STATE OF THE PARKS®

A Resource Assessment

WATERTON-GLACIER INTERNATIONAL PEACE PARK

NATIONAL PARKS CONSERVATION ASSOCIATION

NOVEMBER 2002

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.

But over the years, Americans have learned that designating national parks does not automatically ensure the well being of the resources parks are meant to protect and the history those resources represent. Many parks are threatened by incompatible development of adjacent lands, air and water pollution, skyrocketing visitation, and rapid increases in motorized recreation. Park officials often lack adequate information on the status of and trends in wildlife populations. Two-thirds of historical structures are in serious need of repair and maintenance. Most cultural landscapes have yet to be adequately inventoried.

Only 20 percent of the National Park Service's budget is earmarked for management of natural resources and considerably less is targeted for cultural resources. In most years about 7 percent of permanent park employees work in jobs directly related to park resource preservation. 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, forecast the future condition of those resources, and determine how well equipped the National Park Service is to protect the park—its stewardship capacity.

The goal is to provide information that will help policy-makers and the National Park Service improve conditions in national parks and ensure a lasting legacy for future generations.

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.

- Over 300,000 members
- 9 regional offices
- 68,000 local activists

The findings in this report do not solely reflect past or current park management. Many factors that affect resource conditions are a result of both natural and human 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 what actions can be taken to protect them into the future.

Cover photo: Glacier National Park as seen from Waterton Lakes National Park. ©Parks Canada/W. Lynch

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Report Highlights

Waterton-Glacier International Peace Park is what much of western North America once was. The Peace Park's outstanding scenic values, diverse wildlife populations, sparkling waters, remarkable historic and cultural heritage, and largely intact ecological processes make it one of the continent's most valued treasures.

But haphazard development of nearby landscapes and inadequate funding for basic park operations threaten the natural and cultural resources that make the Peace Park so extraordinary. The challenge is to maintain the Peace Park's current world-class values and, in some cases, to restore degraded resources.

A long history of protection has not spared Waterton-Glacier from serious threats. In 1980, the National Park Service conducted the first (and to date, the only) systematic study to identify threats across all U.S. national parks. The study found an average of 13.5 threats per park, *but 56 for Glacier*—the fourth highest number of threats facing any of the 326 park units that were surveyed.

Computer models suggest that global warming will play a major role in melting the Peace Park's glaciers by 2030.

In 2000, the Panel on the Ecological Integrity of Canada's National Parks identified significant threats to the ecological integrity of all but one of Canada's national parks. The panel found that Waterton Lakes National Park faced major impacts from external forces and minor impacts from internal sources.

As both of these studies pointed out, most threats to the Peace Park originate outside park boundaries. This report by the National Parks Conservation Association is the first effort to assess Waterton-Glacier International Peace Park as a whole. Still, it is a U.S. study and focuses more on Glacier National Park.

The assessment confirmed that many of the external threats identified earlier continue to pose problems for the Peace Park. They include cumulative impacts from proposed highway expansion; conversion of working ranch and forest lands to recreation, commercial, and residential developments; clearcut logging; a growing number of low-level sightseeing air tours; invasions of non-native species into parklands and waters; and potential extraction of coal, oil, and gas resources.

The results? Fragmented, degraded, and destroyed habitat for many wildlife species, severe limitations on the movement of wide-ranging species like bears, wolves, deer, and elk, diminished popu-

A Park Across Borders

The Peace Park includes Waterton Lakes National Park in southern Alberta, Canada, and adjacent Glacier National Park in northwestern Montana. The U.S.-Canadian border divides the parks. But nature undeniably links them as part of the larger, mostly intact Crown of the Continent Ecosystem and the larger Yellowstone to Yukon region that stretches from central Wyoming to the northern Yukon, south of the Artic Circle.

High astride the Rockies, the National Park Service and Parks Canada work together to ensure the continued viability of the Peace Park's myriad forests, clean waters, and amazingly diverse wildlife communities—including a rare, full complement of carnivores. Places that are sacred to Indian beliefs and hundreds of outstanding historic structures add to the park's important cultural and spiritual heritage.

lations of native fish unable to compete with invasive non-native species, and the potential for degraded water quality.

The Peace Park is also threatened by factors such as global warming and potentially by pernicious airborne chemical pollutants that are being documented ever more frequently in high alpine elevations around the world.

The park is woefully short on both personnel and operating funds to carry out important ongoing work that would help offset the impacts of these external threats and better protect the park's natural and cultural resources. The park has neither the staff nor the money to adequately monitor wildlife populations—including the park's full complement of "top" predators and declining populations of the threatened bull trout—or to complete needed archaeological research, maintain historic structures and museum collections, and provide high-quality visitor services that people have come to expect at national parks.

In addition, both Glacier and Waterton Lakes have large deferred maintenance backlogs. As just one example, annual funding to maintain spectacular Going-to-the-Sun Road is less than one-third of what is needed.

Threats to Park Resources

Examples of landscape alterations abound on land surrounding Waterton-Glacier International Peace Park. Most such changes have negative impacts on the native species that find refuge in the park.

A Proposed expansion of Highways 2 (U.S.) and 3 (Canada), paving of the North Fork Road, and associated development may impede the travel routes of grizzlies, elk, mountain goats, and other wildlife species. Several grizzlies, attracted to grain spills along the Burlington Northern-Santa Fe railroad, have been killed.

B In the currently unsettled Canadian Flathead region, potential hard rock mining, long-term plans to construct an open-pit coal mine, and associated development would adversely affect water quality and transboundary populations of bull trout and other wildlife populations.

C High-density road systems and other infrastructure associated with proposed logging, recreational and rural development, and extraction of oil and gas along the Rocky Mountain Front on both sides of the border would displace grizzlies and big game wildlife species that are known to avoid roads and drilling sites. Extensive gas-field development already has degraded habitat and displaced wildlife north of Waterton.

D Residential, commercial, and resort developments on ranch, farm, and forest lands have encroached on important seasonal range for elk, mule deer, bears, lions, and other wildlife species. Rapid population growth and poorly planned development may result in even more adverse impacts on wildlife.

E In Alberta, the gray wolf can be legally hunted about nine months of every year. Ranchers are allowed to kill wolves within five miles of their land, and there is no limit on the number of gray wolves that can be trapped in a year.

F Invasive non-native fish species have migrated from Flathead Lake into the park, and numerous non-native weed species have been introduced into the park through unauthorized grazing by cattle and horses along the borders of the park.

State of the Parks® Assessment

In this report, the National Parks Conservation Association (NPCA) describes many threats that face the Peace Park through an assessment conducted by the State of the Parks® program. NPCA initiated this program in 2000 to evaluate current resource conditions in national parks across the country. The assessment also forecasts likely future conditions and provides the information that forms the basis of recommendations for improvement. Note, however, that a number of the threats facing the Peace Park may affect the future condition of park resources over a longer period of time than this assessment covers.

In the charts below, down arrows indicate that conditions are likely to deteriorate over the next ten years, while flat arrows indicate no change is likely. The assessment process also uses up arrows to indicate likely improvement in conditions, although no up arrows were assigned to the Peace Park.

FORECAST: Key to Conditions

- Likely Improvement
- No Change
- Likely to Deteriorate

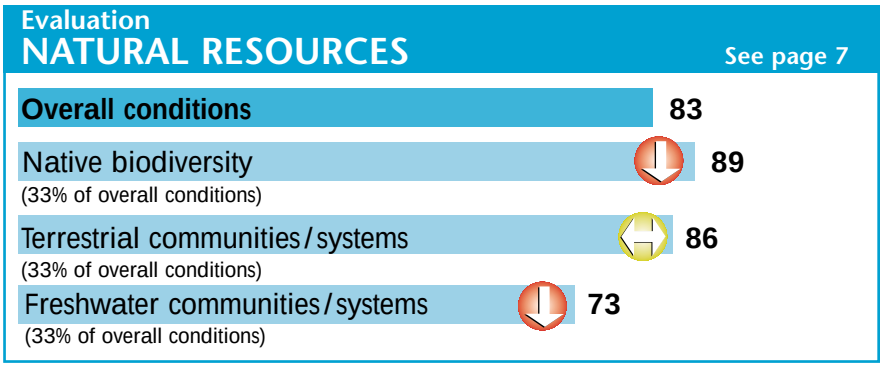
Ratings

Current overall conditions of the Peace Park's known **natural resources rated 83 out of a possible 100.** This relatively high rating masks threats that, if not reduced or eliminated, may seriously degrade natural resources.

The assessment found that nearly 10 percent of native vertebrate species in the Peace Park are of special management concern, in large part due to loss and fragmentation of habitat outside the park.

Aggressive non-native plant and animal species are out-competing native species. This alters ecosystem composition and nutrient cycles, fire regimes, and other ecosystem processes. It also can cause outright loss of native species.

Computer modeling of temperature and moisture changes suggests that the park's glaciers could be gone in 30 years if average annual temperatures rise even modestly. And, persistent organic pollutants and heavy metals transported through the air over long distances may be cause for concern.



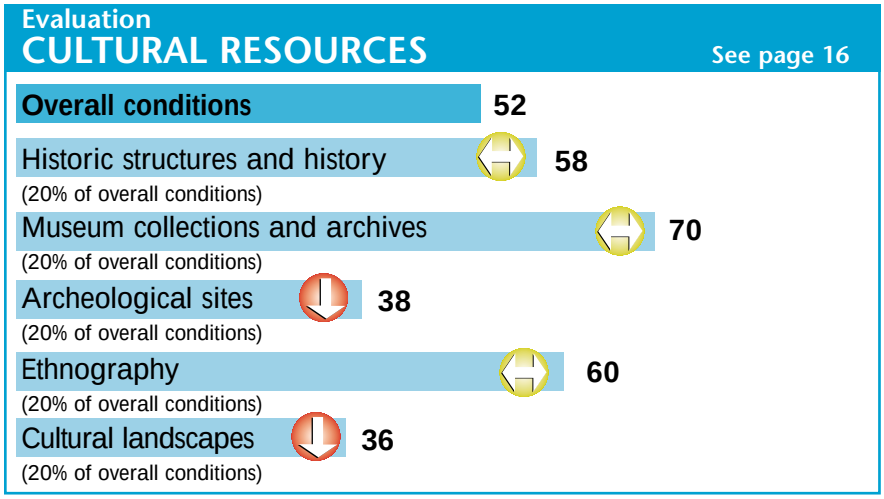
Current overall conditions of the park's known **cultural resources rated 52 out of a possible 100.** This score does not include Canada's Waterton Lakes National Park, as explained on page 16. However, Waterton Lakes and Glacier have similar problems—most notably, inadequate collection and archive storage facilities and an outdated administrative history.

Glacier National Park lacks an administrative history and historic structure condition assessments. The most recent Historical Resource Study was completed more than 20 years ago and needs to be revised.

Some of the park's most popular historic structures, such as Going-to-the-Sun Road, a National Historic Landmark, and Many Glacier Hotel lack funding for stabilization, restoration, and rehabilitation. Eighty-eight percent of Glacier's potentially significant cultural landscapes have not been evaluated, and they are not fully protected.

Storage space is not sufficient to accommodate growth in museum collections, while exhibition facilities are inadequate. Glacier also lacks a permanent, full-time archaeologist and an archivist.

All of these deficiencies place the park's internationally celebrated cultural resources at risk.

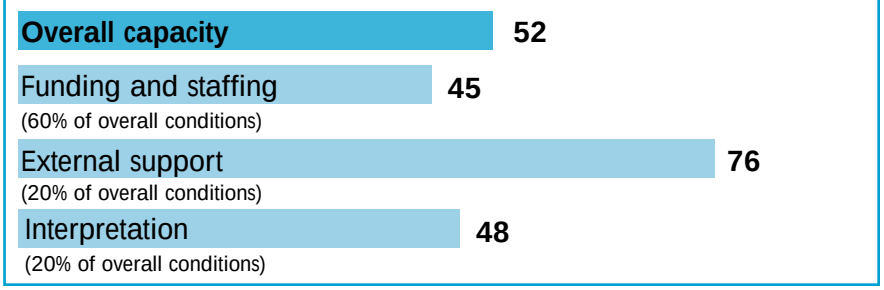


The park's current overall **stewardship** capacity—the ability of the National Park Service to protect resources in the park—rated **52 out of a possible 100.**

One of the most important issues that confronts the Peace Park is lack of sufficient funding and personnel to help reduce the impacts of threats to the park. Glacier National Park lacks adequate operating funds to carry out needed projects and is burdened by a deferred maintenance backlog that exceeds $400 million. Waterton Lakes National Park on the Canadian side is in a similar position.

In addition, visitor facilities in the Peace Park are too small and old, and audio-visual interpretative programs are outdated.

Evaluation
STEWARDSHIP CAPACITY
See page 26



Key Recommendations

Natural resources

- Glacier Park staff should work with the U.S. Department of the Interior to urge the U.S. State Department to increase U.S. federal support for conservation initiatives in the transboundary Canadian Flathead watershed—in particular the proposed Canadian Flathead extension of Waterton Lakes National Park. This is the single most important thing that could be done to improve the Peace Park's future.
- Peace Park staff should work with surrounding jurisdictions to conserve native species throughout the Crown of the Continent Ecosystem. This should include actions such as reconciliation of species lists to improve management of species.
- Additional enforcement personnel are needed to stop unauthorized horse and cattle grazing on the park's eastern boundary and help reduce the spread of invasive non-native species.
- Glacier staff should develop a closer working relationship with the Blackfeet Tribe, Montana's Fish, Wildlife, and Parks Department, U.S. Forest Service, and U.S. Fish and Wildlife Service to foster restoration and conservation programs such as grizzly bear, wolf, and bull trout recovery, resolution of livestock issues, and removal of non-native fish.
- The National Park Service should continue long-term monitoring of air toxics in alpine environments to document impacts to air and water quality and terrestrial and aquatic species.

Numerous studies show the negative impacts of roads on wildlife species such as the grizzly bear—one of the Park's many "top" carnivores.

Cultural resources

- Fund a comprehensive condition assessment of the park's historic buildings and structures as part of a five-year preservation plan.
- Secure funds to write the park's administrative history and a revised Historic Resource Study.
- Evaluate all potential cultural landscapes at Glacier and include cultural landscapes in the park's Resource Management Plan.
- Fund projects to expand collection, storage, and exhibition facilities and hire a permanent, full-time archivist to provide professional management of collections.
- Hire a permanent, full-time archaeologist.

Stewardship capacity

- Citizens interested in the future of Waterton-Glacier should work together to ensure federal funding for the enormous deferred backlog of projects at the park.
- Secure funding for a new visitor center at Glacier and a retrofitted visitor center at Waterton Lakes, updated exhibits, and improved audio-visual programs.

As this assessment reveals, significant challenges face the National Park Service, Parks Canada, and the many other people who care about this park and its extraordinary resources.

If carried out, the recommendations above and others listed in this report will do much to ensure that Waterton-Glacier International Peace Park remains a largely intact ecosystem, with viable wildlife populations, and a reservoir of the Rockies' world-renowned historical and cultural legacy.

I. "Backbone of the World"

Blackfeet Indians call it the "backbone of the world" and for good reason. From the tribe's traditional lands on the plains east of the Rockies, this mountain range rises to thoroughly dominate the landscape, astounding the eye and beguiling the spirit.

Waterton-Glacier International Peace Park stands where the Rockies cross the U.S.-Canadian border. It is a magnificent testament to the beauty of the mountains, the wildlife and plant species that the Rockies harbor, the role that glaciated peaks and forested valleys have played in shaping a rich historical and cultural heritage, and the ability of two countries to find common ground and purpose.

The Peace Park straddles the Continental Divide, where wrinkled topography and distinct east- and west-side climates give rise to diverse habitats, from mountain lakes and streams to wetlands, prairie grasslands, aspen stands, montane coniferous forests, subalpine forests, and alpine meadows. Canada lynx, bobcats, martens, wolverines, fishers, mountain goats, bighorn sheep, elk, bull trout, ptarmigan, and bald eagles make their home in this essentially pristine landscape. And the park is one of the few protected areas in the lower 48 states and southern Canada where a complete set of large predators, including grizzlies and gray wolves, still plays a prominent role in a largely natural ecosystem.

Waterton-Glacier protects more than 350 structures listed in the U.S. National Register of Historic Places and six National Historic Landmarks. World-renowned Many Glacier Hotel and Going-to-the-Sun Road are only two of the park's historic attributes that attract hundreds of thousands of people each year.

Waterton Lakes National Park, the Canadian portion of the Peace Park, covers 129,728 acres in southwestern Alberta. Adjacent Glacier National Park in northwestern Montana includes 1,013,594 acres and is one of 13 U.S. national parks over one million acres in size. Parks Canada and the National Park Service work together to preserve the integrity of the Peace Park's natural and cultural resources—a goal that transcends the international boundary.

Waterton-Glacier is part of a much larger region known familiarly as the Crown of the Continent Ecosystem. The park benefits from relatively natural landscapes on virtually all sides. To the south is the Bob Marshall Wilderness Complex that forms a wild landscape centerpiece of four national forests located southeast and west of Glacier National Park. Glacier's eastern boundary joins the Blackfeet Reservation. Blood Indian Forest Reserve, Bow-Crow and Flathead provincial forests, Akamina-Kishinina Provincial Park, and private lands border Waterton Lakes National Park.

The Peace Park earned global recognition of its outstanding biological and ecological treasures when in 1976, the United Nation's Educational, Scientific, Cultural Organization (UNESCO) named Glacier a Biosphere Reserve. Three years later, UNESCO bestowed the same honor on Waterton. In 1995, UNESCO named the entire Peace Park a World Heritage Site because of its exceptional natural and cultural resources. This designation noted that the Peace Park contains the most complete and diverse cultural historic record of resources from pre-Euro American contact in the Rockies.

The Peace Park straddles the Continental Divide, where wrinkled topography and distinct east- and west-side climates give rise to diverse habitats, from mountain lakes and streams to prairie grasslands.

MATT KANIA

Waterton-Glacier serves as the model for dozens of peace parks now found on five continents. Every year during the Hands Across the Border ceremony, people are reminded of the spirit of peace that this magnificent park celebrates.

A glimpse of the past

Recent archaeological work reveals that people have been part of the Waterton-Glacier region for more than 10,000 years. The descendants of the first inhabitants may still live in the area.

At one time, Blackfeet Indians from the northern plains aggressively protected their eastern slope hunting grounds, warring with the Kootenai, Salish, Crow, Sioux, and Assinibonine, among others, who entered the plains to hunt buffalo. These Indians all dwelled in and around the mountains of Waterton and Glacier. Today, many Blackfeet Indians view the mountains as home to the spirits of creation, weather, and knowledge.

As explorers, fur trappers, traders, miners, lumber barons, and settlers arrived in greater numbers, the Indian way of life changed drastically and forever. Gone were the great herds of buffalo that had sustained the tribes for centuries. Indians were forced off much of their traditional land and onto reservations—the Blackfeet Tribe to the east of the mountains and Salish and Kootenai to the Flathead reservation southwest of Glacier National Park.

From the 1850s, talk of a railroad across the U.S. Northern Rockies abounded. But it wasn't until the late 1800s that James J. Hill completed construction of the Great Northern Railway segment across the mountains. It took 8,000 workers and 3,300 horse teams to finish the line between Belton (West Glacier) and Midvale (East Glacier). The portion of the railroad that crossed low-lying Marias Pass along the southern border of Glacier National Park served as the impetus for yet more miners, homesteaders, and small towns—as well as a promising tourist industry.

Hill's son Louis, who became president of the Railway in 1907, began construction of the Belton Chalets (1909), Glacier Park Lodge (1912), and Many Glacier Hotel (1913), the first in a series of chalets and backcountry lodges. Waterton Lakes' towering Prince of Wales Hotel, completed in 1927, marked the end of the company's hotel-building phase in the two parks.


George Bird Grinnell

With new settlements and growth in tourism came concern that the special attributes of the Waterton-Glacier area might be lost. George Bird Grinnell, the man who coined the phrase "Crown of the Continent," called for preservation of what remained "wild" in the North American frontier. Canadian frontiersman John George "Kootenai" Brown and rancher S. F. Godsel called for protection of the Waterton Lakes area. And in 1895, the Canadians set aside what is now Waterton Lakes National Park as a protected area. Fifteen years later, President William Taft signed legislation that established Glacier National Park.

In 1932, Canada and the United States adopted a proposal by Rotary Clubs in Alberta and Montana to join the two parks. The local clubs sought the designation as part of Rotary International's mission to promote peace and goodwill among all nations. Thus, Waterton-Glacier International Peace Park, the world's first international peace park, was born. It serves as the model for dozens of peace parks now found on five continents and continues to symbolize the spirit of peace. Every year, at the Peace Park Assembly, delegates shake hands during the Hands Across the Border ceremony to recommit the two nations to never raise arms against each other.

Park Facts	
Waterton land set-aside:	1895
Glacier National Park designation:	1910
International Peace Park proclaimed:	1932
Total acreage, Glacier:	1,013,594
Total acreage, Waterton:	129,728

II. The Waterton-Glacier Assessment

Natural Resources

83
Overall Rating

The Peace Park received an overall rating of **83 on a scale of 0 to 100** for natural resource conditions, which include native biodiversity and terrestrial and freshwater communities and systems.

This relatively high rating reflects the fact that, on the whole, natural communities at Waterton-Glacier are relatively intact. Most documented native species still thrive. Most ecological processes continue to operate at some level.

But significant threats—many of which originate outside the park's boundaries—could undermine the viability of some native species and communities of species in the future.

Native Biodiversity

Current conditions = 89

33 percent of overall rating for Natural Resources

Waterton-Glacier's diverse native plant and wildlife communities remain fairly intact. This is because of the park's history of protection, the many—and mostly natural—adjacent landscapes, and the fact that human population densities are relatively low, although increasing, in surrounding areas.

Parks Canada reports 885 native and 88 non-native vascular plant species at Waterton Lakes National Park—a significant number given the relatively small size and temperate climate of the park. At Glacier National Park, staff report an impressive 1,005 native and at least 127 non-native vascular plant species.

The two agencies keep separate records, and it is not certain how many of these species occur at both parks. But it is known that 179 native vascular plant species in Waterton Lakes are rare throughout Alberta, 22 are found nowhere else in Alberta, and two are found nowhere else in Canada. About 30 of the native vascular plant species that grow in Glacier are found only in the Crown of the Continent Ecosystem portion of northwestern Montana, northern Idaho, southern Alberta, and southeastern British Columbia.

Around the world, nonvascular plants are not well known and only sporadically studied. But at Waterton-Glacier, researchers have compiled a relatively extensive record of nonvascular plants—218 species of lichens and 182 of bryophytes (mosses) in Waterton Lakes and 440 species of lichens and approximately 430 of bryophytes in Glacier.

The Peace Park supports a combined total of 330 native vertebrate species. Most impressive is the presence of the region's complete set of "top" mammalian predators. Grizzly and black bears, cougars,

Purple showy fleabane carpets this meadow below Mt. Reynolds in Glacier National Park.

gray wolves, lynx, fishers, wolverines, bobcats, and martens—many of which have been extirpated across wide swaths of their native habitat—make their home in the park. And all but the black bear, cougar, and marten are species of special management concern.

Spotted coralroot, a member of the orchid family found at the park, has a unique symbiotic relationship with a beneficial fungus (mycorrhizae) whereby the plant provides the fungus with energy and the fungus provides the plant with soil nutrients.

Thirty (about 10 percent) of all native terrestrial vertebrate species in the Peace Park are of special concern in the United States, Canada, or both. Two native vertebrate species, woodland caribou (probably never more than a rare transient) and bison, have been extirpated, although Parks Canada keeps a small herd of captive bison at Waterton Lakes, while the agency studies the possibility of restoring bison to maintain the ecosystem and biodiversity of native grasslands.

The list of raptors, waterfowl, cavity-nesters, and songbirds that find refuge in the park includes species of special concern such as the bald eagle and peregrine falcon. Waterton-Glacier's aquatic communities contain 31 species of freshwater fish—three that are subspecies of cutthroat trout and six that are not native to the park—as well as one aquatic reptile (the western painted turtle) and eight species of amphibians. A ninth amphibian, the tiger salamander, is a resident of Waterton Lakes National Park. It has been documented just outside Glacier's boundary and is thought to occur inside the park.

Thirteen aquatic species are considered species of special management concern, including two fish—bull trout and westslope cutthroat trout—and one invertebrate, the Rocky Mountain capshell limpet.

The assessment found that the major threats to native biodiversity in the Peace Park stem from loss and fragmentation of habitat outside park boundaries.

Forecast

The assessment forecasts that the condition of the Peace Park's native biodiversity is likely to decline over the next ten years if steps are not taken to alleviate the factors that led to this prediction. Of particular importance are (1) external threats that cause degradation and loss of habitat, (2) a need for designated wilderness areas, (3) spread of invasive non-native species and diseases, and (4) lack of adequate information about Waterton-Glacier's invertebrate species and nonvascular plants.

1. Threats that arise outside the park may have serious repercussions for native biodiversity inside the park, particularly for the park's suite of predators—grizzly bear, black bear, gray wolf, cougar, lynx, bobcat, marten, wolverine, and fisher. Loss or declines in populations of these species, many of them already imperiled, would lead to drastic changes in biological composition and ecological relationships and possibly to the loss of other species. Yet each of the park's top predator species is legally hunted or trapped in the Crown of the Continent Ecosystem, except in the Peace Park. This concern is probably greatest in the case of Peace Park gray wolves that are killed outside park boundaries in Alberta where there are no restrictions on the number of wolves that can be hunted or trapped.

Top predators play essential roles in natural communities. They help control populations of prey species and maintain food-chain interactions, thus contributing to overall biodiversity and the productivity of ecosystems. These species are often used to evaluate the health of ecosystems because they require large home ranges and may disperse over great distances. They also tend to favor wild landscapes that are relatively free of human development.

Few places on earth still sustain robust populations of large native predators. Waterton-Glacier is one of those places. Their persistence is attributed largely to adjacent natural public lands such as national forests and designated wilderness areas in the Crown of the Continent Ecosystem that provide, along with the park, the range of necessary habitat and their connections to populations further north in the Yellowstone to Yukon region.

Much remains to be learned about the specific requirements of these creatures, and researchers are doing so across the ecosystem. As one example, the Interagency Grizzly Bear Committee, established in 1983, has played an important role in the formation of major state and federal programs to determine the status, life history, movements, and behavior of grizzly bears within the region.

Many land uses in unprotected areas around the park—recreational and residential construction, agriculture, logging, extraction of oil and gas reserves, and increased road densities that result from these uses—are degrading or threatening to destroy habitat, thus restricting the movement of grizzlies and causing more direct deaths.

The impact of roads on grizzlies is of particular concern to recovery efforts for the bear in northwestern Montana and to maintenance of grizzly populations throughout the Crown of the Continent Ecosystem. Research indicates that grizzlies may persist in roaded areas, but survival will decline as road densities, traffic volume, and human settlements increase. Grizzly bears are also attracted to grain spills such as those from railroad cars, and several grizzlies have been accidentally killed along the Burlington Northern-Sante Fe railroad line at the southern border of the park. To its credit, the railroad company has worked to seal leaks in grain cars and initiated an accident identification system.

Habitat throughout the traditional range of the lynx has also been highly fragmented by human settlements and extraction of resources. The Rockies, from Yellowstone to Glacier and adjacent public lands, now serves as the highest potential habitat for this animal in the contiguous United States.

Throughout the Waterton-Glacier area, use of private lands for commercial, residential, and recreational purposes is rapidly increasing. As just one example, in Flathead County (south and west of Glacier National Park), nearly 6,200 new lots and tracts were created by subdivision between 1990 and 2000, and 8,225 new housing starts were reported for that period. The number of ski resorts and year-round recreational areas is also on the rise. These types of land uses in the lower elevations surrounding the park destroy and fragment wildlife habitat, particularly the corridors that top predators use.

2. Wilderness Areas. Although approximately 95 percent of Glacier National Park has been proposed

Loss of top predators in the Peace Park would cause drastic changes in ecological relationships and possible losses of other species.

The survival of the gray wolf, an endangered species in the United States, is threatened by loss and degradation of its habitat outside the Peace Park.

for designation as wilderness, which would ensure legal protection in perpetuity, Congress has not acted on this proposal. Waterton Lakes National Park, however, does not contain a similar wilderness backcountry; there is a road or trail—or both—in every valley throughout the park. The proposed Canadian Flathead extension to the park would provide approximately 100,000 acres of wilderness.

Clark's nutcracker has co-evolved with whitebark pine (a keystone species). The bird buries the seeds of the tree at exactly the right depth for germination in newly disturbed areas.

3. Invasive non-native species pose a great threat in the Peace Park, where nearly 10 percent of vertebrate species are already endangered, threatened, vulnerable, or otherwise of special management concern.

Some non-native species were intentionally introduced. This includes fish species used to stock rivers and lakes prior to the 1970s. Some were unintentionally introduced by wildlife, hikers, and wind or through unauthorized grazing by horses and cattle along the park's eastern boundary.

Ample evidence exists that non-native species are taking a toll. As one example, non-native plants such as spotted knapweed, oxeye daisy, leafy spurge, Canada thistle, and sulphur cinquefoil are out-competing native species. This alters the composition of native plant communities, nutrient cycles, fire regimes, and other ecosystem processes.

Whitebark pine blister rust, a non-native disease, has killed or severely damaged most whitebark pine in the Peace Park and is threatening to destroy much of the remaining whitebark seed sources. Whitebark pine, a keystone species, is an important food source for grizzlies and Clark's nutcracker. It also is a pioneer that "jump starts" the successional process and helps other vegetation to prosper by providing shade, retaining snow, and stabilizing erosive soils.

Park managers at Glacier monitor more than 800 infestations of invasive non-native plants in the park and 47 outside the park's boundaries. Through cross-boundary cooperation, Parks Canada and the National Park Service carry out integrated pest management programs to control or eradicate noxious weeds. Waterton Lakes staff have adapted Glacier's intensive weed monitoring program that uses a powerful spatial database to integrate monitoring and inventory information.

But tracking the number and extent of infestations and the effectiveness of control methods is a complex task because the degree and density of infestations vary among species and from area to area.

Loss of top predators in the Peace Park will cause drastic changes in ecological relationships and possible losses of other species.

4. The entire Peace Park lacks baseline inventories for invertebrate species. Such inventories, although difficult and expensive, are essential to successful management of the park's native biodiversity. They provide important information on the role of invertebrates in ecosystems and can help to determine the causes of changes in ecosystems. This information, in turn, can help to devise management strategies to maintain viable communities of species.

This yellow and black swallowtail butterfly is one of many native invertebrate species at Waterton-Glacier International Peace Park.

Recommended Actions:

Share knowledge. The viability of top predator and other native species populations in the Peace Park depends to a large extent on management of lands outside park boundaries. Therefore, Parks Canada, the National Park Service, and the Interagency Grizzly Bear Committee should consistently contribute their knowledge and perspectives at public hearings and other venues where decisions are made in relation to development of resources on public and private lands adjacent to the park and beyond. An excellent forum is the Crown of the Continent Managers Workshop, first convened by Peace Park officials in 2001 to bring together the region's land, wildlife, and conservation managers from state, provincial, federal, and tribal agencies.

Control non-native species. Control and eradication of invasive non-native species in the Peace Park should be a top management priority for both agencies. Of particular importance is increased enforcement to reduce unauthorized horse and cattle grazing along the park's eastern boundaries and thus help prevent the spread of noxious weeds. Toward this end, Glacier park staff should develop a closer working relationship with the Blackfeet Tribe to resolve issues related to unauthorized grazing within park boundaries.

Surveys and studies. The two agencies should continue their nonvascular plant baseline study and undertake new baseline research of invertebrate species. Subsequent to the surveys, the agencies should develop and carry out a monitoring program to determine any changes in nonvascular plant and invertebrate populations. And the agencies should work with surrounding jurisdictions to combine species lists with the goal of improved species management in the entire Crown of the Continent Ecosystem.

Implement agreement. Implement the May 1998 Memorandum of Understanding between the National Park Service and Parks Canada to cooperate in management, research, and protection of national parks throughout the Yellowstone to Yukon region. This agreement is consistent with the need to develop linked systems of protected areas that conserve wilderness and biodiversity across the larger landscape.

Terrestrial Communities and Systems

Current conditions = 86

33 percent of overall rating for natural resources

Waterton-Glacier ranges from 3,200 to 10,500 feet in elevation and supports a mosaic of major vegetation communities where species from north, south, east, and west come together. Many species found here are at the very periphery of their natural ranges. Lower elevation lands include prairie grasslands and sagebrush steppe, aspen parklands interspersed with black cottonwood and conifers, peripheral remnants similar to dry Palouse prairie that contain species more commonly found in the Cascade and Pacific Coast mountain ranges, and ponderosa pine. Subalpine forest, the park's dominant vegetation community, blankets mountainsides from 4,000 feet in elevation up to the alpine zone. The lower subalpine vegetation zone is a complex mosaic of lodgepole pine and western larch—common species after fire—that are succeeded by the more shade-tolerant spruce and subalpine fir.

Spruce/fir communities are found above 6,000 feet in the upper subalpine zone. Whitebark pine, although composing only a small fraction of all the vegetative communities, is a pioneer species on recently burned sites and dry, sunny, exposed slopes and was once more abundant in this zone. As noted in the previous section of this report, whitebark pine blister rust has decimated this keystone species, and only remnant whitebark pine stands persist. Limber pine, whitebark pine's close relative, is prevalent on harsh, windy, mid-elevation slopes, but it occurs only on the east side of the Continental Divide where it too has been affected by blister rust.

Subalpine fir is a shade-tolerant vegetation community that succeeds lodgepole pine and western larch at elevations above 6,000 feet in the Peace Park.

No natural landscape is frozen in time, and Waterton-Glacier continues to be molded by ecological processes such as fire, flash floods, landslides, and avalanches that bring change to the park's biological communities. All of these natural disturbances play important roles. Avalanches create and maintain open swaths on steep mountainsides where only low shrubs and forbs can persist. These areas are important forage for grizzlies and other berry-seeking wildlife. Floods scour stream banks and deposit new sediments that allow willows and cottonwoods to germinate.

Fires sparked by lightning and ignited by Indians once prevailed in Waterton-Glacier. But Euro-American influence increased, and by the 1930s fire suppression became the norm in the park. Fire suppression can have a negative effect on the composition of natural communities as well as other impacts. Over the past decade, the National Park Service and Parks Canada have worked to restore natural fire regimes. As one result of the changed fire policy and several recent large wildland fires, the North Fork landscape is moving towards a natural fire regime and vegetation patterns.

The park's terrestrial communities have yet to suffer significantly from the impacts of poor air quality. Indeed, air quality at the Peace Park is considerably better than in most other areas of the continent, primarily because of the lack of high levels of fossil fuel combustion.

The absence of large-scale development of natural resources inside the park has reduced the need to restore terrestrial communities and systems. Glacier contains 418 acres of privately owned land—mostly in Apgar village, on Lake McDonald, and in the North Fork Valley. Those lands are primarily used for commercial, residential, and recreational purposes. Thus, most of the park's restoration projects encompass small-scale disturbances such as non-native plant infestations, road and utility maintenance, development of facilities, old borrow pits, discontinued campsites, and trampling in campgrounds and on trails. Glacier staff undertake 30 to 50 plant restoration projects annually, totaling approximately five to ten acres, every year. And Glacier National Park has a native plant nursery and horticulture program, which offers research and restoration expertise and propagation services to neighboring agencies.

Major threats to terrestrial communities and systems in the Peace Park include the potential impacts of global warming.

Forecast

The condition of the Waterton-Glacier's terrestrial communities and systems is not likely to change over the next ten years, although early warning signs of future threats exist. Those threats could lead to possible habitat degradation beyond the ten-year forecast.

Both Parks Canada and the National Park Service seek to restore fire's natural role in the landscape to maintain natural communities and biodiversity. Fire suppression has made this task more difficult by paving the way for more catastrophic fires where mixed-severity blazes once were the norm. Prevailing weather patterns and the need to protect park visitors and property inside the park as well as property outside the park further complicate the job.

The greatest future threats to terrestrial communities and systems stem from outside the park. For example, increased UV-B radiation, which can cause skin cancer in

humans, damages plant DNA and growth. Increased UV-B stems from depletion of the Earth's ozone in the stratosphere. Although this does not appear to be a current problem, it could pose future risks to plant communities.

And changes in species community composition could well occur with global warming. Mountain ecosystems are especially vulnerable to potential climate change because of their elevation and climatic gradients. Scientists predict that just a slightly higher average annual temperature will cause greater fragmentation and homogenization of alpine vegetation, expansion of cedar-hemlock forests at lower elevations, and accumulation of forest fuels that could cause more large, catastrophic fires. All of these changes could force plants and animals to seek suitable habitat elsewhere, causing significant alterations in species composition.

A growing body of evidence points to long-distance transport of air toxics into alpine systems such as the Peace Park and Arctic regions. These types of chemicals are usually extremely toxic at very low concentrations. They persist in the environment and tend to "biomagnify" in the food web. This means that the highest and most damaging levels are found in the fatty tissue of animals and humans.

An emerging concern at the park is visibility. Data, collected from 1988 to 1996 at Glacier National Park, indicates that there are fewer days classified as "worst" visibility days, and the park's average annual visual ranges also appear to be improving. Still, visibility during the period 1988 to 1994 was between 40 and 47 miles, while estimated natural visibility in the region is approximately 25 to 70 miles. It is possible that increased levels of particulates in the air may occur—primarily from wood-burning stoves, road dust, and transportation as residential and commercial growth continues outside the park. Such particulates have the potential to decrease visibility and thus enjoyment of the park's spectacular scenic vistas.

Most landowners with inholdings in Glacier National Park visit their properties with little or no adverse impact to the park's natural resources. However, recent issues related to poor food sanitation practices, winter snowmobile access, and proposed developments, including a 27-lot subdivision in a remote area of the North Fork subdistrict, pose potential threats to wildlife and water quality.

Wet maritime weather from the Pacific Coast supports lush, lower elevation forests on the west side of the park.

Recommended Actions:

Continue air quality monitoring. It is vital for Peace Park staff to continue long-term monitoring of particulates, UV-B radiation, and air toxics. Without this information, it will be difficult to determine the condition of air quality at the park, monitor it into the future, and preserve the health of wildlife.

Continue to restore fire regimes. Peace Park staff should continue their efforts to restore natural fire regimes at Waterton-Glacier. Of particular importance is the effort to restore natural fire frequency in the North Fork drainage and in park grasslands and foothills of the Waterton Valley.

Promote stewardship of inholdings. Glacier staff should work closely with the owners of inholdings in the park to promote land-use practices that protect valuable park resources. The park should also seek to buy inholdings from willing sellers.

Freshwater Communities and Systems

Current conditions = 73

33 percent of overall rating for natural resources

In the mostly arid West, the Peace Park boasts clean waters that owe their existence largely to wet maritime weather sliding in from the Pacific Coast and snow-laden arctic storms sweeping down from the north in winter. The park's glaciers and snow fields feed mountain streams, wetlands, fens, and bogs, while hundreds of lakes sparkle in alpine cirques and fill the glacier-carved valleys.

From Waterton-Glacier's perch atop the Continental Divide, fresh waters that originate in the park's mountains feed three major North American river drainages, separated by Triple Divide Peak in Glacier National Park. Glacier's streams and rivers flow northeast into the Saskatchewan River and Hudson Bay Basin, southeast into the Missouri River Basin, and west into the Columbia River Basin. Waterton Lakes' streams and rivers all flow into the Hudson Bay Basin.

At the headwaters of these three systems, the park protects and provides clean water and high-quality aquatic habitat for native species, many of which are dwindling elsewhere.

Waterton-Glacier's aquatic environments are seasonally influenced by the degree of snowfall, glacial melt, spring runoff, and flooding. Beavers also help shape stream hydrology in the park. Their dams create ponds and wetlands that support myriad aquatic and riparian-dependent wildlife and plants.

Aquatic invertebrate diversity is particularly high in the North Fork and Middle Fork riverine ecosystems. Forty-two species of stoneflies have been documented at a site located near the confluence of Camas Creek, including a very unusual hypogean species (insects that live below ground) first identified there. A sampling program at Camas Creek and the International Border documented more than 300 taxa, including 38 species of caddisflies.

Forecast

The assessment forecasts that the condition of the Peace Park's freshwater communities and systems will likely decline over the next decade, largely because of factors that originate outside park boundaries.

As described on page ten, non-native species are having a negative impact on several aquatic species, as are external threats originating on lands adjacent to or near the park. Threats, including impoundments, diversions, and pollution, are altering freshwater systems, to the possible detriment of the park's waters.

Throughout its range, the bull trout has seriously declined because of habitat degradation, habitat fragmentation, and the introduction of non-native fish. In the Columbia River Basin, St. Mary-Belly River drainage, and the Waterton River drainage, bull trout stocks—cut off from migration by dams and impoundments—have succumbed to habitat degradation and fragmentation. And research at Glacier shows that from 1969 to 2000, bull trout numbers dropped by as much as 97 percent in the four largest lakes on the west side of the park. The dramatic decline in the number of bull trout corresponds with a large increase in introduced lake trout, which prey on other fish. Lake trout are native to some Peace Park waters but not the western side of Glacier.

The biggest obstacle to bull trout recovery on the east side of Glacier National Park is Sherburne Dam, which has isolated a small upstream park population of this species from the larger St. Mary River population. The St. Mary population is threatened by a complex system of dams, diversions, and canals, which ultimately divert water from the

Iceberg Lake lies within this alpine cirque in Glacier National Park.

Hudson Bay drainage into the Milk River and upper Missouri River watershed. A current proposal to retrofit Sherburne Dam for hydroelectric power generation could further jeopardize fish populations by increasing water fluctuations above and below the dam.

Recent discussion related to potential construction of an open-pit coal mine in the Canadian Flathead watershed (North Fork drainage) has sparked renewed concerns about the impacts of the mine on water quality and transboundary bull trout populations. The initial proposal for the mine was scuttled in the 1980s, in part because of those concerns. As the issue has resurfaced, so have calls for expansion of Waterton Lakes National Park into the Canadian Flathead watershed.

Even though air quality at the Peace Park is considered quite good, some high altitude lakes and streams are naturally more sensitive to acidification from atmospheric deposition of certain chemicals. And some lakes may be at future risk from episodic acidification if nitrogen deposition increases at the park, is stored in snowpack, and then is released rapidly with spring snow melt.

The greatest future threat to the park's aquatic resources may arise from alterations associated with global climate change. Current computer modeling by U.S. Geological Survey researchers, based on just a slight increase in the annual average temperature, predicts significant changes in the natural water cycle at the park, including changes in water quantity, quality, and temperature of all freshwater systems—with especially severe impacts to alpine, floodplain, and wetland systems. Complicated spatial changes in stream temperatures would affect aquatic species that have narrow habitat ranges. Major changes in the abundance and distribution of stream organisms would occur, and changes in soil moisture would also have an effect on vegetative communities and systems.

Global warming will certainly play a major role in the condition of the park's glaciers. An overall increase of approximately 1 percent in average summer temperatures has been correlated to the rate of glacier retreat dating back to 1900. All 37 named glaciers in the Peace Park have receded since the mid-19th century, and less than one-third of glaciers present in the park in 1850 exist today. Although some of the glacier loss is part of the natural process, the speed at which they are disappearing has been compounded by global climate change. Computer modeling of temperature and moisture changes, based on predictions for global climate change in the region, indicate that the glaciers could be gone in 30 years.

Piegan Glacier, Glacier National Park. Between 30 and 50 small glaciers remain at the Peace Park, including Peigan Glacier.

Recommended Actions:

Work to protect the Canadian Flathead. Park staff should work with the U.S. Department of the Interior to urge the U.S. State Department to increase federal support for conservation initiatives in the transboundary Canadian Flathead watershed—in particular the proposed Canadian Flathead extension of Waterton Lakes National Park.

Conduct repeat surveys in park lakes to determine the existing composition of fish species and evaluate changes in fish species composition and community structure caused by invasions of non-native fish.

Assess threat of non-native fish. Convene a workshop of experts to assess the threat posed by non-native fish to native bull trout and westslope cutthroat trout and identify research needs. The workshop should produce action plan alternatives to bolster native fish populations through reductions in non-native fish populations in five west side lakes and to prevent the introduction of non-native fish into waters they do not currently occupy.

Conduct inventories, then monitor the range of aquatic organisms, including invertebrates and vegetation.

Work to recover bull trout populations. Glacier park staff should work with Blackfeet Nation biologists and the Bureau of Reclamation to improve fish passage and favorable water flows for bull trout in Swiftcurrent Creek and the St. Mary River system.

Cultural Resources

52
Overall Rating

Glacier National Park received an overall rating of **52 on a scale of 0 to 100** for cultural resource conditions. This category includes historic structures and history, museum collections and archives, archaeological sites, ethnography, and cultural landscapes.

The assessment rated cultural resource conditions only at Glacier National Park. The National Park Service and Parks Canada, under U.S. and Canadian law, manage cultural resources differently. State of the Parks® assessment criteria rely on U.S. management policies. Therefore, it was not possible for the assessment to produce an overall evaluation of cultural resources in both parks. Recent studies, however, cover archaeology and ethnography for both parks, and it should be emphasized that the agencies cooperate to the extent possible in protecting the Peace Park's cultural resources.

Historic Structures and History

Current conditions = 58

20 percent of overall rating for cultural resources

Over the past several years, historic structures have become a relatively high priority at Glacier National Park. The year 2002 alone saw completion of a $1 million structural stabilization project at Many Glacier Hotel, and the park is on the verge of a $6 million exterior rehabilitation effort for that hotel. In addition, the park's relatively new cultural resource specialist brings additional expertise as a trained historical architect.

However, some of the park's most beloved structures are in poor to fair condition at best and need additional stabilization, restoration, and rehabilitation work. The park needs more money to address current projects and to fund Glacier's deferred maintenance backlog for historic structures. Primarily for these reasons, the assessment rated Glacier National Park 58 in this category.

Many of the park's structures are historically significant because of their association with the Great Northern Railway, whose president, Louis Hill, began construction on

Waterton Lakes' Historic Structures

Waterton Lakes National Park contains two Canadian National Historic Sites in addition to more than 66 structures—some of which have been evaluated, and 18 of which have been recognized as having historic importance. The best known of the two designated historic sites, Prince of Wales Hotel, is a grand survivor of Great Northern Railway's resort development projects in the Peace Park. The hotel is privately owned, and the land is leased from Parks Canada. The agency has no legal mandate such as the U.S. Historic Preservation Act of 1966 to preserve the hotel's historic integrity.

The other historic site, Discovery Well, is the first oil well in western Canada. According to Waterton Lakes' staff, the oil well is in need of an archaeological inventory and digital mapping to properly document the site.

Prince of Wales Hotel

Swiss-style chalets a year before Glacier was named a national park. In addition to chalets, he built a network of tent camps and backcountry hotels, each a day's horseback ride from the next.

The Park Service also constructed historically significant structures to accommodate park administration, tourism, and the automobile—including Going-to-the-Sun Road, which is one of the most scenic drives on Earth. This road has earned distinction as a National Historic Landmark and a National Historic Civil Engineering Landmark and is listed in the National Register of Historic Places. It is the only east-west road in the park to link park attractions on both sides of the Continental Divide and is crucial to the livelihoods of many area residents. But information from the Going-to-the-Sun Road Advisory Committee indicates that funds allocated to maintain the road have been less than one-third of what is needed.

In the spirit of good stewardship, park staff have evaluated most of Glacier's historic structures for eligibility in the National Register of Historic Places. Three hundred fifty-eight federally owned and concessioner-owned buildings and structures are listed in the National Register, including several masonry foot and auto bridges, roads, and trails. Some privately owned historic structures within the park, including Bull Head Lodge and artist Charlie Russell's place on Lake McDonald, are also listed in the National Register.

Of the historic structures recorded on the National Park Service List of Classified Structures, only 37 are in good condition, 278 are in fair condition, and 22 are in poor condition. Park staff also manage 23 Historic Districts, six National Historic Landmarks, 95.2 miles of historic roads, and 176 miles of historic trails.

In the 1990s, the park fielded a historic preservation maintenance crew—an uncommon practice within the National Park Service. Since 1995, the crew has rehabilitated 24 of the most deteriorated structures listed in the National Register of Historic Places. The crew's skills have grown with each year of operation and are now considered vital to the survival of many of the park's unique buildings such as Sperry and Granite Park chalets. The crew also completes routine monitoring of structures, an important task called for in National Park Service guidelines, but which few parks have the personnel or expertise to accomplish.

Glacier National Park enjoys outstanding outside support for protection of its historic structures (see pages 28-30). As one example, the National Trust for Historic Preservation funded a historic structures report for Many Glacier Hotel in preparation for that building's restoration and rehabilitation. The Trust was also instrumental in rehabilitation of the park's renowned fleet of red buses.

Red Buses: a Rehabilitation Triumph

Public and private interests joined to rehabilitate the fleet of historic red buses.

In the 1930s, Glacier Transport Company contracted with White Motor Company for the production of canvas-topped touring sedans to provide transportation for visitors in national parks. The fleets are long gone from most parks, but at Glacier, the decision was made to maintain the fleet of 33 vehicles, known as red buses, because they were ideal for trips on Going-to-the-Sun Road.

In the summer of 1999, the National Park Service and Glacier Park Inc. pulled the historic red buses from service because of safety concerns. Glacier Park Inc. (the concessioner for the fleet) joined the Park Service, Glacier Fund, National Trust for Historic Preservation, Ford Motor Company, and others to replace the chassis on each bus and convert the fuel source to propane.

The buses were rehabilitated and returned to service in the summer of 2002.

Forecast

Despite efforts to rehabilitate Going-to-the-Sun Road and historic lodges, the assessment forecasts that there will likely be no significant improvement in the condition of historic structures and historical research over the next ten years unless bold steps are taken to increase funding for preservation and to focus on the park's history.

As for preservation of historic structures, the most compelling need is more funding to decrease the millions of dollars of deferred maintenance, most of which is for historic structures and Going-to-the-Sun Road.

In addition, park personnel have yet to evaluate whether various private inholdings and well-used campgrounds and trails are eligible for the National Register of Historic Places. Without a determination of eligibility, these places are more likely to inadvertently lose their historic integrity.

Many of the most significant buildings and other structures reflect a long-standing relationship between concessioners and park management. Most difficulties that arise regarding preservation of concessioner structures stem from a lack of understanding on the part of the concessioners regarding federal laws—specifically the National Historic Preservation Act of 1966—that guide national park preservation efforts.

Glacier lacks an administrative history of park management. Research for the history was started, but funds to write the document ran out in 1997. Thus, as the park's 1999 Resource Management Plan states, no solid information base exists about past management decisions to help guide current and future management actions. Moreover, the most recent Historical Resource Study, completed in 1980, needs to be re-evaluated. Information gaps such as these could result in repetition of past mistakes at potentially great cost to historic resources, interpretive programs, and the park's budget.

Despite recent work that culminated in 35 recorded oral history interviews, the park lacks a formal oral history program. The Waterton-Glacier region boasts a number of people with collective knowledge about the park's resources and the area's history. This aging population of retirees, former seasonal park employees, and tribal members, among others, represents a wealth of information about early homesteading, the Civilian Conservation Corps, early concessioner operations, park facilities, and park planning that is extremely valuable to the park's administrative and resource histories.

Recommended Actions:

Maintain historic structures. Increase funding to reduce the millions of dollars of deferred maintenance for the park's historic structures, including Going-to-the-Sun Road.

Write a history. Secure funds to write the park's administrative history.

Rehabilitate hotels and chalets. Step up the pace of and increase funding for rehabilitation of the park's historic hotels and chalets.

Update the Historic Resource Study to provide historical context in a useful format for management and interpretation decisions.

Develop a transportation plan. Consider an alternative transportation plan to alleviate wear and tear on Going-to-the-Sun Road by reducing heavy traffic congestion.

Begin an oral history program. Initiate a comprehensive, professional oral history program that begins within the next two years and expands each year with the goal of becoming a permanent part of park programming.

Designate historic properties. Determine whether inholdings and popular campgrounds and trails are eligible for the National Register of Historic Places.

Offer preservation training. Initiate training for concessioners and park staff regarding the National Preservation Act of 1966 and other legislation and regulations that pertain to the preservation of historic structures.

Museum Collections and Archives

Current conditions = 70

20 percent of overall rating for cultural resources

Collections and archives are important because they provide irreplaceable information about prehistoric and historic peoples, geology, flora and fauna, and the history of park management. Glacier has more than 400,000 museum collection and archival items, including objects related to archaeology, ethnology, history, biology, paleontology, and geology. Ninety-one percent of the material is archival—written records, field notes, and transcribed interviews.

Glacier rated 70 in this category. Park staff are doing a relatively good job of protecting the material, despite the large size of the collections and archives. Their most outstanding accomplishment is that more than 90 percent of the items are cataloged. In contrast, only 44 percent of collections have been cataloged for the entire National Park System (385 units in all). In addition, Glacier meets nearly 77 percent of the National Park Service's stringent Checklist for Preservation and Protection of Museum Collections. This above-average figure should rise in 2003 because construction of a storage facility for the park's collection of historic vehicles and other large artifacts has been completed. The new facility replaced three substandard storage units.

Glacier National Park needs additional storage facilities for museum collections and more exhibit space.

Forecast

Despite the many positive efforts to protect museum collections and archives at Glacier, the assessment predicts that there will likely be no change in the condition of these resources over the next ten years unless steps are taken to expand storage facilities and exhibit space and hire an archivist.

The new storage facility for large artifacts is a welcome addition to the park, but other problems exist in relation to collection storage. For example, all three of Glacier's collection storage facilities have adequate fire detection and suppression systems, but the park has too few employees to regularly monitor environmental conditions at the storage facilities and make adjustments, as necessary. Monitoring and modification of environmental conditions contribute to long-term preservation.

Glacier also lacks sufficient storage to accommodate growth in the collections and enough facilities to exhibit key collection items. To correct these deficiencies, at least in part, park personnel submitted a proposal to construct a combined museum, archives, and library facility, and the 1999 General Management Plan calls for a full-time archivist. Approval and funding, however, are not assured.

Although more than 90 percent of the museum collections are cataloged, information on the condition of the items is readily available (through the Automated National Catalog System) for only about 28 percent of the park's more than 400,000 items. The park also lacks a collection condition survey to detect problems.

Waterton Lakes' Collections

Parks Canada has a different system than the National Park Service's Checklist for Preservation and Protection of Museum Collections to assess storage facilities, supplies, equipment, and planning. The park's records indicate that the overwhelming majority of Waterton Lakes' 169 historic objects and 6,191 biological specimens have been cataloged. The park lacks an electronic database of these items, and none of the 7,000 archival items has been cataloged.

Ninety-two geologic items are in good condition, while approximately 119 historic items, all 13,648 archaeological items, and 6,108 herbarium specimens are in good or fair condition. Fifty historic items are in poor condition, as are all 83 faunal specimens in the collection of 8,385 biological specimens.

Waterton Lakes staff indicated that four historic items have been negatively impacted or are unaccounted for, several archaeological items are missing, and data management problems plague some historic records. The park also struggles with inadequate collection storage facilities.

Recommended Actions:

Approve the Glacier park staff's proposal for a combined museum, archives, and library facility and ensure that adequate space is available to store and display significant collection items.

Do a collection condition survey. Initiate a schedule to enter information on the condition of collection items into the Automated National Catalog System and to conduct a collection condition survey.

Hire a full-time archivist to provide professional management of collections.

The condition of 43 percent of Glacier's recorded archaeological sites is not known, and the sites could be eroding away.

Archaeological Sites

Current condition = 38

20 percent of overall rating for cultural resources

The Waterton-Glacier area has a long (10,000-radiocarbon years) record of Indian harvesting and occupancy in valleys and alpine regions. Archaeological sites in Glacier National Park—429 on record—include artifact and lithic scatters, fire pits, rock alignments, rock art, cairns, scarred trees, tipi rings, and vision quest sites. Waterton Lakes National Park maintains more than 200 known archaeological sites. Combined, the Peace Park's archaeological sites, according to UNESCO, contain the most complete and diverse cultural historic record of resources from pre-Euro American contact in the region.

Although only 2 percent of Glacier National Park's surface area has been surveyed for archaeological resources, a recent study was designed to focus on areas that had the highest potential to yield information. The study found that sites are eroding and that some have been lost entirely. Completion of this study is, arguably, the park's greatest accomplishment with regard to archaeological resource management. Conducted over four years (1992-1996), it included data from Waterton Lakes National Park, identified new archaeological sites, and tested, evaluated, and excavated (an activity that can destroy resources and should be used judiciously) sites for management and interpretive purposes.

During the survey, archaeologists performed test excavations at two sites that had been impacted by backcountry campground management. The excavations were the first ever in the alpine life zone of the Rockies.

In 2000, the survey was documented and interpreted in Glacier's Archaeological Overview and Assessment, which serves as baseline information for management decisions. Although resource managers acknowledge that this document requires additional work, in general the steps taken to increase knowledge of archaeological resources in both parks over the past ten years have been tremendous.

However, significant management needs and threats persist at Glacier, which is why the park received a score of 38 in this category. The condition of 43 percent of recorded sites is not known, and the sites could be eroding away. It is impossible for resource managers to prioritize protection efforts when the condition of only a little more than one-half of the park's identified archaeological sites is known. Only 16 of the recorded archaeological sites are in good condition, while more than 130 are in poor condition, and 11 have been lost forever.

Waterton Lakes Archaeological Work

Archaeological site management at Waterton Lakes National Park is quite strong. Approximately 80 percent of Waterton Lakes National Park has been surveyed for archaeological resources, uncovering 358 sites—35 percent of which have been formally tested or excavated. The condition of only 12 percent of the Waterton Lakes sites is unknown compared with 43 percent for Glacier.

The park does not have a ranger protection program for archaeological sites, although a number of rangers and other park employees have been trained in archaeology over the years. At one time, the park had a plan for both backcountry and front country rangers to identify archaeological sites at risk, but the plan was abandoned.

Survey reports have been written in some detail, and sites have been mapped and numbered. But only one archaeological site has been officially evaluated for the National Register of Historic Places (the National Historic Preservation Act of 1966 requires that all archaeological sites be evaluated).

The park needs a permanent archaeologist position. Seasonal archaeologists spend 90 percent to 100 percent of their time conducting work required by legislation and driven by development plans. This leaves the park with limited staff time to develop projects that interpret the collected data, much less to make recommendations to protect and preserve archaeological sites.

Historic Apgar Mercantile in Glacier National Park.

Forecast

The assessment predicts that the condition of archaeological resources at Glacier is likely to decline over the next ten years because of many threats and management needs at the park. Without additional funding, the condition of archaeological resources that, in part, contributed to the site's status as a World Heritage Site will continue to go undocumented, and potentially valuable sites will remain unidentified.

Recommended actions:

Hire a full-time archaeologist to oversee evaluation and protection of Glacier's world-renowned archaeological resources.

Direct management efforts to strengthen ranger capability to protect archaeological sites.

Designate archaeological sites. Provide funds to evaluate archaeological sites for the National Register of Historic Places, which is already a priority of resource managers in the park.

Inventory archaeological sites. Complete inventories of sites located around park inholdings and near frequently used trails and campgrounds.

Conduct systematic inventory of historic archaeological sites (for example, historic chalets and road camps).

There will likely be no change in the condition of Glacier's ethnographic resources over the next ten years unless substantial improvements are made, including stronger partnerships with tribes.

Ethnography

Current conditions = 60

20 percent of overall rating for cultural resources

The study of ethnography provides an assessment of places and natural and cultural resources that are valued in different ways by various groups affiliated with a park. At Glacier, the most recent ethnographic management emphasis focuses on identification of places and resources that have special significance to American Indian people who view the park as an important part of their traditional homeland.

Blackfeet Indians at Glacier have been gathering plants for ceremonies and religious rituals for centuries, and they continue to do so today. An important part of Blackfeet religious and ceremonial life involves sacred ceremonial "bundles," which consist of a wide variety of plants, animals (or animal parts), minerals, and other materials specifically associated with the bundle's origin and power.

For many Indian peoples, the mountains themselves are important to their traditional ways of life. For example, Blackfeet Indians regard Chief Mountain as an important vision quest destination, and the Park Service has long recognized the peak for its Traditional Cultural Property/Site values. This mountain and surrounding landscapes are no doubt eligible for the National Register of Historic Places and may be eligible as a National Historic Landmark. An eligibility statement for Chief Mountain has not been completed, but five other sites will be evaluated for the National Register of Historic Places through recent agreements with the Blackfeet Tribe and Confederated Salish and Kootenai Tribes.

The National Park Service recently finished a baseline ethnographic study, through a contract with a Canadian anthropologist, which resulted in publication of the Ethnographic Overview and Assessment for Glacier National Park. The study included areas within both Glacier and Waterton Lakes national parks and focused on Blackfeet and Kootenai tribes. Blackfeet elders participated in preparation of the overview.

Park staff have formally consulted with tribes associated with Glacier approximately 25 times over the past ten years. And in an attempt to help the park staff identify ethnographic resources, traditionally associated groups receive scoping letters and National Environmental Protection Act documents.

Despite these efforts, members of the Glacier staff agree that the park's ethnographic potential exceeds the current level of information and protection. Glacier and Waterton Lakes share a rich tribal cultural history, and both have the opportunity to identify, interpret, and protect ethnographic resources that are significant to park-affiliated tribes. Consequently, the State of the Parks® assessment rated Glacier National Park 60 in the ethnography category.

Many generations of Blackfeet have climbed mountain tops in Glacier, especially places with clear views of the sacred Sweetgrass Hills or Chief Mountain (above) to fast and pray for four days and nights, awaiting a vision that usually comes on the last night. More than 100 vision site structures have been recorded in the Peace Park.

Forecast

The assessment forecasts that there will likely be no change in the condition of ethnographic resources over the next ten years.

Among the concerns is the need to expand the inventory of ethnographic resources and develop enforcement programs for the protection of vision quest sites and other sites of significance to American Indians. Lack of a comprehensive ethnographic inventory may result in staff decisions that inadvertently endanger or even destroy ethnographic resources.

Accurate interpretation of ethnographic resources is important to the park, but to provide interpretation that is in line with current scholarship, the park needs funding to complete an updated human history of Waterton-Glacier.

The most important task in relation to ethnography is to strengthen park partnerships with all affiliated tribes. A representative of the park must be accountable for maintaining ongoing and more frequent dialogue than what exists today. This will help ensure the mutual trust and respect that is required for truly effective partnerships.

Waterton Lakes Collaborative Management

Waterton Lakes adheres to the concept of collaborative management that attempts to involve First Nation (Indians) in park management through formal agreements that specify respective rights, power, and obligations. One result is to incorporate traditional knowledge into decision-making. All sides come to the table with the understanding that respect and trust are critical elements of good working relationships. Representatives of Parks Canada indicate that this concept is gaining credibility worldwide as a viable alternative to reduce conflicts and achieve more sustainable management of resources in national parks.

In cooperation with Glacier National Park, Waterton Lakes staff use Glacier's ethnographic overview and assessment as a source for interpretation.

Recommended Actions:

Protect sites of significance. Seek funding for effective protection of vision quest sites and other sites of significance to American Indian peoples.

Write a new human history. Research and write, for interpretive staff and the public, an updated text that addresses human history within the area of the park.

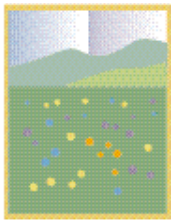
Develop a resources inventory. Initiate and maintain an ethnographic resources inventory.

Work with tribes to develop a more comprehensive and integrated interpretation program for the park that expands the story of traditional cultures.

Cultural Landscapes

Current conditions = 36

20 percent of overall rating for cultural resources



The National Park Service's Cultural Resource Management Guidelines defines cultural landscapes as reflections "of human adaptation and use of natural resources . . . often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built." Identification and study of significant characteristics and features of cultural landscapes leads to knowledge about how they relate to one another and to important events, trends, people, and other resources. Landscapes change over time, and it is necessary to understand those changes in making decisions for the future.

Glacier National Park has 33 landscapes that may be culturally significant and that merit further evaluation for eligibility in the National Register of Historic Places. If they are found to be eligible, the landscapes will require additional research, documentation, treatment, and monitoring plans.

The park recently posted a major accomplishment with completion of a cultural landscape inventory and report for Going-to-the-Sun Road. Although the remaining 32 landscapes have yet to be evaluated, their known characteristics are considered during project planning. In the absence of formal reports, however, significant features and characteristics are at risk of loss from routine maintenance, uninformed management decisions, and development. This, coupled with the realities of regionally driven priorities, limited funding for cultural landscape management, and competition for time and money with well-established cultural resource programs, led to a score of 36.

The park recently completed a cultural landscape inventory and report for Going-to-the-Sun Road, shown here, during winter, in the 1920s.

Waterton Lakes and Cultural Landscapes

Canadian national park policy does not recognize "cultural landscapes" as understood by the National Park System. The most similar designations in Waterton Lakes National Park are two National Historic Sites—the Prince of Wales Hotel and the first oil well in Western Canada.

Over the years, however, the Historic Sites and Monuments Board of Canada has identified the need to increase national recognition of the history of Aboriginal peoples. To accomplish this, Parks Canada offered the approach of "cultural landscapes" as a possible response. The aim was to provide the board with a framework that could encompass the traditional values of Aboriginal peoples, while still being understandable to board members whose world views are typically based in Western historical scholarship.

In Canada, the designation as an Aboriginal Cultural Landscape is more similar to the designation in the Untied States of a Traditional Cultural Property for the National Register of Historic Places than it is to "cultural landscape" as referred to in U.S. Park Service guidelines. Currently, Waterton Lakes National Park has no sites designated as Aboriginal Cultural Landscapes.

It is likely that management complexity also plays a role in the park's relatively low score in this category. Cultural landscape management incorporates terminology and definitions that differ from more ingrained and traditional cultural resource management activities. And cultural landscape inventories and reports require significant funding. To add to the complexity, different types of cultural landscapes require varying degrees of evaluation—from historic, designed, vernacular, and ethnographic landscapes to historic sties. These categories are not mutually exclusive. One landscape may be associated with a significant event, include vernacular characteristics, and be important to a certain cultural group.

Siyeh Bend area of world-renowned Going-to-the-Sun Road in Glacier National Park.

Forecast

If current priorities do not change over the next ten years, it is likely that the condition of cultural landscapes at Glacier National Park will decline. Threats to cultural landscapes from routine maintenance, development, and uninformed management and treatment decisions will continue.

Recommended Actions:

Evaluate potential landscapes. Finish the evaluation of all potential cultural landscapes and conduct a systematic cultural landscape inventory to identify additional sites for study and interpretation in the next five years.

Secure research funding. Secure funding for historical research to identify the context in which cultural landscape resources exists in the park.

Make informed landscape treatment decisions. Use data from identification, evaluation, and research of cultural landscapes to make recommendations for treatment and to put a monitoring program in place.

Include cultural landscapes in the Resource Management Plan and incorporate them into the new Comprehensive Interpretive Plan to bring about greater public awareness of and appreciation for this important park resource.

Park staff estimate that Glacier's backlog of deferred maintenance and construction needs exceeds $400 million. Waterton Lakes also has a substantial deferred maintenance backlog.

Stewardship Capacity

52
Overall Rating

The third and final step in the resource assessment process examines stewardship capacity—how well positioned the Park Service and Parks Canada are to protect the Peace Park's natural and cultural resources. Included is information from three crucial areas—funding and staffing, external support, and interpretation.

Overall, the park's stewardship capacity rated 52. As noted in previous sections of this report, Waterton-Glacier faces a large number of threats that often originate outside its borders, and the capacity of the management agencies to address the scope and seriousness of these threats effectively is in doubt. The management agencies do not have the money or staff to meet the challenges to the Peace Park.

Funding and Staffing

Rating: 45

60 percent of overall stewardship capacity rating

Aside from external threats, limited funding is the most significant factor affecting the Peace Park agencies' capacity to protect park resources. Here, too, we find significant stress on the Peace Park.

The National Parks Conservation Association, in cooperation with the National Park Service, has conducted a study of budgets for about 50 U.S. national park units over the past four years. The conclusion, certified by a national public accounting firm, is that the parks are seriously underfunded—on average about 32 percent below what is needed to meet basic private-sector standards and legal mandates. Hardest hit are scientific analyses, external affairs, planning, cultural and natural resources management, environmental education, and interpretation. On average, these functions are underfunded between 40 percent and 60 percent.

Canadian parks face a similar funding crisis. The Panel on the Ecological Integrity of Canada's National Parks concluded in 2000 that Parks Canada lacked the funds and scientific capacity for adequate stewardship of Canada's National Park System, including Waterton Lakes. The panel recommended an increase in Parks Canada's operating budget of $328.3 million (Canadian) to improve the agency's capacities in virtually every key area of resource management—science, planning, restoration, resource monitoring, engagement with Aboriginal peoples, and stewardship efforts—as well as a doubling of the interpretation budget.

A similar budget study for Glacier National Park has not been conducted. However, there is no evidence that Glacier's funding needs are less than the shortfalls identified for other parks. This assessment, for example, documented that the park has not funded a park archaeologist position, noxious weed control, and enforcement of livestock trespass. Glacier staff have requested approximately $1 million more for wildlife management, monitoring, and research. This total includes money to address the park's legal mandate to protect threatened and endangered species such as the lynx, bull trout, grizzly bear, and gray wolf.

Park visitors enjoy a hike at Waterton-Glacier International Peace Park.

High on the list of personnel needs at Glacier is restoration of ranger positions and additional personnel to better protect park resources. Partly because of fiscal constraints, Glacier's current ranger staffing level is insufficient to adequately handle poaching, illegal removal of natural resources, and damage to cultural resources. Some rangers have been recruited from the park for national security needs and replacements have not been hired because of fiscal restraints. More personnel are also needed to meet basic standards for monitoring, cataloging, maintenance, and preservation of the park's museum, library, photography, and archive collections. Just one person is currently assigned to these tasks.

In addition to annual, ongoing budget needs, park staff estimate that Glacier's backlog of deferred maintenance needs exceeds $400 million (in one-time spending). The total includes $10 million to construct a new west-side visitor center, more than $150 million to stabilize historic hotels, and about $150 million to rehabilitate historic Going-to-the-Sun Road.

Glacier's current ranger staffing level is insufficient to adequately handle illegal removal of natural resources and damage to cultural resources.

On a more positive note, special appropriations through the congressional initiative known as the Natural Resource Challenge have aided efforts to better understand Glacier's flora and fauna. The Challenge supported studies of the grizzly bear, wolverine, lynx, several species of owls, fish (primarily the bull trout, westslope cutthroat trout, and invasive lake trout), and the whitebark pine as well as the initial phases of a much-needed resource inventory and monitoring system.

The Challenge also helped to create the Crown of the Continent Learning Center. Only a handful of such centers exist throughout the National Park System. This center will help to facilitate research and education by providing offices and dormitory facilities for researchers and disseminating research findings to the public.

Visitation

The Peace Park served 2.2 million visitors in 2000—420,000 at Waterton Lakes and 1,738,119 at Glacier. A recent survey found that 19 percent of non-resident summer visitors to Montana indicated that Glacier was their "primary" reason for visiting.

Sixty percent of Glacier's visitors come in July and August, for an average of 16,700 visitors daily. Glacier's records indicate more than 29,800 person-nights (one person spending one night in the backcountry) for the year 2000. These visitation levels have held fairly steady for the past ten years.

To provide visitor-related services for the more than 2 million visitors each year, Glacier National Park maintains approximately 120 permanent positions, 20 project-funded employees, and 365 seasonal employees. In all, Waterton Lakes has 36 full-time equivalent positions and 58 seasonal employees.

In Glacier National Park, two significant issues have arisen that impact the visitor experience. First, on any given summer day in the park, visitors to the backcountry may be subjected to the noise of many helicopter sightseeing tours. During the park's recent planning process, 861 comments addressed the air tours, and almost 90 percent of those expressed concerns about the disturbance that these flights cause. To date, sightseeing overflights are not a problem in Waterton Lakes.

Second, the number of private vehicles using historic Going-to-the-Sun Road has increased from 40,000 in the 1930s to nearly 500,000 today. The result is congestion, overcrowded parking lots, and safety concerns along this 50-mile route. Glacier staff have developed a draft plan for rehabilitation of the Going-to-the-Sun Road. It begins to address alternative transportation needs and could turn into a permanent transportation solution. The plan can be found at the park's web site: www.nps.gov/glac/whatsnew/plans/gttsr.htm.

At Waterton Lakes National Park, only 36 percent of the 2002 base operating budget went to resource management and protection—planning, mapping, wildfire and weed control, law enforcement, environmental assessments, management of cultural resources, and trail maintenance. Just nine of the park's 36 full-time employees are responsible for all of these tasks, with the aid of nine seasonal employees. The park employs one wildlife-aquatics specialist and one conservation biologist.

Waterton Lakes also faces a considerable deferred maintenance challenge to address degradation of the park's roads, campgrounds, trails, and other facilities.

Recommended actions:

Budget for a business plan. Glacier staff should budget monies for a business plan assessment that will point out which park functions are most deficient in relation to funding.

Cooperate to secure funding. Entities and individuals with an interest in the management and future of Waterton-Glacier should work together to secure increased federal funding for research, interpretation, and resource protection needs while working to eliminate the enormous deferred maintenance backlog at the parks.

Meet staffing needs. Funding must also be secured to fill the most pressing staffing needs at both parks. Priorities include biological technicians, data managers, a permanent archaeologist and archivist, and additional assistance to manage museum collections and park history.

Finalize regulations for air tours. The Federal Aviation Administration must act immediately to finalize rules implementing a federal law passed in April 2000 that will allow parks to develop management plans for low-level sightseeing air tours, which are now largely unregulated.

Develop transportation plan. Glacier managers should develop a long-term alternative transportation plan to include an affordable public transportation system that will reduce traffic congestion and expand bicycle opportunities on Going-to-the-Sun Road.

External Support

Rating: 76

20 percent of overall stewardship capacity rating

The National Park Service by itself cannot meet all goals to achieve protection of park resources. Volunteerism and partnerships with other organizations are essential and have long been part of national park management in this country. They can supplement insufficient park budgets, free park staff for other tasks, and help with resource management activities. Through day-to-day involvement in park management, volunteers and partnerships help to increase public recognition and appreciation of park values, a critical factor in building the long-term support needed for stewardship of park resources.

Across the country volunteers, formal partnerships, and park support groups are making enormous contributions to the ongoing work of protecting park resources. In this category, Waterton-Glacier received a relatively high rating of 76 for reasons discussed below.

Volunteerism and Partnerships. In Fiscal Year 2000, 1,554 volunteers guided by park staff collectively contributed 36,200 volunteer hours to Waterton-Glacier International Peace Park on a variety of projects. In addition, the park boasts a number of significant partnerships with organizations that are using their own expertise and resources to advance resource stewardship.

Partner contributions include efforts of the National Trust for Historic Preservation to rehabilitate the park's fleet of red buses and restore Many Glacier Hotel (see page 17), the more than $1.5 million donated to the park over the past 56 years by the Glacier Natural History Association through sales of publications and membership fees, volunteers and interns sponsored by Glacier National Park Associates for the past 13 years, and the ongoing efforts of the Rotary's Waterton-Glacier International Peace Park Association to keep the principles behind establishment of the Peace Park alive.

Gateway community attitudes and involvement. The support of residents in gateway communities near national parks can be a real asset to park managers. To probe broader community views about Glacier National Park, a written questionnaire was sent to a random sample of 200 residents in Kalispell, Montana. Only 24 percent said they had expressed opinions about park management in the preceding five years (Fig. 1). But an overwhelming 91 percent of survey respondents said that they had visited the

The Peace Park boasts a number of significant partnerships with organizations using their own expertise and resources to advance resource stewardship at the park.

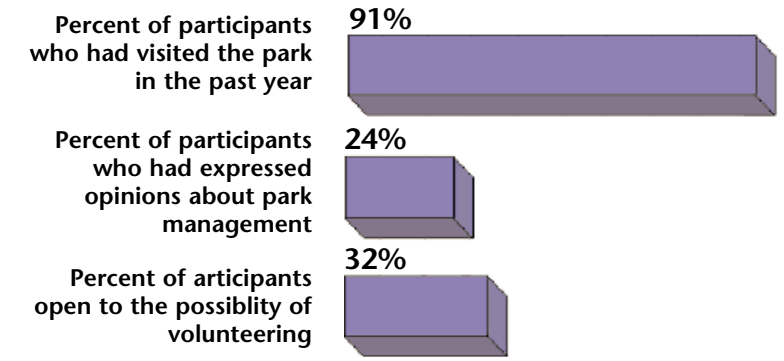
Waterton-Glacier Partners

- Rotary Club's Waterton-Glacier International Peace Park Association, the chief organization in establishment of the Peace Park, remains highly involved in park issues.
- Glacier Fund, founded in 1999 as a subsidiary of the National Park Foundation. More than $100,000 from the fund in 2002 was targeted to environmental education, wildlife research, trail work, and revegetation of impacted sties.
- Glacier Institute, initiated in 1983. Provides field-based educational experiences for 2,500 adults and children in the Crown of the Continent Ecosystem.
- Glacier Natural History Association, founded in 1946. Offers a variety of publications and materials that promote better understanding of Glacier's diverse landscapes, animal and plant life, culture, and history. The association provided more than $120,000 in aid to Glacier National Park in 2002.
- Glacier National Park Associates, established in 1989. Facilitates volunteerism in park projects and sponsors summer interns at the park.
- Great Northern Environmental Stewardship Area Committee. This group was founded in 1991 as a public-private sector partnership to resolve conflicts between travel corridor operations (rail, highway, natural gas) and maintenance of the natural environment along the park's southern boundary.
- Crown of the Continent Ecosystem Education Consortium. Focus is analyses of transboundary issues such as cumulative effects.
- Miistakis Institute, launched in 1995. Collects ecological information about the Rockies, makes it understandable, and disseminates it widely for land-use and conservation planning.
- Waterton Natural History Association, founded in 1983. Operates the Heritage Center at Waterton Lakes, and through publication sales, funds a staff member for the park's visitor center.
- Yellowstone to Yukon Conservation Initiative. A joint Canadian-U.S. network of more than 450 organizations, institutions, foundations, and conservation-minded individuals who are working together to restore and maintain the unique natural heritage of the Yellowstone to Yukon region and the quality of life it offers.
- Canadian Biosphere Reserves Association. This member-run group of representatives from Canadian biosphere reserves provides national coordination to develop and implement conservation projects.

park, and a respectable 32 percent indicated they were open to the possibility of volunteering their time at the park.

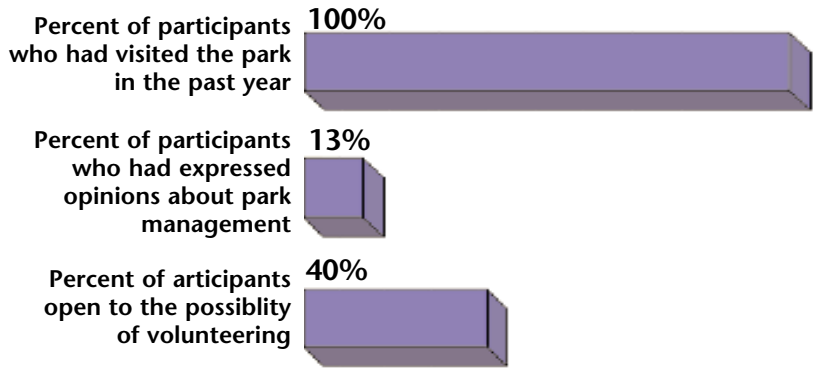
The questionnaire was also sent to a random sample of residents in the towns of Cardston and Pincher Creek in Alberta. While just 13 percent said they had expressed opinions about park management in the preceding five years (Fig. 2), *all* respondents said that they had visited the park. Forty percent indicated they were open to the idea of volunteering at Waterton Lakes.

Figure 1.
Participation in Park Issues at Glacier



Results of 2001 State of the Parks® survey mailed to a random sampling of 200 residents of Kalispell, Montana

Figure 2.
Participation in Park Issues at Waterton Lakes



Results of 2001 State of the Parks® survey mailed to a random sampling of residents in Cardston and Pincher Creek in Alberta.

Recommended Actions:

Collaborate with local tribes and First Nations. Establish a more consistent long-term relationship with local tribes and First Nations to foster a collaborative approach to management and resource decisions. (See pages 22-23 for more on this issue.)

Seek to increase public support. Park staff and the park's partners should seek ways to increase public support of the partners' efforts to aid management of Waterton-Glacier.

Expand outreach. Glacier park officials should expand their outreach with gateway communities to promote cooperative efforts aimed at maintaining community character and regional conservation values in the face of rapid change.

Interpretation

Rating: 48

20 percent of overall stewardship capacity rating

Communicating an understanding to the public of park resources and threats to those resources is a critical stewardship tool. Without understanding, people cannot be expected to fully value park resources and support resource protection efforts.

Waterton-Glacier received a relatively low rating of 48 in this category. The score reflects limitations in the delivery of interpretive programs because of outdated visitor centers, antiquated exhibits and audio-visual equipment, and too few employees in interpretive programs.

At both Glacier and Waterton Lakes national parks, visitor centers are the focal points of contact with the public. Both parks also have theaters, museums, and field programs. At Waterton Lakes, management concerns center on general infrastructure—the theaters and museum exhibits are simply outdated (some are 40 years old) to relay key messages effectively. The park also lacks an interpretive training program for seasonal employees, many of whom accompany visitors to the field, and a formal evaluation procedure to measure the response of visitors to interpretive messages.

Like Waterton Lakes, Glacier has infrastructure problems, especially at visitor centers. St. Mary's Visitor Center on the eastern side of the park is 40 years old, and its audio-visual program and exhibits are sorely outdated. On the western side where the majority of the park's visitors enter—more than 2,000 a day during the summer—the Apgar Visitor Center is a small (900 square feet) converted two-bedroom house that lacks modern equipment for exhibits and audio-visual presentations. Also, the park has no formalized curriculum-based educational initiative.

Glacier's first Comprehensive Interpretive Plan will contain guidance to address these concerns, in particular the outdated visitor centers, and will include a strategy to create a more comprehensive educational program.

Adequate staffing and funding for interpretation are always a concern. Waterton Lakes has a staff of just three full-time communications specialists whose function is to work with external support groups and local schools. One permanent and nine seasonal employees are responsible for all the interpretive work, including 14 different programs that serve roughly 11,533 visitors annually and the visitor center program that served an additional 83,000 people in 2001.

Both Glacier and Waterton Lakes have outdated visitor centers, antiquated exhibits and audio-visual equipment, and too few employees in interpretive programs.

The Town within the Park

The town of Waterton, located in the center of Waterton Lakes National Park, is the only community within the boundaries of the Peace Park. Approximately 300 people live there in the summer, although its facilities attract up to 6,000 visitors on any given summer day.

Parks Canada and the town of Waterton worked together to produce a new plan that limits development of acreage surrounding the town to 49 percent less than what was allowed in an earlier (1994) plan. The new plan caps the number of commercial establishments at the existing level and limits their floor space expansion to about 3 percent of existing space. No new land will be released for cottages.

The plan provides a way to determine the appropriateness of goods and services offered in the Waterton Lakes National Park, defines a program to protect the heritage values of the community, sets standards for energy efficiency, waste management and recycling, and adopts a principle of no net negative environmental impacts. It also calls for a monitoring framework to gauge park health in relation to the community.

In 2001, Glacier's nine permanent and 41 seasonal interpreters reached approximately 130,000 visitors through formal interpretive programs, and the three main park visitor centers served nearly 630,000 visitors. Every year, park interpreters at Glacier interact with nearly 4,000 local schoolchildren.

A Difference in Interpretation

Waterton-Glacier received a relatively low rating of 48 in this category. The score reflects limitations in the delivery of interpretive programs because of outdated visitor centers, antiquated exhibits and audio-visual equipment, and too few employees in interpretive programs.

Parks Canada's approach to interpretation—an approach that the State of the Parks® program considers a potential model for all U.S. park units—is one of the most significant differences in management of Waterton Lakes and Glacier national parks. Parks Canada policy requires managers of national parks to identify "key management messages" related to resource use. Interpretation programs at the parks, including Waterton Lakes, must closely follow those management messages and include discussion of issues that are considered necessary to safeguard important park resources.

Waterton Lakes also inherits a separate set of broader interpretive themes that bind the park to a national agenda. In all Canadian national parks, managers must consider the following in their interpretive programs: How does the park relate to a national system of protected areas? How does the park contribute to a "sense of place?" How does the park contribute to its mandate to protect the ecological integrity of the area?

The United States has no such requirements. Instead, managers at individual parks, including Glacier, devise interpretive messages for inclusion in required comprehensive interpretive plans. Glacier's current priority themes are geology, wilderness, the Peace Park, American Indians, ecosystems, and westward expansion. This approach allows for flexibility, but it also limits coordination of themes across parks.

Recommended Actions:

Enlarge and enhance visitor centers. Secure funding for larger visitor centers at Glacier and Waterton Lakes, retrofitting an existing structure in Waterton. Update audio-visual equipment, programs, and exhibits in both parks.

Develop programs and guides for local schools. At Glacier, develop school curriculum-based teacher guides and reinvigorate programs to work with local schools in the area of resource education, following the strategy outlined in the new Comprehensive Interpretive Plan.

Secure funds to train seasonal staff. At Waterton Lakes, secure funds for additional interpretive staff and a training program in effective communications for seasonal staff.

Work with tribes and First Nations to integrate into interpretive programs the historic and contemporary tribal relationships with the park. (See pages 22-23 for more on this issue.)

Appendix: **State of the Parks®** Assessment Process

To determine the condition of known natural and cultural resources at Waterton-Glacier and other national parks, the National Parks Conservation Association in cooperation with Colorado State University's Natural Resource Ecology Laboratory developed the initial resource assessment process. These methodologies are currently undergoing update and revision for use beyond the test phase of this program. The assessment process examines current resource conditions, evaluates the park staff's capacity to fully care for the resources, and forecasts likely conditions over the next ten years.

Researchers gather information in a number of critical categories—11 for Waterton-Glacier. A series of "indicators" (questions pertinent to the condition of the resources) are used to elicit data in each category. In total, data are collected for more than 100 indicators. Information is also gathered about stresses and threats that have negative impacts on park resources. These include invasive non-native species, pollution, altered natural processes, land use and boundary issues, and climate change.

Information from the indicators is used to rate the current condition of park resources and then to forecast likely future conditions.

For the Waterton-Glacier assessment, researchers focused on natural resources throughout both national parks, where information was available and where evaluation of the entire Peace Park was feasible and practical. The parks share many of the same threats, and their management and protection are inevitably intertwined. In some cases, the evaluation is skewed more towards assessment of Glacier National Park's natural resources because more information about those resources was available.

In relation to cultural resources, the assessment considered only Glacier National Park because the State of the Parks® cultural resource assessment methodology is based on U.S. management policies and laws, which differ from those in Canada. However, as noted in this report, the National Park Service and Parks Canada cooperate to the extent possible to protect cultural resources in both parks.

To evaluate stewardship capacity, the assessment included information from both parks, where available, and from random sampling of residents in Kalispell, Montana, and Cardston and Pincher Creek in Alberta.

Researchers collected data and prepared a paper that summarized the results. The initial paper from the team of Colorado State researchers was reviewed and augmented by researchers Christine Paige and Katherine Johnson who complied in-depth analyses that form the basis for this report. These drafts underwent peer review and were also reviewed by staff at the Peace Park.

The information will serve as part of the framework for an assessment of national parks across the country. Information generated through the assessment process will allow comparisons of park conditions or threats to park resources at national and regional scales. This is the

Categories assessed for Waterton-Glacier International Peace Park

Natural Resource Conditions

Native biodiversity
Terrestrial communities and systems
Freshwater communities and systems

Cultural Resource Conditions

Historic structures and history
Museum collections and archives
Archaeological sites
Ethnography
Cultural landscapes

Stewardship Capacity

Funding and staffing
External support
Interpretation

Appendix: Assessment Process

Continued

first time that such an assessment has been undertaken for the National Park System. The approach used is a work in progress. Comments on the program's initial direction and methods are welcome.

This report does not address all information gleaned from the assessment process. Rather, it highlights current natural and cultural resource conditions in the Peace Park and the threats that Parks Canada and the National Park Service can likely address to improve resource conditions. For more information, contact National Parks Conservation Association, State of the Parks® Program, P.O. Box 737, Fort Collins, CO 80521 Phone: 970-493-2545; Fax: 970-493-9164; E-mail: stateoftheparks@npca.org

Rating the parks

In the final phase of the assessment process, the National Parks Conservation Association applies a rating system to evaluate resource conditions, forecast how resources will fare over the next ten years, and determine how stewardship capacity may affect resource conditions. The scores stem from risk analyses, indicator questions, and questionnaires.

Resource conditions. Terrestrial and freshwater communities and systems were evaluated based on documented damage to terrestrial and freshwater resources. Information from the research reports was used to estimate the severity, geographic scope, and irreversibility of damage.

This portion of the natural resource assessment process was patterned after The Nature Conservancy's site conservation planning model. Checklists that combine all

Data sources for this report*

Montana

- Montana Natural Heritage Program
- Montana State Historic Preservation Office

Canada

- Parks Canada and staff at Waterton Lakes National Park
- Miistakis Institute
- Canadian Parks and Wilderness Society

U.S. Government

- Bureau of the Census
- Environmental Protection Agency
- National Oceanic and Atmospheric Administration
- National Atmospheric Deposition Program/ National Trends Network
- U.S. Geological Survey
- U.S. National Park Service, especially staff at Glacier National Park

Other

- The National Trust for Historic Preservation
- The Nature Conservancy
- American Park Network

** Data from these sources were collected during visits to the park and from park publications, personal interviews, Internet resources and literature reviews.*

Appendix: Assessment Process

Continued

collected information about a resource were used to determine the degree of existing information, the extent of existing research, and the planning efforts under way to protect the resource. The percentage of positive responses determined the condition score.

Scores for cultural resources were determined based on the results of approximately 68 indicator questions. These questions were chosen to reflect the National Park Service's own Cultural Resource Management Guidelines and other Park Service resource management policies.

Each resource received a score on a 100-point scale. An overall average was calculated with a different weight assigned to each resource based on a determination of the relative importance of the resource to the park. Currently, insufficient baseline data exist to ascertain whether a score of 100 is attainable for all of the resources at Waterton-Glacier International Peace Park.

Resource forecast. Indicators of stress and threats to resources and stewardship capacity were applied across each cultural and natural resource to determine what their impacts would likely be over the next ten years. A checklist was used to derive a score based on the percentage of positive responses to questions posed about threats to existing resources. This approach enabled a risk analysis to indicate whether resource conditions are likely to decline, remain the same, or improve.

The impact of threats to the park was also used to evaluate how resource conditions may change as a result of threats that are outside the control of park staff.

Stewardship capacity. Stewardship capacity refers to the Park Service's ability to protect park resources. The collected information was circulated to staff and peer reviewers for analysis and to assign ratings. An overall average based on a 100-point scale was used to determine the ratings discussed in this report.

To determine the degree of external support in gateway communities for the Peace Park, a questionnaire was mailed to a random sample of residents of Kalispell, Montana, and Cardston and Pincher Creek in Alberta.

ROBERT WILLIAMS

Vimy Peak from Lower Waterton Lake.

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Intermountain Region
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