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*Protecting Parks for Future Generations®*

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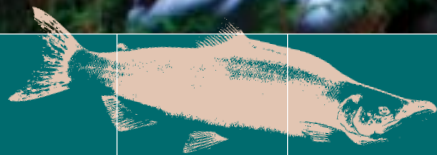


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STATE  
♦ OF THE ♦  
PARKS®

may 2004

# OLYMPIC NATIONAL PARK



A Resource Assessment

NATIONAL PARKS CONSERVATION ASSOCIATION



# STATE ♦ OF THE ♦ PARKS®

## STATE OF THE PARKS® Program

More than a century ago, Congress established Yellowstone as the world's first national park. That single act was the beginning of a remarkable and ongoing effort to protect this nation's natural, historical, and cultural heritage.

Today, Americans are learning that national park designation alone cannot provide full resource protection. Many parks are compromised by development of adjacent lands, air and water pollution, invasive plants and animals, and rapid increases in motorized recreation. Park officials often lack adequate information on the status of and trends in conditions of critical resources. Only 10 percent of the National Park Service's (NPS) budget is earmarked for natural resources management, and less than 6 percent is targeted for cultural resources management. In most years, only about 7 percent of permanent park employees work in jobs directly related to park resource preservation. One consequence of the funding challenges: two-thirds of historic structures across the National Park System are in serious need of repair and maintenance.

The National Parks Conservation Association initiated the State of the Parks® program in 2000 to assess the condition of natural and cultural resources in the parks, and determine how well equipped the National Park Service is to protect the parks—its stewardship capacity. The goal is to provide information that will help policy-makers, the public, and the National Park Service improve conditions in national parks, celebrate successes as models for other parks, and ensure a lasting legacy for future generations.

For more information about the methodology and research used in preparing this report and to learn more about the State of the Parks® program, visit [www.npca.org/stateoftheparks](http://www.npca.org/stateoftheparks) or contact: NPCA, State of the Parks® program, P.O. Box 737, Fort Collins, CO 80522; Phone: 970.493.2545; E-mail: [stateoftheparks@npca.org](mailto:stateoftheparks@npca.org).

The National Parks Conservation Association, established in 1919, is America's only private, nonprofit advocacy organization dedicated solely to protecting, preserving, and enhancing the U.S. National Park System for present and future generations by identifying problems and generating support to resolve them.

- \* Nearly 300,000 members
- \* 7 regional offices
- \* 32,000 activists



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## REPORT SUMMARY



Jagged, glacier-capped mountains, luxuriant forests, and rugged coastline dominate the landscape of Olympic National Park, centered on western Washington's Olympic Peninsula. To protect its wild qualities, Congress designated approximately 95 percent of the park's 922,651 acres as wilderness in 1988. The park is divided into two units—most of the acreage encompasses the Olympic Mountains and

old-growth forests of the interior of the peninsula, but a narrow band of parkland lies along the coast, separated from the rest of the park by state, private, and Forest Service land. This strip of Pacific coastline—about 65 miles long—is one of the largest stretches of protected wilderness coast in the contiguous United States and provides protection for flocks of sea birds and myriad marine organisms.

The park includes about 65 miles of Pacific coastline—one of the largest stretches of protected wilderness coast in the contiguous United States.

## OLYMPIC NATIONAL PARK AT A GLANCE

- In recognition of its unique resources, Olympic National Park is designated as both an International Biosphere Reserve and a World Heritage Site. Only nine national parks hold both distinctions.
- The park protects 922,651 acres of mountains, forests, and coast, including one of the few temperate rainforests in the world and the largest contiguous block of old-growth coniferous forest in the country. The ecosystems protected within Olympic contain a unique array of habitats and life forms, resulting from thousands of years of geographic isolation, along with extreme gradients of elevation, temperature, and precipitation.
- Olympic National Park has traditional ties to more American Indian groups than most other national park units. The eight associated tribes are the Quinault, Quileute, Hoh, Jamestown S'Klallam, Lower Elwha Klallam, Port Gamble S'Klallam, Skokomish, and Makah.
- The park features some of the best remaining habitat for the federally threatened northern spotted owl and marbled murrelet and contains at least 15 kinds of animals and eight kinds of plants that live only on the Olympic Peninsula, existing no where else in the world.
- Olympic National Park protects the largest population of Roosevelt elk in its natural environment in the world. Decades of protection from human harvest and habitat manipulation have sustained high densities of elk, as well as preserved the natural composition, social structure, and dynamics of this unique coastal form of elk.
- Located on the Olympic Peninsula and separated from Seattle by Puget Sound, the park is easily accessed by ferry and automobile. More than three million people visited the park in 2003.

Flett's violet (*Viola flettii*) is one of the park's endemic species.



Olympic National Park preserves the largest intact block of temperate rainforest and old-growth forest in the Pacific Northwest and is home to the federally threatened northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*), as well as at least 23 endemic plant and animal species found nowhere but the Olympic Peninsula. The park's rivers and streams support eight species of anadromous fish (fish that migrate from the ocean to inland freshwater to spawn), including five species of Pacific salmon and the bull trout (*Salvelinus confluentus*), a federally listed threatened species.

In addition to an impressive array of natural resources, the park contains hundreds of historic structures and more than 600 identified archaeological sites that help tell the story of the region's 12,000 years of human habitation. Landscapes saturated with history and cultures, as well as nearly half a million museum objects such as prehistoric baskets and tools, illustrate the region's past. The presence and involvement of eight local American Indian tribes adds depth to the park's cultural and historical story.

Even though the animals, plants, waters, and cultural treasures within Olympic National Park have federal protection, they are not immune to threats including incompatible adjacent land uses, declining salmon and spotted owl populations, invasive species, habitat degradation, poaching, management conflicts, and limited funds for resource protection. In 2003, Olympic National Park had a budget of \$10.29 million, but unfunded operating needs totaled nearly \$6.1 million.

Insufficient funding results in failure to achieve some of the park's primary goals, difficulty meeting mandated legislation and regulations, and increased reliance on special project funding to pay for daily operations. A lack of funds also means the park cannot hire the staff needed to properly care for its resources and interpret those resources for visitors. Recently, the park announced cuts in important visitor services. Some visitor centers may close or have reduced hours, there may be some main road closures, and few seasonal interpreters will be hired.

### RATINGS

Current overall conditions of Olympic's known **natural resources** rated 81 out of a possible 100, indicating they are in marginally good condition, with viability of the ecosystem(s) estimated as vulnerable. Ratings were assigned through an evaluation of park research and monitoring data using NPCA's State of the Parks comprehensive assessment methodology (see Appendix).

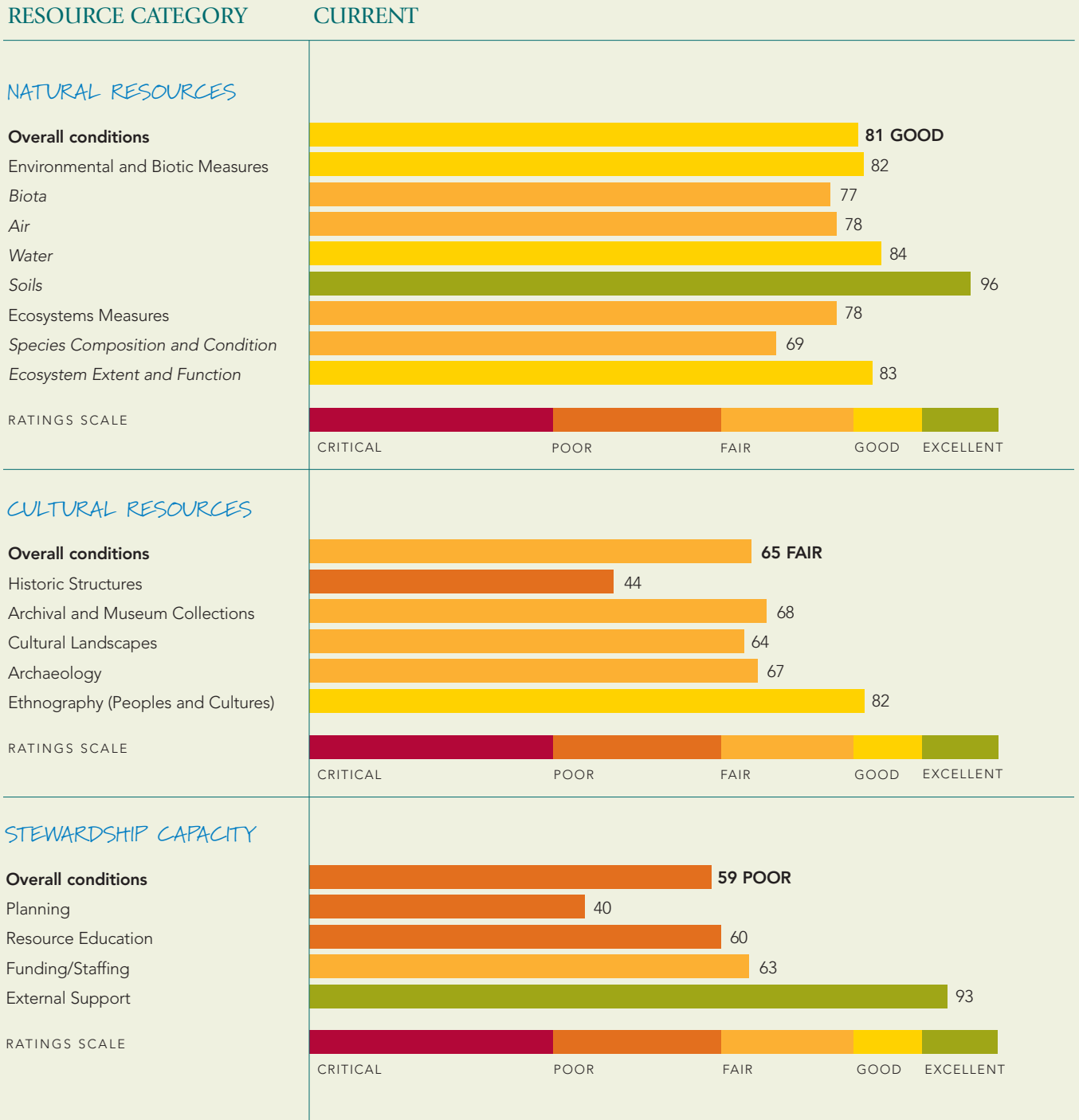
Challenges include adjacent land use practices, particularly timber harvesting (leading to habitat fragmentation and decline); dams on the Elwha River (preventing migration of ecosystem-critical salmon); the introduction and proliferation of non-native invasive species (compromising habitat and community structure and displacing native species); and fishing and harvesting practices (including hatchery releases and treaty and recreational fisheries that may collectively be affecting sustainability and even genetic diversity of native populations).

Overall conditions of the park's known **cultural resources** rated 65 out of a possible 100, indicating they are in fair condition. Olympic is a large park and most of the resources need additional protection. Though the park has identified 600 archaeological sites, hundreds or thousands more may exist. Thirteen of the park's historic and cultural landscapes are in poor condition, and the park needs to complete new and updated condition assessments for more than 150 historic structures. These condition assessments would allow the park to update its 1983 Historic Buildings Survey and the NPS List of

### KEY CHALLENGES

- Olympic National Park's salmon species face the same serious threats felt by salmon throughout the Pacific Northwest. Habitat degradation, hydroelectric projects, hatchery production, and high harvest levels outside the park threaten native salmon, trout, and char populations that rely on park waters for spawning and rearing. Currently, sockeye salmon in Lake Ozette, chinook in the Elwha River, and bull trout throughout the park are listed as threatened species under the Endangered Species Act.
- Fish harvest rates outside the park are based on maximum sustained yield, a concept that maximizes the removal of fish throughout harvest, without accounting for the role of these fish as a food source for other organisms in the ecosystem. The result is a greatly diminished supply of fish to bears, eagles, and other wildlife.
- The park is in critical need of additional staff in nearly every division, but budget constraints limit hiring of full-time and seasonal staff.
- Many of the park's historic structures are located in designated wilderness areas and may be threatened. According to the National Park Service List of Classified Structures, 82 percent of the listed structures have not had a condition assessment in the past five years. Resource managers must proactively determine how and when to preserve Olympic's cultural heritage while at the same time managing for wilderness values.
- Habitat fragmentation threatens natural resources conservation in the park. As incompatible land uses like clearcutting occur on adjacent lands, the park becomes more and more isolated—like an island of protected habitat. This habitat fragmentation exacerbates and/or is the root cause of threatened species issues, barred owl and invasive plant problems, and others.
- Loss of native species such as the fisher and the gray wolf, a top predator, has led to changes in system dynamics within the park. Predators no longer influence large herbivore populations, and this leads to effects on forest structure.
- Thirteen of the park's 31 identified cultural landscapes are in poor condition.
- Non-native invasive species have gained a foothold in the park. Barred owls are replacing northern spotted owls in the park's forests, approximately 186 non-native plant species are competing with native plants throughout the park, and non-native fish have been observed in nearly every major drainage.

**Note:** When interpreting the scores for natural resource conditions it should be recognized that critical information upon which the ratings are based is not always available. The extent to which data requirements for the assessment methodology are met is called information adequacy and provides a basis for interpreting the ratings. In this assessment, 78 percent of the information requirements associated with the methods were met. This reflects the park’s dedication to science and the exceptional research and monitoring programs in place.



The findings in this report do not necessarily reflect past or current park management. Many factors that affect resource conditions are a result of both human and natural influences over long periods of time, in many cases before a park was established. The intent of the State of the Parks® program is to document the present status of park resources and determine which actions can be taken to protect them into the future.

## TOP TEN KEY RECOMMENDATIONS

- Congress and the administration should immediately allocate funds to support critical natural resources research and monitoring programs. Projects include focused research and monitoring on pre- and post-removal of dams on the Elwha River; long-term monitoring of spotted owls, marbled murrelets, and Roosevelt elk; studies focusing on the effects of adjacent land use, particularly logging at or near park boundaries; and an examination of the effects of maximum sustained harvest practices on fish and other organisms in the ecosystem that use fish.
- Park staff should make a concerted effort to work with conservation organizations seeking to buy lands adjacent to the park. The goal of several of these organizations is to provide increased protection for wildlife that depend on resources both within and outside the park boundary. For example, The Western Rivers Conservancy and The Wild Salmon Center are engaged in a partnership to protect lands around the Hoh River (which originates within the park) to further protect salmon.
- Congress and the administration should allocate adequate funds to support non-native plant control activities. Currently, a number of noxious weeds are invading the park, even infiltrating undisturbed forested habitats.
- The Park Service should remove and/or eliminate mountain goats from the park and develop a renewed examination of wolf and fisher reintroduction.
- Congress and the administration should increase park funding to support cultural resources studies and plans. These include an archaeological study to describe and evaluate the condition of 99 percent of the park's 622 identified, but unmonitored sites; an update to the 1988 Archaeological Overview and Assessment; surveys and evaluations of historic archaeological resources; a historic preservation plan to address all structures in the park that are at least 40 years old; and an updated List of Classified Structures that includes all of the park's historic structures, particularly structures such as Mission 66 buildings that have recently become eligible for listing in the National Register of Historic Places.
- The Park Service should continue to explore the possibility of establishing intertidal reserves in conjunction with the Olympic Coast National Marine Sanctuary. These reserves would protect the most biologically rich areas, such that recreational shellfish harvest would not affect these zones.
- Congress and the administration should increase park funding to support additional full-time permanent staff, including vegetation, wildlife, coastal, marine, and fisheries biologists; an archivist; administrative assistance for the ethnographer and archaeologist; a cultural landscape specialist; a full-time research coordinator; and interpretive personnel. These positions should not be outsourced.
- The Park Service should strive to restore excellent visitor services. Congress and the administration should support this effort by providing adequate funding for all operational needs to maintain facilities and provide the full range of education, resource management, and visitor services.
- Congress and the administration should provide funds to procure additional storage space for the park's archive and museum collection.
- The Park Service should provide for the regular preservation maintenance of historic structures through the presence of a historic architect and preservation maintenance specialist. In addition, after hiring a cultural landscape specialist, the park should develop a formal annual cultural landscape monitoring process, strive to include site documentation and treatment recommendations in all landscape studies, and bring 13 of the park's cultural and historical landscapes from poor to good condition. The Park Service should also develop a petroglyph education and protection program to mitigate damage occurring to these resources.



## RESOURCE MANAGEMENT HIGHLIGHTS

- The park has a rare opportunity to restore miles of Elwha River habitat that were degraded by two dams built in the first part of the 20th century. The dams prevent salmon from reaching 70 miles of spawning habitat, and the effects on the ecosystem are far-reaching. Dam removal is scheduled to commence in 2007, and park managers expect salmon populations to begin recovery in this watershed in the next decade. This is one of the Park Service's largest ecosystem restoration projects.
- The park's coast is a mixing zone of southern and northern Pacific intertidal species, creating one of the richest intertidal community assemblages found anywhere on the West Coast. The park's general management plan will examine the possibility of establishing intertidal reserves in conjunction with the Olympic Coast National Marine Sanctuary. These reserves will protect the most biologically rich areas as "seed banks" for adjacent areas and prevent recreational shellfish harvest from affecting these zones.
- Olympic National Park is one of only three parks in the entire park system to have a full-time ethnographer/cultural anthropologist. This staff member meets regularly with tribes on the Olympic Peninsula to facilitate protection and interpretation of traditional cultures and culturally important places. As a result, the park's thriving ethnography program is a worthy model for other park units.
- The park has an active revegetation program to restore denuded or eroded areas of the wilderness or frontcountry (caused by high visitor use levels) and to assist park maintenance operations in stream and riverbank stabilization. Natural resource staff and volunteers collect and propagate native plant cuttings and seeds from areas to be restored. This program subsists on grants and volunteers. In fiscal year 2003, volunteers donated more than 3,000 hours to assist with restoration projects.

The Glines Canyon Dam is one of two dams built on the Elwha River. Constructed in the 1920s, the dam blocked the river's salmon runs.

Classified Structures so that all of the park's historic structures are included in future treatment and management plans.

Olympic's overall **stewardship capacity**—the Park Service's ability to protect resources at Olympic National Park—rated a poor score of 59 out of a possible 100. Funding and staffing shortfalls constrain resource protection efforts and all park operations. In 2003, the park had unfunded needs totaling nearly \$6.1 million, and long-term investment needs totaled approximately \$100 million. Section 110 of the National Historic Preservation Act of 1966 requires NPS and other federal agencies to inventory all cultural resources, but Olympic does not have the money or the staff to carry out this mandate. The park is also mandated to inventory and monitor natural resources. Funds provided through the NPS Natural Resource Challenge provided a welcome opportunity to begin these efforts, but they are far short of what is needed. Important resource management plans have not been completed, and visitor services suffer as a result of insufficient funds and staff. Problems caused by deferred maintenance continue to grow, affecting resource protection needs such as removal of culverts that block fish passage, replacement of non-compliant storage tanks, and other projects.





## IMPRESSIVE NATURAL RESOURCES AND A RICH HUMAN HISTORY



Olympic National Park was established in 1938, in large part to preserve some of the Olympic Peninsula's magnificent old-growth forests from logging and provide protection for herds of native Roosevelt elk (*Cervus elaphus roosevelti*). But creation of a national park did not come easily. Logging was a primary industry in the region, and politically powerful timber interests did not want to lose access to land that contained commercially valuable trees. In the end, countless concerned citizens, conservation organizations, and local

schoolchildren ultimately succeeded in convincing President Franklin D. Roosevelt to support creation of a national park on the Olympic Peninsula.

Powerful geologic processes acting over millions of years have shaped the rugged mountains, rocky coastlines, and lush river valleys of Olympic National Park. The Olympic Mountains were formed when plates on the ocean floor collided with the North American land mass. A massive amount of lava was deposited along the margin of the continent and ocean floor sediment was jammed beneath it, causing



Olympic National Park protects the largest herd of native Roosevelt elk in the wild. Elk are important parts of the ecosystem, and they influence the structure of the forest understory.

the Olympics to rise. Glaciers scoured the peninsula, adding finishing touches to the mountains and creating deep valleys and craggy peaks. More than 60 glaciers are still found in the park.

A huge sheet of ice—the Cordilleran ice sheet—descended from western British Columbia to the Olympics at least six times in the last 1.8 million years, most recently only 15,000 years ago. The ice effectively isolated the Olympic Peninsula from surrounding lands, leading to different communities of flora and fauna than those found nearby. Grizzly bears, wolverines, pikas, and mountain sheep never colonized the Olympic Peninsula, and the peninsula is home to eight plant species and 15 animal species found nowhere else.

At 7,965 feet, glacier-capped Mount Olympus is a primary feature of the park, and the Olympic Mountain range holds sway over precipitation pat-

terns on the peninsula. As moisture-laden air masses move in from the Pacific and are forced over the mountains, they release most of their water as rain or snow. As a result, the western part of the park gets much more precipitation—Mount Olympus receives as much as 240 inches each year—than the eastern part. In the nearby town of Sequim to the northeast, annual precipitation averages only 18 inches. This disparity in precipitation is called a rain shadow, and the rain shadow in the Olympics is the most pronounced example of this phenomenon in the world at temperate latitudes.

The extreme precipitation and elevation gradients in the park allow for a variety of different vegetation zones in a relatively small geographical area. Temperate rainforest, lowland, montane, and sub-alpine forests—some of the last old-growth forests in the Pacific Northwest—boast record size Douglas-fir (*Pseudotsuga menziesii*), Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), western red-cedar (*Thuja plicata*), and other impressive trees.

This unique landscape has also been home to different groups of people for thousands of years. Numerous American Indian tribes and their ancestors lived in the region before settlers of European descent began to explore the area. Hundreds of archaeological sites and historic structures teach visitors about these past inhabitants and the development of the park itself, and new discoveries are still being made. In 1993, a family visiting the park uncovered a fragment of a 2,900-year-old woven cedar Indian basket. This is the park's oldest accurately dated artifact, and it provides an important and easily recognizable link between Native people and the use of resources in the Olympic Mountains.

Olympic is a park with a broad spectrum of natural and cultural resources, and it offers a wide range of recreational and educational opportunities. Visitors can explore the rainforests of the Hoh River Valley, visit ancient petroglyphs along the coast, and enjoy the scenic vistas along Hurricane Ridge. Managing a park with such diverse resources is a challenge, and park staff struggle to uphold the Park Service mandate of protecting park resources, while

at the same time providing for visitor enjoyment of those resources. This struggle is made even more difficult by funding constraints.

Sometimes cultural and natural resource management objectives conflict with one another and with visitor experience objectives. For example, visitors might want access to remote areas of the park, but maintaining roads or trails could lead to degradation of natural and cultural resources in those areas. Ninety-five percent of the park is designated wilderness, and management of historic structures and other

cultural resources in these areas can be challenging. Park staff must strive to find a balance between cultural and natural resource values when formulating management strategies, and these values must be considered when planning for visitor services. This is a complicated task made more complex by the lack of a park-wide wilderness management plan. The park is currently drafting a new general management plan (GMP) to address these and other park management issues. To learn more about the GMP process, please visit [www.nps.gov/olymp/pphtml/news.html](http://www.nps.gov/olymp/pphtml/news.html).

## OLYMPIC NATIONAL PARK



MATT KANIA



## THE OLYMPIC ASSESSMENT

OLYMPIC NATIONAL PARK

10

Olympic National Park



### NATURAL RESOURCES— MOUNTAINS, FORESTS, AND COASTLINE REPRESENT UNIQUE RESOURCES AND CHALLENGES

**T**he assessment rated the overall condition of natural resources at Olympic National Park an 81 out of 100. Influences on the ratings include myriad effects associated with adjacent land use, particularly historic logging practices around and in many cases abutting park boundaries. These effects include increased downstream sedimentation loads to tributaries, lakes, and coastal discharge points, detrimental effects on salmon and other sensitive species, enhanced

opportunity and pathways for invasive species, and potential habitat-degrading forest edge effects. Collectively, logging and adjacent lands development increasingly serve to isolate the park interior, limiting animal movement and forcing sensitive species to retreat into the park for refuge.

Additional prominent factors affecting the ratings are the effects of introduced non-native mountain goats (*Oreamnos americanus*) on alpine and sub-alpine plant communities, harvest of fish and intertidal marine animals, displacement of threatened spotted owls by the barred owl (*Strix varia*), trampling on intertidal communities, competitive effects of and hybridization with hatchery and non-native fish, and the proliferation of invasive plants.

## SALMON AND OTHER ANADROMOUS FISH—VITAL ECOSYSTEM LINKS

Olympic National Park contains 3,550 linear miles of stream, including 300 miles of river and 3,250 miles of creek. Together with the park's lakes, these waters are home to 29 native freshwater fish species, including at least 54 unique populations of Pacific salmon and steelhead, one endemic species, and five non-native fish species. The park represents one of the largest contiguous areas of undisturbed aquatic habitat in the lower 48 states, and contains some of the last free-flowing coastal rivers in the United States.

In Olympic National Park, salmon link together the mountains, forests, coast, and sea. The park's rivers and streams are the corridors through which they travel. Salmon begin life in the gravelly bottoms of cold, clear rivers that flow from snowmelt high in the Olympic Mountains. These rivers nurture them until they head for the coast and swim to the sea, where they grow to maturity on the ocean's bounty. Then, following an age-old genetic calling, they battle upstream to return to their natal streams where they give their last strength to spawn, creating the next generation. This life history is termed anadromy.

Many species of Pacific salmon die after spawning, and as life leaves their battered bodies, the salmon become food for a host of forest inhabitants. Bears, eagles, raccoons, skunks, and even mice feast on the dead and dying fish. The bodies of the salmon nourish the next generation of juveniles by providing nutrients to stream invertebrates and other organisms that will become food for the young salmon.

Recent studies have shown that salmon also nourish the forest system. When carcasses are dragged ashore by bears and other forest animals, what is left uneaten becomes food for scavengers, as well as a supplemental nutrient flow into the system. The fish are rich in nitrogen, a primary nutrient required by trees and other vegetation. Decaying salmon carcasses, as well as waste from animals that have consumed salmon, release nitrogen and other nutrients that are used by plants.

## SPECIAL WILDLIFE SPECIES IN OLYMPIC NATIONAL PARK

### Federally endangered species:

- Brown pelican (*Pelicanus occidentalis*)

### Federally threatened species:

- Bull trout (*Salvelinus confluentus*)—coastal/Puget Sound
- Marbled murrelet (*Brachyramphus marmoratus*)
- Northern bald eagle (*Haliaeetus leucocephalus*)
- Northern spotted owl (*Strix occidentalis caurina*)
- Ozette sockeye salmon (*Oncorhynchus nerka*)
- Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*)
- Stellar sea lion (*Eumetopias jubatus*)

### Endemic species:

- Olympic marmot (*Marmota olympus*)
- Olympic yellow-pine chipmunk (*Tamias amoenus caurinus*)
- Olympic snow mole (*Scapanus townsendii olympicus*)
- Olympic ermine (*Mustela erminea olympica*)
- Olympic torrent salamander (*Rhyacotriton olympicus*)
- Beardslee rainbow trout (*Oncorhynchus mykiss irideus*)
- Crescenti cutthroat trout (*Oncorhynchus clarki clarki*)
- Mazama pocket gopher (*Thomomys mazama*)

### Extirpated species:

- Gray wolf (*Canis lupus nubilus*)
- Pacific fisher (*Martes pennanti pacifica*)—possibly extirpated

The Olympic marmot is an endemic species that makes its home in the park's alpine areas.



TWENTY-SIX RUNS OF PACIFIC SALMON  
AND STEELHEAD ARE FEDERALLY  
THREATENED OR ENDANGERED, AND MANY  
MORE ARE CONSIDERED TO BE AT  
HIGH RISK OF EXTINCTION.



Elinor Chittenden poses with a steelhead caught in the Elwha River in 1907, before two dams were constructed on the river. The dams obstructed salmon and steelhead migration, leading to severe population declines.

Both historic and contemporary practices occurring outside the park's borders, including habitat degradation, hydroelectric projects, high levels of harvest, and hatchery production—often called 'the four Hs'—continue to have detrimental effects on salmon populations within the park. Salmon habitat is degraded by logging, erosion, development along waterways, and other activities that affect water temperatures, suspended sediments, flows, and stream dynamics. Hydroelectric projects directly affect salmon by limiting access to traditional spawning habitat and changing river flows. Based on maximum sustained yield, harvest levels for salmon are determined by economic return, with little regard for the ecosystem-wide benefits salmon provide. Hatcheries, initially built to supplement wild salmon populations, actually harm the fish by diluting native gene pools. In addition, the abundance of hatchery fish allows officials to set higher harvest limits for salmon. As a result, more wild salmon are inadvertently caught, further depleting wild runs and affecting the park's aquatic and terrestrial ecosystems.

Twenty-six runs of Pacific salmon and steelhead are now listed under the Endangered Species Act, and several of these occur in the park. Many more runs are considered to be at high risk of extinction. Salmon and their habitat are protected within Olympic National Park, but the fish face many obstacles as they migrate from the park, to the ocean, and back. In some places, like the Elwha River, these obstacles are insurmountable.

FLORA—TOWERING TREES AND  
CREEPING CRYPTOGRAMS POPULATE  
THE PARK

Steep elevation and precipitation gradients create the conditions needed for a variety of vegetation communities in Olympic. Towering Sitka spruce and western hemlock blanketed with tapestries of mosses, lichens, and ferns, as well as big-leaf maples (*Acer macrophyllum*) covered with epiphytes, characterize the rainforests of the Quinalt, Queets, and Hoh river valleys on the west side of the park. Abundant rainfall keeps the forest green with growth, providing

healthy habitat for cougars (*Puma concolor*), black bears (*Ursus americanus*), northern spotted owls, and a variety of other animals.

Further inland and above the rainforests, western hemlock, Douglas-fir, and grand fir (*Abies grandis*) dominate the lowland forest. As elevation increases, the montane forests of Pacific silver fir (*Abies amabilis*) and western hemlock begin to take over the landscape. Climbing even higher into the Olympic Mountains, visitors can experience the subalpine zone where winters are longer and mountain hemlock (*Tsuga mertensiana*) and subalpine fir (*Abies lasiocarpa*) are the primary trees. Meadows of wildflowers attract photographers and add color to the park's subalpine and alpine areas.

The region also hosts an impressive array of lichens, liverworts, and mosses—collectively known as cryptogams—that are key components of Olympic's ecosystems. They hold large quantities of water that help keep the forests cool and humid, they are eaten by deer, elk, and slugs, and they provide shelter for birds and other forest creatures. Early human inhabitants of the Olympics used moss as bedding and insulation, and today some lichens are used in deodorants and herbal remedies. Lichens are also important indicators of air quality because they are intolerant of pollutants. These organisms could serve as early warning systems of ecosystem stress, and park staff should consider incorporating such a monitoring component into the long-term research plan for the park.

The park's lush vegetation enchants visitors but also lures poachers looking for mosses, ferns, salal, and other greenery to be used in the floral industry. Cedar trees and other species near the park boundary are targets of illegal harvest, and so are wildlife such as elk, deer, and black bears. Logging roads criss-cross adjacent lands, providing access to parts of the park that were once remote. Poachers take advantage of this access, and law enforcement officials have a difficult time controlling illegal activities. Poaching is a widespread problem throughout the park system and should be addressed with additional law enforcement staff, greater public awareness of the seriousness of the problem, and stricter punishment of offenders.



### OLYMPIC'S FORESTS—A SAFE HAVEN FOR SPECIAL SPECIES

In a landscape scarred by clearcuts, Olympic National Park protects some of the last remaining stands of old-growth forest in the Pacific Northwest. Scientists estimate that as much as 82 percent or more of original old-growth forest that existed in Washington before logging activities is now gone. The protected forests and alpine areas of the park act as a refuge for countless wildlife species, including a number of formerly and currently designated federally threatened and endangered species, as well as endemic species found nowhere else.

Preservation of one special species—native Roosevelt elk—was one of the primary reasons that Olympic National Park was established. The animals were hunted extensively until fewer than 2,000 remained in 1905. Hunting was prohibited until

Mosses, ferns, lichens, and liverworts cover nearly every surface in Olympic's rainforests. The lush vegetation helps to keep the forests cool and humid, and it provides food and shelter for a host of wildlife species.



## RESTORING THE ELWHA



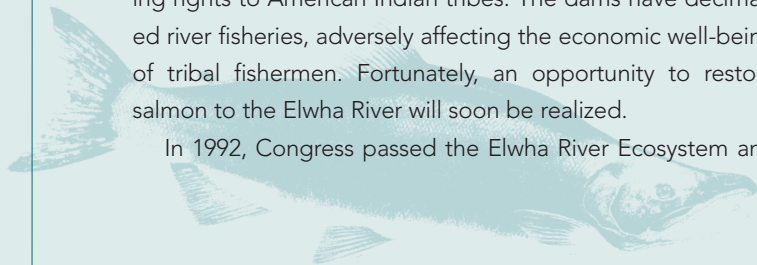
The Elwha, the largest of the park's watersheds, once supported all five species of local Pacific salmon, in addition to anadromous steelhead trout (*Oncorhynchus mykiss*). Accounts of 100-pound chinook salmon (*O. tshawytscha*) from the Elwha are legendary, but this natural bounty ended when two dams were built on the river in the first quarter of the 20th century, preventing salmon from reaching traditional spawning and rearing areas. The dams blocked more than 70 miles of main-stem and tributary habitat that once supported as many as 380,000 salmon and sea-going trout, and the dams degraded the remaining 4.9 miles of habitat still accessible to the fish by preventing the downstream transport of large woody debris, nutrients, and coarse sediment required for spawning. Recent estimates indicate there are fewer than 3,000 naturally spawning salmon and steelhead in the Elwha today.

The effects of damming this river reach far beyond the impacts wrought on salmon populations and are felt by many species of aquatic and terrestrial wildlife that feed on salmon. The dams are also at odds with treaties that guaranteed fishing rights to American Indian tribes. The dams have decimated river fisheries, adversely affecting the economic well-being of tribal fishermen. Fortunately, an opportunity to restore salmon to the Elwha River will soon be realized.

In 1992, Congress passed the Elwha River Ecosystem and

Fisheries Restoration Act, which authorized the federal government to acquire both dams and remove them to restore the Elwha River ecosystem and native anadromous fisheries. The dams now belong to the federal government, and removal is slated to begin in 2007. Chinook, coho (*O. kisutch*), chum (*O. keta*), sockeye (*O. nerka*), and pink salmon (*O. gorbuscha*) and steelhead trout runs are expected to recover in a matter of decades, albeit with some human assistance. For example, juvenile chinook salmon will be propagated in the Washington Department of Fish and Wildlife's Rearing Channel on the Elwha, as they are now, and transported to areas within the park by helicopter for release.

The Elwha represents a unique opportunity to correct past mistakes, as well as an unsurpassed opportunity to learn from those mistakes. The Elwha is a particularly special situation because the land upstream of the dams is some of the most pristine habitat in the Pacific Northwest. Documenting the effects of restoring salmon to such an unaltered environment would be an unequalled natural experiment that could not be replicated anywhere else, and the information gained could be used to inform other river restoration efforts. This restoration project is one of the Park Service's largest, yet only limited funds are available to monitor the recovery of salmon populations or study ecosystem responses to salmon recovery.



1933, but the elk needed continued protection from unregulated hunting if they were to survive. The park provided this needed refuge. Today, Olympic protects about 3,000 to 5,000 animals, the largest population of Roosevelt elk in the wild. As large herbivores, elk are important to the park's ecosystem. They play a major role in determining the structure of the forest understory and are an important food source for large carnivores. Although the park's elk population is protected, several animals have been killed illegally, and hunting and habitat loss threaten elk that use resources outside the park.

Just as park protection is important for the preservation of Roosevelt elk, it is also key for marbled murrelets, small and agile seabirds that nest inland in old-growth forests, and northern spotted owls, the unwitting poster species for protection of old-growth forests. Habitat loss is thought to be the main reason behind decline of both of these federally threatened species. The old-growth forests of Olympic National Park represent some of the best remaining murrelet habitat, giving the park a critical role in the conservation and recovery of this species. A well-defined monitoring plan is needed to keep park managers up-to-date on murrelet populations, and cooperation with surrounding state, federal, and private landowners to preserve remaining suitable murrelet habitat is critical to the preservation of this species.

The park hosts about 230 pairs of northern spotted owls, more than 50 percent of the owls that occur on National Park Service lands within the bird's range in California, Oregon, and Washington. Olympic has been monitoring the spotted owl population in the park since 1989, contributing to a valuable long-term data set, but scarce funds threaten to quash the park's ability to continue these studies. Continued monitoring is as important as ever since recent studies show that barred owls, tough non-native competitors of spotted owls, are moving into Olympic. Barred owls have been found throughout the park and may be excluding spotted owls from desirable habitat. Olympic National Park is considered to be a prime example of unaltered Pacific Northwest old-growth forest habitat, making it the ideal location to monitor

both spotted and barred owls to further understand the competitive dynamics between these two species.

Bald eagles (*Haliaeetus leucocephalus*), designated as threatened in 1967 after DDT poisoning decimated populations, have made a comeback along the park's coastal strip. They feed on the plentiful seabirds that frequent the coast, but bald eagles may not be as common in the park's interior even though there is plenty of suitable habitat. What's missing? The salmon that the eagles would normally feed on have been drastically reduced from historic levels, possibly limiting eagle populations. The return of salmon to the Elwha River could significantly benefit eagle populations in the park's interior, but few funds are available to study wildlife response to salmon recovery.

Olympic National Park protects important habitat for the northern spotted owl, below. But displacement by non-native barred owls is a concern. Funds are needed to support continued research to further understand the competitive dynamics between these two species.





Park visitors can discover colorful sea stars, anemones, and other organisms along the coast. Care should be taken not to disturb these fragile organisms and their habitat.

#### OLYMPIC'S COASTS—DIVERSE ASSEMBLAGE OF MARINE LIFE

Olympic National Park protects more than 65 miles of undeveloped Pacific coast—one of the largest stretches of wilderness coast in the contiguous United States. The coast is a mixing zone of southern and northern Pacific intertidal species and is home to an estimated 130 species of plants and 180 species of animals, making it one of the richest intertidal communities anywhere on the West Coast. Rocky shores, boulder and cobble fields, and sandy beaches each host a contrasting complement of species. Pools that form at low tide are favorite sites to discover colorful sea stars, anemones, barnacles, limpets, chitons, and coralline algae.

Additional protection for the park's coastal strip came with the establishment of the Olympic Coast

National Marine Sanctuary in 1994. The sanctuary protects 3,310 square miles of marine waters off the Olympic Peninsula, including those waters adjacent to Olympic National Park. This partnership ensures broader protection for the coastal environment and its varied inhabitants, but concerns about sensitive linkages between intertidal and nearshore environments and habitat of special species like the northern sea otter (*Enhydra lutris*) remain. These concerns are related to the effects of erosion and increased sediment loads from the mainland on the nearshore environment, as well as the effects of potential overharvest of marine organisms.

Three subspecies of sea otters once were found from Japan's northern islands, east across the Aleutian chain to the mainland of North America, and south along the coast to Baja California, Mexico. Pursued for their luxuriant fur, sea otters were driven to the brink of extinction by the maritime fur trade in the 18th and 19th centuries. Protection for the sea otter came in 1911 with the International Fur Seal Treaty, but by that time they had been extirpated from most of their range. Reintroduction efforts in 1969 and 1970 led to the successful reestablishment of a northern sea otter population off the coast of Washington, adjacent to Olympic National Park. Wildlife managers have been monitoring sea otters regularly since their reintroduction. The population has grown steadily to about 600 animals, but there has been recent cause for concern because of sea otter deaths from unknown causes. Some deaths may be attributable to disease, while some otters may be affected by biotoxins accumulating in shellfish, a major food source. More research is needed to determine causes of sea otter mortality.

Oil spills from the high levels of marine traffic off Washington's coast are a real threat to all marine organisms, as well as coastal birds. Two spills occurred near the Olympic Peninsula in 1988 and 1991, killing thousands of seabirds and at least one sea otter. New spills have the potential to be even more destructive.

Park managers are also concerned about the effects of marine harvest and other visitor impacts

such as trampling. Visitors who possess a Washington shellfish license are allowed to collect a variety of native intertidal species from within park boundaries. The effects of this harvest on populations of marine organisms have not been well documented. The park's general management plan will examine the possibility of establishing intertidal reserves in conjunction with the Olympic Coast National Marine Sanctuary. These reserves would preserve the most biologically rich areas and ensure that recreational shellfish harvest would not affect these zones.

Trampling and disturbance of intertidal areas, specifically tide pools, are also concerns. These are fragile systems and can be affected by high visitor use. Foot traffic can crush or dislodge organisms, and one study found that tubeworm colonies in areas accessible to visitors were only half as large in diameter when compared with colonies in inaccessible areas.

Park managers must find a way to balance visitor access to these areas with protection of them. Solutions could include increasing visitor education about tide pool etiquette and focusing foot traffic in designated areas.

### EXTIRPATED AND NON-NATIVE SPECIES — RESTORING SOME SPECIES AND MANAGING OTHERS

Olympic National Park still contains nearly the full complement of wildlife species that were historically present in the area, but one species is conspicuously absent: the gray wolf (*Canis lupus nubilus*). Wolves once roamed the Olympic Peninsula, but systematic hunting, trapping, and poisoning eliminated them by the 1930s, a fate experienced by wolf populations across the country. Reintroduction of gray wolves to the Olympic region has been suggest-

Wolves were extirpated from the Olympic Peninsula by the 1930s, but reintroduction of these important top predators might be feasible in Olympic National Park.



GARY KRAMER / USFWS

Mountain goats are not native to the Olympic Peninsula, but they were introduced to the area in the 1920s. Unfortunately, they pose a threat to some of the park's rare and endemic plants.

ed on at least four occasions since the 1930s. Most recently, a 1999 study indicated that Olympic National Park may be a suitable site for reintroduction of gray wolves. Public and political support for reintroduction will be critical to success, but some peninsula residents oppose wolf reintroduction, citing concerns ranging from human safety and livestock losses to depletion of game animals.

Fishers (*Martes pennanti*) and martens (*M. americana*)—medium sized mustellids found in old-growth coniferous forests—inhabited Olympic National Park in the past. These two species have declined throughout their ranges as a result of trapping, predator control programs, and habitat loss. Researchers now believe fishers have been extirpated from the state of Washington, and recent park surveys for martens have come up empty. Fishers are listed as a Washington state endangered species and may become federally listed as threatened. The state of Washington is conducting a study to assess the feasibility of reintroducing these animals, and Olympic National Park has been singled out as the best site for fisher restoration in the state. Park staff are cooperating with state officials on the initial phases of this

project. More research is needed to determine the status of the park's marten population and evaluate whether management intervention is necessary.

Mountain goats, a non-native species, are of particular concern in Olympic National Park. Eleven or 12 goats were introduced to the area in the 1920s, most likely to establish a population that could be hunted. However, hunting was prohibited when Olympic National Park was established in 1938. Once introduced, mountain goats fared well on the peninsula, and their population reached an estimated 1,175 animals in 1983. The animals negatively affect native ecosystems in the park by grazing, wallowing, trampling, and eroding soils.

Concern for park resources, particularly rare and endemic plants, prompted park officials to adopt a goat population control strategy during the 1980s that included live capture and shooting. The most recent estimate places the population between 237 and 325 animals, but this number will likely increase without further control measures. Studies show that shooting the animals is the least expensive and most effective means of removing goats from the park, but this method is highly controversial. Park officials are struggling to fulfill their management obligation of removing non-native species that degrade park resources in a way that is cost-effective and sensitive to public sentiment.

Non-native plants are taking a toll on the park's native vegetation. Approximately 186 non-native plant species inhabit the park, and some are displacing state-listed rare and sensitive native plants. The worst offenders include herb Robert (*Geranium robertianum*), Japanese knotweed (*Polygonum cuspidatum*) reed canarygrass (*Phalaris arundinacea*), English holly (*Ilex aquifolium*), English ivy (*Hedera helix*), Canada thistle (*Cirsium arvense*), and Scot's broom (*Cytisus scoparius*). These species can withstand disturbance, shade, and unfavorable conditions, and some can invade essentially undisturbed forest. Control methods are ineffective, costly, or very labor-intensive, and limited funds constrain park efforts to comprehensively address these destructive non-native invaders.



## ADJACENT LAND MANAGEMENT— EFFECTS OF LAND USE FELT WITHIN PARK

Olympic National Park is surrounded by private, state, and other federally owned lands such as national forests. The park has no control over activities on these lands, and adjacent land uses such as logging and urbanization are sometimes at odds with the park's preservation goals. Logging is particularly detrimental to surrounding habitats and effects are felt within the park as well.

Clearcutting severely alters terrestrial systems by destroying and fragmenting habitat. Logging activities on lands surrounding the park effectively isolate sensitive species that are unable to or avoid travel through deforested lands. Timber removal that occurs right up to park borders reduces the protective buffer zone around the park and increases edge effects. It may be easier for non-native generalist species to infiltrate the park, out-competing native species, as evidenced by the displacement of spotted owls by non-native barred owls. Logged lands may also provide a corridor for invasive plants to establish themselves in the park. Herbicides and other chemical treatments are frequently used on logged lands. These harmful substances may drift onto parklands and into park waters, but the effects of this contamination have not been studied.

Aquatic systems are affected by clearcuts in many ways. Trees and other vegetation shade streams and rivers, but when they are removed water temperatures can rise and become too warm for temperature-sensitive species, including salmon. Clearcutting also leads to increased erosion and sediment washing into waterways, choking out aquatic life. Salmon and steelhead trout must pass through these affected lands as they migrate between the park and the ocean. Declining sockeye salmon populations in Lake Ozette have been attributed primarily to shoreline and tributary habitat degradation on the lake's eastern side. This part of the lake borders private land, much of which has been logged. The salmon populations have declined so much that the Ozette sockeye were classified as threatened in 1999.



Continued logging is increasingly isolating the park, turning it into an island of vulnerable habitat.

CLEARCUTTING ON LANDS SURROUNDING  
THE PARK DRAMATICALLY ALTERS BOTH  
TERRESTRIAL AND AQUATIC HABITATS.  
SOME OF THE EFFECTS ARE FELT WITHIN  
THE PARK AS WELL.

Eleven major rivers radiate out from the Olympic Mountains, and because they originate in the park, their waters are relatively pristine. However, the rivers are threatened with several sources of degradation outside the park.

Restoring the flora and fauna inside the park requires cooperation with managers of adjacent lands. Park staff should continue to build on existing partnerships and develop additional partnerships with organizations seeking to purchase or establish conservation trusts on lands adjacent to the park.

#### WATER QUALITY—PARK WATERS HEALTHY BUT DEGRADATION OCCURS OUTSIDE OF PARK

Olympic's watersheds are likened to the spokes of a giant wagon wheel—11 major rivers radiate out from the mountains and flow to the Pacific Ocean, Strait of Juan de Fuca, and Puget Sound. These rivers are fed by glaciers and snowmelt high in the Olympic Mountains, and because they originate within the park, their waters remain essentially pristine. Outside the park, however, Olympic's rivers are threatened with several sources of degradation. Contamination can occur as a result of municipal and industrial waste-

water discharges, agriculture, residential development, logging activities, gravel pit operations, stormwater runoff, recreational use, and atmospheric deposition.

Studies conducted within the park indicate that water quality is generally good, but detrimental effects that occur outside park boundaries affect downstream waters and coastal areas where the rivers meet marine environments. Little work has been done to quantify these downstream effects.

Two large lakes, Ozette and Crescent, are contained within Olympic National Park, but some of Lake Ozette's eastern shoreline is privately owned, and 106 privately owned tracts of shoreline lie along Lake Crescent. The watersheds of both lakes are outside park borders, and much of Lake Ozette's watershed has been heavily logged. Both lakes contain unique fish species, and some of these have been declining. The federally threatened Ozette sockeye does not exist anywhere else in the world, and overfishing and shoreline and tributary habitat degrada-



tion are thought to be primary causes of its decline. Nutrient loading occurring in Lake Crescent causes algal blooms that choke gravels in the primary spawning area of the endemic Beardslee trout.

The park has been conducting a long-term monitoring program in West Twin Creek in the Hoh River watershed since 1984. Work has primarily focused on determining the effects of nitrate and sulfate inputs from precipitation. These two common pollutants, which may be transported to the park from as far away as Asia, can disrupt nutrient cycles and alter soil and stream acidity. Nitrate deposition was linked to increased acidity in West Twin Creek, and the system was thought to be on the verge of nitrogen saturation. Total deposition of both nitrates and sulfates increased during the 1990s, but has decreased significantly from 2000 through 2002. These long-term studies in West Twin Creek provide important data that can be used to evaluate resource condition and identify trends.

#### AIR QUALITY—SOME OF THE BEST IN THE PARK SYSTEM, BUT CONTINUED MONITORING NEEDED

Air quality at Olympic National Park generally ranks among the best in the National Park System. Its location on the Olympic Peninsula keeps the park largely isolated from major industrial centers and pollution sources, although the eastern side of the park probably receives some pollution from Seattle and Puget Sound communities. That is not to say the park is without concerns. Wet sulfate deposition (a component of acid rain) measured near the Hoh ranger station as part of the Clean Air Status and Trends Network (CASTNet) and National Atmospheric Deposition Program/National Trends Network (NADP/NTN) programs showed an increasing trend through the 1990s. More recent data (2000-2002), however, suggest the trend has reversed itself. It is thought that atmospheric sulfate concentrations at Olympic may in part be related to fluctuations in natural dimethyl sulfide production in the seas near the park. In contrast, nitrate deposition decreased slightly through the 1990s, but increased during the 2000-2002 period.



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Although visibility is generally excellent at Olympic, data collected from September 2001 to January 2003 showed elevated haze levels in the summer months with values averaging 12.4 dv (deciviews). Lower deciview values indicate better visibility. Olympic's worst days are still better than the best visibility days in Great Smoky Mountains and Shenandoah national parks, two parks with some of the worst air pollution in the park system. Data collected 1990-1999, show that the best visibility days in Great Smoky Mountains and Shenandoah averaged 14.4 and 13.1 dv, respectively.

Ozone pollution to date at Olympic has been of minimal concern with no reported exceedances of Environmental Protection Agency clean air standards. Measurements taken in the park are consistently among the lowest of all parks monitored. But there has been concern that persistent organic pollutants could be traveling to the park from as far away as Asia. Additional research is needed to determine levels and sources of these pollutants.





Lake Crescent Lodge, where President Franklin D. Roosevelt stayed during a visit in 1937, serves today's park visitors.

## CULTURAL RESOURCES—12,000 YEARS OF HUMAN HISTORY

Olympic scored an overall 65 out of 100 for cultural resource conditions, including archaeology, cultural landscapes, historic structures, museum and archival collections, and peoples and cultures (ethnography). This score indicates that the park's cultural resources are in fair condition (Fair: 61–80). The scores for cultural resources are based on the results of indicator questions that reflect the National Park Service's own Cultural Resource Management Guideline and other policies related to cultural and historical resources.

## HISTORIC STRUCTURES—UPDATE LIST OF CLASSIFIED STRUCTURES

Olympic National Park has more than 100 historic structures, including homesteads, lodges, administrative buildings, and backcountry ranger stations and shelters, yet many of these are not in the park's official List of Classified Structures (LCS). This list needs to be updated to include newly eligible National Register of Historic Places buildings and other unlisted structures to ensure they receive proper treatment and maintenance. In addition, some structures that have been removed or have collapsed should be deleted from the list. About half of the 109 listed structures are in good condition, while the other half

are in unknown, poor, or fair condition. The park also needs to implement an annual monitoring program and receive adequate funds to keep important structures from deteriorating.

Some of the park's historic buildings are still used, and continued use is one of the best ways to ensure these structures will be preserved. Lake Crescent Lodge, where President Franklin D. Roosevelt stayed during a visit in 1937, serves today's park visitors. Olympic Park Institute, a non-profit education and outreach organization, operates from the historic Rosemary Inn. And the 1930s era Enchanted Valley Chalet is now a summertime ranger station.

In 1988, Congress designated about 95 percent of the park as wilderness, raising new issues about the management of some of the cultural resources in these areas. Management issues are further complicated by the lack of a park-wide wilderness management plan. Some people believe that certain human structures do not belong in a wilderness area, while others feel that historic structures should be valued for their role in telling the story of the area's history. Park staff are in the challenging position of determining how to preserve Olympic's historical and cultural heritage as one of many wilderness values.

Federal mandates such as the National Historic Preservation Act of 1966 require resource managers to consider potential effects on historic structures before any action can be taken that could harm them. Some of the park's backcountry shelters are believed to be in poor condition, and park staff must decide whether backcountry structures should be allowed to decay or whether actions should be taken to reconstruct, stabilize, preserve, or rehabilitate them. This type of management challenge is not unique to Olympic National Park—similar decisions must be made throughout the park system.

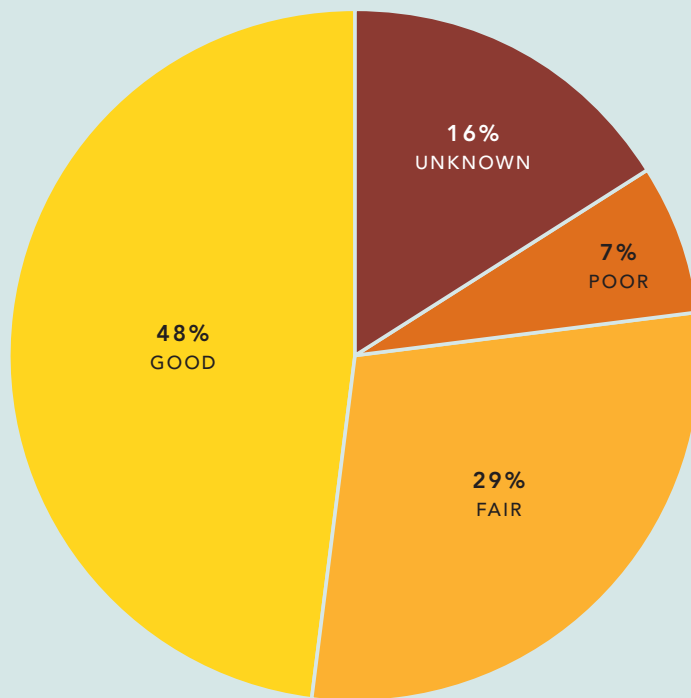
### CULTURAL LANDSCAPES—TELLING THE STORY OF PAST INHABITANTS

Cultural landscapes provide a blend between natural settings and historical context, illustrating the ties between people and the land. At Olympic National Park, cultural landscape management centers on pre-

serving the historical integrity of landscapes, despite changing patterns of land use. The park has 31 identified cultural landscapes that may be eligible for listing in the National Register of Historic Places, including historic homesteads and resort properties such as Humes Ranch, Roose's Homestead, Kestner's Homestead, Park Headquarters, Lake Crescent Lodge, and the Rosemary Inn. Thirteen of these landscapes are in poor condition because of a lack of resources and staff able to formulate and execute appropriate management plans for their protection.

The Kestner-Higley Homestead, located in the southwest corner of the park, is eligible for the National Register of Historic Places. Anton Kester homesteaded at this site in 1900, and his settlement became the largest and most successful homestead in the Quinault Valley. The park hopes to find funds to further interpret this homestead with trails and exhibits.

### CONDITION OF HISTORIC BUILDINGS ON THE LIST OF CLASSIFIED STRUCTURES



## PROTECTING THE PARK'S PETROGLYPHS

Some of the first people to inhabit the Olympic Peninsula left behind evidence of their lives in the form of petroglyphs—carved symbols and images that can be found on rocks and outcroppings along the coast. These sites give visitors a glimpse of the past and provide a broader context for the vast natural resources and scenic beauty of the park. Unfortunately, these important resources do not always receive proper respect, and some have been defaced by vandals. Damaged areas include the park's largest petroglyph site, which is listed in the National Register of Historic Places.

The park has identified the need to develop an effective petroglyph protection and education program to protect this important site. The proposed approach would involve an interdisciplinary team composed of cultural resource specialists, resource educators, and law enforcement staff working in coordination with local tribal representatives to develop a comprehensive public education plan.

## ARCHIVAL AND MUSEUM COLLECTIONS—SAFE MUSEUM STORAGE SPACE NEEDED

Olympic possesses a valuable collection of museum objects and archival items—489,179 recorded items in all—including prehistoric Indian basket collections and tools, natural history specimens, large animal antlers, historic maps, beadwork, and oral histories. About 43 percent of these items are not catalogued, making management and preservation of the entire collection a challenge. The backlog was at 95 percent just three years ago, demonstrating the efforts by park staff to remedy this situation. Staff also made duplicates of the park's unique collection of oral history audiotapes. There is now a lending library of cassette tapes and a system to locate these tapes is available to researchers.

Most of the backlogged items (about 200,000) are archival documents, but Olympic does not have an archivist or curator on staff who has been trained to process and care for these resources. Despite serious programmatic needs, the park has done an excellent job making resource management records available electronically for staff use, enabling them to make better-informed decisions.

Limited storage space is also a concern. Some items are stacked too high, and temperatures often exceed safe photographic preservation standards. Large furnishings and animal antlers are stored in a building without temperature controls, a sprinkler system, smoke detectors, or intrusion alarms. In spite of these concerns, the park met 70 percent of items on the *Checklist for Preservation and Protection of Museum Collections* in 2000.

## ARCHAEOLOGY—ADDITIONAL INVESTIGATION COULD UNCOVER MORE SITES

The park's 622 identified archaeological sites provide evidence of human occupation of the region dating back at least 12,000 years. In 1993, park visitors found fragments of a 2,900-year-old woven cedar Indian basket. The basket adds to the already large body of evidence supporting extensive use of the



Although the Olympic Mountains had been important to peninsula tribes for centuries, it wasn't until the late 1880s that they were explored by outside groups.

Olympic Mountains by peninsula tribes. While knowledge and appreciation of native use of the mountains is widespread within tribal communities and the anthropological community, it has been through artifacts such as the basket that the general public has become aware of the importance of the mountains to the peninsula's tribes.

The oldest known archaeological site in the region, the Manis Mastodon Site, dates to 10,000 B.C. and was found accidentally by Emanuel Manis in the late 1970s. Remarkably, the mastodon that was discovered had a spear point made of antler bone lodged in one of its ribs. The rib had partly grown over the spear point, suggesting that it was not the cause of the prehistoric mammal's death. Other archaeological resources include shell middens, petroglyphs, lithic sites, and historical sites. Archaeological investigations at the Ozette village along the northern part of the Olympic coast led archaeologists to believe that Ozette was possibly one of the largest whaling villages south of Alaska.

The potential knowledge to be gained through archaeological studies within Olympic National Park is of great regional significance, yet less than 1 percent of the park has been surveyed for archaeological resources. Olympic's 622 identified archaeological sites have received preliminary documentation, but few have received formal condition evaluations. In addition, Olympic's Archaeological Overview and Assessment, a primary archaeology management document that was completed in 1988, needs revision.

Interpretation of archaeological resources and education for visitors and park staff are critical to resource protection. Some of the park's archaeological resources are at risk because of increasing visitation to popular sites and because visitors and staff do not always recognize the significance of these resources. Increased traffic to some sites in the backcountry can lead to loss of vegetation, resulting in erosion that can threaten the resources. Today's



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ACCORDING TO ARCHAEOLOGICAL INVESTIGATION, AN OZETTE VILLAGE ALONG THE NORTHERN PART OF THE OLYMPIC COAST MAY ONCE HAVE BEEN ONE OF THE LARGEST WHALING VILLAGES SOUTH OF ALASKA.

Melissa Peterson, a Makah tribal member from Neah Bay, documents the materials and weave style of this basket.

backcountry campsites, because of their prime locations, are often the same campsites of prehistoric or historic times.

Olympic's cultural resources staff participate in several collaborative research projects including a partnership with staff at Mount Rainier National Park and North Cascades National Park to research sub-alpine archaeological sites and a project involving students at Western Washington University to study Ozette Lake and its prairies. Cooperation between the park and tribal representatives is important for the protection of petroglyphs along the coast.



### ETHNOGRAPHY (PEOPLES AND CULTURES)—COLLABORATION FACILITATES CULTURAL UNDERSTANDING

Olympic National Park has traditional ties to eight American Indian groups: Quinault, Quileute, Hoh, Jamestown S'Klallam, Lower Elwha Klallam, Port Gamble S'Klallam, Skokomish, and Makah. Members of a number of these tribes live on reservation lands near the park, and cultural resources staff have begun exploring the connections between these associated groups and the park.

Olympic National Park is one of only three parks in the entire park system to have a full-time ethnographer/cultural anthropologist, and the park's thriving ethnography program is a worthy model for other park units. The most important component of a successful ethnography program is a high level of collaboration with traditionally associated peoples. Olympic's cultural resources staff has worked on a number of projects with the Olympic Peninsula Intertribal Cultural Advisory Committee, a group composed of representatives from nine peninsula tribes. This partnership has facilitated resource protection and research, and has resulted in publication of *Native Peoples of the Olympic Peninsula: Who We Are*, which was edited by Olympic's cultural anthropologist. This collaboration is one of the first that strives to depict indigenous people of the Olympic Peninsula from a Native perspective. This book introduces information about places to visit and offers tribal history and current cultural and political issues, as well as information about tribal heritage programs.

Park staff played a key role in developing the Ethnographic Resources Inventory, a park system-wide searchable database that stores ethnographic information. Olympic's own inventory contains information on more than 1,000 ethnographic resources, but the park lacks the personnel required to manage this database, complete other program tasks, and coordinate the regional Ethnographic Resources Inventory.



## STEWARDSHIP CAPACITY— INSUFFICIENT FUNDS AFFECT OLYMPIC'S ABILITY TO MEET CORE MISSION

Overall, the park's stewardship capacity rated a poor score of 59 out of 100.

## FUNDING AND STAFFING—UNFUNDED NEEDS GROWING

The most significant factor affecting a park's ability to protect and steward resources is the funding a park receives from Congress and other sources. In 2003, Olympic National Park had a budget of \$10.29 mil-

lion, but unfunded operating needs totaled nearly \$6.1 million. Insufficient funding results in failure to achieve some of the park's primary goals, difficulty meeting mandated legislation and regulations, and increased reliance on special project funding to pay for daily operations.

The park's draft business plan, written in 2001, indicates that Olympic's base budget has increased at an annual rate of about 1.75 percent since 1980 when adjusted for inflation. However, unfunded congressional directives have forced the National Park Service to assume many significant costs. For example, the agency has had to cover most of the costs of mandated federal pay raises out of its own budget; this has had ramifications in parks throughout the system, includ-



ing Olympic. About \$2 million per month in homeland security needs also has been absorbed by the agency as a whole since September 11, 2001. Visitation has placed increased demands on Olympic's staff and resources, growing from two million in 1980 to more than three million in 2003.

Olympic's staff size has increased in an effort to address growing resource protection and visitor services needs. In 1992, the park employed 181 full-time staff members, and by 2001 that number had grown to 206. Unfortunately, the resulting increases in staff costs were not covered by commensurate increases in the budget, so funds had to be diverted from other programs. Budget constraints have now reduced full-time staff to near 1992-levels at 186 in 2003, and it is likely this number will continue to drop.

Additional critical assistance is needed in every division of the park. All divisions are woefully under-

staffed, and more cuts are likely. Cultural resource management has pressing needs for an archivist, cultural landscape specialist, ethnography assistance, administrative help, and an archaeological technician to help with site mapping. In a park exceeding 900,000 acres, with more than 600 miles of trails and 65 miles of coastline, there is only one permanent part-time wildlife specialist, one wilderness specialist, one fisheries specialist, one coastal/marine biologist, and one part-time research coordinator. At least one permanent botanist is needed to assist in the park's greenhouse to grow native species for restoration. Fisheries, in particular, are in need of additional field biologists. With 3,550 miles of streams in 11 major river systems, the park has one full-time fisheries biologist. In comparison, tribes outside the park employ several dozen fisheries biologists and technicians.

The consequences of funding and staffing shortfalls are not always obvious to visitors—an invasive non-native plant may grow unchecked, museum objects may go uncataloged, or a historic structure may go unmonitored to the point of failure. Although these may seem like small sacrifices, the lists of neglected projects in all parks continue to grow and have widespread effects on the integrity of the National Park System as a whole.

In addition to day-to-day operating demands, the park has a growing list of long-term investment needs that now totals approximately \$100 million. Projects on this list include rehabilitating and upgrading park exhibits (\$1.01 million), maintaining popular park trails (\$500,000), constructing an addition to the Wilderness Information Visitor Center (\$1.73 million), constructing an adequate museum and archival collections storage facility (\$1.1 million), continuing northern spotted owl monitoring (\$112,000), and cultural landscape maintenance (\$135,000).

#### PLANNING—NEW GENERAL MANAGEMENT PLAN UNDER WAY

In a large park with such a variety of natural and cultural resources, a collection of planning documents is needed to guide management activities. Olympic has many documents that address wildlife, historic struc-

tures, fire management, and other park issues, but some of these plans need to be updated and others are missing altogether.

The general management plan (GMP) is a broad plan that guides long-term decision-making. Olympic is in the process of developing a new GMP to replace one that was written in 1976. The new plan is scheduled to be published in 2005/6 and will provide broad direction for management of the park's wilderness and developed areas. A wilderness management plan will follow the GMP. Public participation in the GMP process is encouraged and interested parties can visit [www.nps.gov/olymp/pphtml/news.html](http://www.nps.gov/olymp/pphtml/news.html) to learn more. Another primary management document—the resource management plan—was updated in 1999 and is regularly used to guide resource management decisions in the park. The park's interpretive plan is more than ten years old, but updates should be complete by 2006.

Several relevant management plans have not been completed, including a plan to guide management of

Roosevelt elk. Olympic also lacks a fish management plan even though the park is home to important runs of Pacific salmon. A plan dealing with non-native mountain goats has not been finalized, and the park does not have a water resources management plan—an unexpected omission in a park that receives upwards of 240 inches of precipitation each year. A vegetation management plan that addresses non-native plant management and eradication is also needed. Funding and staffing shortfalls explain the lack of these plans, but to help mitigate the situation the park recently hired a planner who works on the GMP and other park projects.

### RESOURCE EDUCATION—SERVICES SUFFER

The park's varied landscape—from glacier-covered peaks and dense rainforest to swift mountain streams and cobble beaches—provides endless opportunities for natural history and environmental education. The region's diverse cultural resources provide a wealth of



BRUCE C. MOORE



## WHAT YOU CAN DO TO HELP

- **Support or become a member of groups helping to protect the park:** Northwest Region of NPCA ([www.npca.org/field/northwest.asp](http://www.npca.org/field/northwest.asp)) 206.903.1444, Olympic Park Associates ([www.drizzle.com/~rdpayne/opa.html](http://www.drizzle.com/~rdpayne/opa.html)), Washington's National Park Fund ([www.wnfp.org](http://www.wnfp.org)), Friends of Olympic National Park (P.O. Box 2438, Port Angeles, WA 98362), and other regional organizations.
- **Volunteer in the Parks.** Many parks are looking for dedicated people who can lend a helping hand. There are opportunities for people to raise native plants in the park's greenhouse, assist with research or resource monitoring projects, maintain buildings and trails, do landscaping, provide technical web expertise, assist with welcoming visitors, and much more. To learn about opportunities at Olympic National Park, contact the Volunteer Coordinator at 360.565.3141.
- **Become an NPCA activist.** When you join our activist network, you will receive *Park Lines*, a biweekly electronic newsletter with the latest park news and ways you can help. Join by visiting [www.npca.org/takeaction](http://www.npca.org/takeaction).



opportunity to learn about the area's former inhabitants. Olympic's Resource Education Division strives to educate visitors about all of the park's natural and cultural treasures and inspire an understanding of the resources' significance, but funding shortfalls constrain these efforts. Helping people to discover the magic and wonder of Olympic National Park is key to the long-term support and protection of its resources.

In 2002, the park reached 535,000 people through its three visitor centers, four information stations, and interpretive programs. The park made another 373,100 contacts through its publications and audio-visual programs. Community outreach resulted in nearly 4,000 more contacts, and the park's web site generated 2.2 million hits. Volunteer hours are rising from 47,000 hours logged in 1999 to more than 60,000 in 2003.

This effort was accomplished by only nine full-time staff, supplemented by 13 seasonal employees. The budget shortfall for this division was estimated to be \$700,000 in 2001; the total annual budget is \$827,000. This deficit is taking a toll on park exhibits and audio-visual presentations that need updating, efforts to reach out to local schools and an increasingly diverse regional population, and staffing levels. Further budget constraints in 2004 will likely mean a major loss in seasonal employee hiring. The result may be one of great concern to resource objectives—a shift from providing educational programs to one of simply dispensing park orientation and basic information.

Funding and staffing shortfalls mean that the park may not be able to offer the same level of services visitors have come to expect. Some of the park's visitor contact stations could face seasonal or daily closures, and interpretive program outreach efforts could be reduced. As a result, visitors would have fewer opportunities to interact with park staff to gain a deeper understanding of park resources.

Finally, the restoration of the Elwha River presents a significant opportunity for the interpretive division if funds can be obtained. The restoration effort that will be taking place in the park once the two dams along the river are removed is the second largest restoration project in the National Park System, sec-

ond only to the work being conducted in the Everglades. The funding for both the education and research components of the program has been entirely removed. For a project with such far-reaching implications, this will be a great opportunity lost.

### EXTERNAL SUPPORT—VOLUNTEERS AND PARK PARTNERS PROVIDE IMPORTANT SERVICES

Olympic National Park staff alone cannot fully achieve park resource protection without help from others. Volunteers, partnerships, park support groups, and Congress make enormous contributions to this ongoing work. Indeed, Olympic enjoys stronger and broader external support than many parks.

In 2002, more than 900 volunteers gave upwards of 67,000 hours to assist Olympic staff with a variety of resource management and visitor services projects. This is equivalent to 33 full-time staff and labor value of about \$1.1 million. One project—an annual cleanup of Olympic’s coast—recently attracted 300 volunteers. Since the project began four years ago, volunteers and park and marine sanctuary staff have removed more than 40 tons of debris from the park’s beaches. The number of people who want to volunteer in the park exceeds the number that park staff can manage. To fully maximize volunteer assistance, the park needs additional staff to supervise volunteers and funds to provide vehicles, computers, and office space for volunteers to use.

The park also benefits from non-profit organizations in the region. Now affiliated with the National Park Foundation, Washington’s National Park Fund is dedicated to restoring, enhancing, and preserving Olympic, Mount Rainier, and North Cascades national parks. The Fund raises money for and promotes public awareness of these three parks. The Northwest Interpretive Association operates the park’s bookstores, educates its visitors through seminars and printed materials, and supports interpretive programs and research. The Olympic Park Institute provides interpretation and educational opportunities to park visitors and schoolchildren with daily and residential programs, and the Friends of



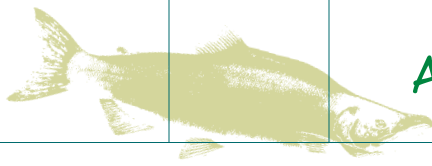
OLYMPIC PARK INSTITUTE

Olympic National Park recently was established to facilitate understanding of the park through educational efforts, outreach, and interpretation.

Political and advocacy support is critical to the park as well. Since 1948, Olympic Park Associates has advocated effectively for wilderness and wildlife preservation in the park. On Capitol Hill, Olympic enjoys strong support from Washington’s congressional members. Both of the state’s senators and six of its nine representatives received NPCA’s Friend of the Parks award in 2003.

Because the park borders other federally and privately managed lands and waters, park staff also collaborate with adjacent landowners and management agencies such as the U.S. Forest Service, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, and American Indian tribes.

Students of the Olympic Park Institute learn about park resources through daily and residential programs.



## APPENDIX: METHODOLOGY

The park is home to more than 60 glaciers, including Blue Glacier.



To determine the condition of known natural and cultural resources at Olympic National Park and other national parks, the National Parks Conservation Association developed a resource assessment and ratings process. It examines current resource conditions and evaluates the park staff's capacity to fully care for the resources. The assessment methodology can be found online at NPCA's State of the Parks® web site ([www.npca.org/stateoftheparks/](http://www.npca.org/stateoftheparks/)).

Researchers gather available information from a variety of research, monitoring, and background sources in a number of critical categories. The Natural Resources rating reflects assessment of more than 120 discrete elements associated with environmental quality, biotic health, and ecosystem integrity. Environmental quality and biotic health meas-

ures (EBM) address air, water, soils, and climatic change conditions as well as their influences and human-related influences on plants and animals. Ecosystems Measures (ESM) address the extent, species composition, and interrelationships of organisms with each other and the physical environment for indicator, representative, or all terrestrial and freshwater communities.

The scores for cultural resources are determined based on the results of indicator questions that reflect the National Park Service's own Cultural Resource Management Guideline and other Park Service resource management policies.

Stewardship capacity refers to the Park Service's ability to protect park resources. Information is collected and circulated to park staff and peer reviewers for analysis. An overall average based on a 100-point scale is used to determine the ratings based on numerous benchmarks. An overall score is obtained by weighting the funding and staffing component at 40 percent, recognizing its critical importance, and the remaining three elements at 20 percent each.

For this report, researchers collected data and prepared a paper that summarized the results. The draft underwent peer review and was also reviewed by staff at Olympic National Park.

NPCA's State of the Parks program represents the first time that such assessments have been undertaken for units of the National Park System. Comments on the program's methods are welcome.

# ACKNOWLEDGMENT

For more information about the  
**State of the Parks® Program**  
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Please visit [www.npca.org/stateoftheparks/](http://www.npca.org/stateoftheparks/) to  
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State of the Parks® Program.

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