is helping to identify areas of historic fires and areas susceptible to new fires and to large-scale subsidence or collapse.

Plant inventories at Zion National Park (Utah) in 2003 detected five sub-populations of the federally endangered Shivwits milkvetch. Prior to the inventory only one small patch of the plant was known to exist within the park. Zion National Park can serve as a sanctuary for the plant, which faces development and off-road vehicle use outside the park.

Inventories for the future

Scientifically sound information is a critical prerequisite for improving the management of park natural resources. Within this context, natural resource inventories are paying big dividends. Not only have they uncovered a wide range of new plants and animals, but inventories have also improved understanding of complex natural systems and expanded management options. To date, 6 of the 12 basic inventories have been essentially completed in the parks, resulting in 1,500 new data sets for management use. The National Park Service and its partners are hard at work completing the remaining inventories.

This program does not fund inventories of many important park natural resources, such as nonvascular plants, invertebrates, and fossils. However, once the basic inventories have been completed, a portion of current funding may be



As a result of biological inventories, scientists documented the red-bellied turtle for the first time in Blue Ridge Parkway. The new record represents a 100-mile range extension for the species.



Staff of George Washington Birthplace National Monument, Virginia, and the U.S. Fish and Wildlife Service inventoried fish species in the park in August 2003.

available to address those critical needs. With these additions, this ambitious program will provide managers of all 270 natural resource parks with essential resource information, a major step forward for the National Park Service in protecting the remarkable natural heritage of the nation.

Baseline inventories are delivering important and fundamental information to park managers.