



State of the Park Report

Yukon-Charley Rivers National Preserve

Alaska



2017

On the cover: Primary winter transportation by dog team. NPS Photo.

Disclaimer. This State of the Park report summarizes the current condition of park resources, visitor experience, and park infrastructure as assessed by a combination of available factual information and the expert opinion and professional judgment of park staff and subject matter experts. The [internet version](#) of this report provides the associated workshop summary report and additional details and sources of information about the findings summarized in the report, including references, accounts on the origin and quality of the data, and the methods and analytic approaches used in data collection and assessments of condition. This report provides evaluations of status and trends based on interpretation by NPS scientists and managers of both quantitative and non-quantitative assessments and observations. Future condition ratings may differ from findings in this report as new data and knowledge become available. The park superintendent approved the publication of this report.

Executive Summary

The mission of the National Park Service is to preserve unimpaired the natural and cultural resources and values of national parks for the enjoyment, education, and inspiration of this and future generations. NPS Management Policies (2006) state that “The Service will also strive to ensure that park resources and values are passed on to future generations in a condition that is as good as, or better than, the conditions that exist today.” As part of the stewardship of national parks for the American people, the NPS has begun to develop State of the Park reports to assess the overall status and trends of each park’s resources. The NPS will use this information to improve park priority setting and to synthesize and communicate complex park condition information to the public in a clear and simple way.

The purpose of this State of the Park report is to:

- Provide to visitors and the American public a snapshot of the status and trend in the condition of a park’s priority resources and values;
- Summarize and communicate complex scientific, scholarly, and park operations factual information and expert opinion using non-technical language and a visual format;
- Highlight park stewardship activities and accomplishments to maintain or improve the State of the Park;
- Identify key issues and challenges facing the park to help inform park management planning.

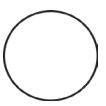
The National Park Service Organic Act of 1916 states that units of the national park system are established to “conserve the scenery and the natural and historic objects and the wildlife therein and to provide for enjoyment of the same in such manner and by such means as to leave them unimpaired for the enjoyment of future generations.” This statement represents the most basic mission of Yukon-Charley Rivers National Preserve.

Most of the national parks in Alaska, including Yukon-Charley Rivers National Preserve, were established or expanded under the Alaska National Interest Lands Conservation Act (ANILCA), which was signed into law on December 2, 1980. ANILCA’s passage culminated more than 20 years of deliberation on federal land claims after Alaska statehood.

The purpose of Yukon-Charley Rivers National Preserve (“Yukon-Charley,” “the preserve”) is to maintain the environmental integrity of the undeveloped Charley River basin, and to protect the natural and cultural history of the upper Yukon River corridor for public enjoyment and scientific study.

The summary table below, and the supporting information that follows, provide an overall assessment of the condition of priority resources and values at Yukon-Charley based on scientific and scholarly studies and expert opinion. The internet version of this report, available at <https://www.nps.gov/stateoftheparks/yuch/>, provides additional detail and sources of information about the resources summarized in this report, including references, accounts on the origin and quality of the data, and the methods and analytical approaches used in the assessments. Reference conditions that represent “healthy” ecosystem parameters, and regulatory standards (such as those related to air or water quality) provide the rationale to describe current resource status. In coming years, rapidly evolving information regarding climate change and associated effects will inform goals for managing park resources, and may alter how the park measures the trend in condition of resources. Thus, reference conditions, regulatory standards, and/or best judgment about resource status or trend may evolve as the rate of climate change accelerates and the park responds to novel conditions. In this context, the status and trends documented here provide a useful point-in-time baseline to inform understanding of emerging change, as well as a synthesis to share as the park builds broader climate change response strategies with partners.

The status and trend symbols used in the summary table below and throughout this report are summarized in the following key. The background color represents the current condition status, the direction of the arrow summarizes the trend in condition, and the thickness of the outside line represents the degree of confidence in the assessment. In some cases, the arrow is omitted because data are not sufficient for calculating a trend (e.g., data from a one-time inventory or insufficient sample size).

Condition Status		Trend in Condition		Confidence in Assessment	
	Warrants Significant Concern		Condition is Improving		High
	Warrants Moderate Concern		Condition is Unchanging		Medium
	Resource is in Good Condition		Condition is Deteriorating		Low

State of the Park Summary Table

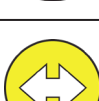
Priority Resource or Value	Condition Status/Trend	Rationale
Natural Resources web ►		
Snowpack		The presence of a seasonal snowpack is important for the ecological health of the preserve; many plant and animal species have adapted to a snow-dominated landscape and any changes, whether positive or negative, could have implications. The snow depth at Coal Creek on April 1, 2015 was 58 cm. The period of record (2007–2015) average is 51 cm with a range between 41 cm and 61 cm. The most recent conditions fall within the range of values for the seven-year period of record (NRCS 2015).
Air Quality		Overall air quality at Yukon-Charley is in good condition, and scenic views are rarely affected by air pollution-caused haze; however, the steady input of contaminants from both local and global sources make pollution a primary concern for managers. Sources of contaminants in parklands include point sources, regional sources, and trans-Pacific and transpolar global pollution sources.
Geologic Features and Processes		The rocks north of the Yukon River are the only rocks in Alaska that have always been tied to the North American continent. They contain a remarkably unbroken and well-preserved history from the Precambrian Era 800 million years ago to the Cenozoic Era 40 million years ago. Placer gold mining was prevalent in the area's rivers in the late 1800s. Minor permafrost loss has been observed in Yukon-Charley.
Water Quantity and Quality		In general, the lakes and streams within Yukon-Charley are in good condition. The Yukon and Charley Rivers are the two major water bodies that flow through the preserve, in addition to a number of smaller tributaries. The Charley River is a designated Wild and Scenic River. The entire Charley River watershed is contained within Yukon-Charley boundaries.
Birds		Of the many bird species in Yukon-Charley, the once-endangered American peregrine falcon population has been monitored since 11 nesting pairs were counted in 1973. Populations have increased to nearly 60 nesting pairs in recent years.
Mammals		Common mammals in the preserve include, but are not limited to moose, caribou, grizzly and black bears, Dall's sheep, and wolves. Other mammals documented in the preserve include porcupine, river otter, beaver, snowshoe hare, hoary marmot, northern red-backed vole, tundra vole, various species of shrews, marten, ermine, and wolverine. Over the last five years, there has been a decline in the number of wolves in the preserve as a result of predator control efforts on adjacent lands.

Priority Resource or Value	Condition Status/Trend	Rationale
Fish		The anadromous species that use the waters within Yukon-Charley for spawning, rearing, or migrating include: Chinook salmon (<i>Oncorhynchus tshawytscha</i>), chum salmon (<i>O. keta</i>), coho salmon (<i>O. kisutch</i>), Bering cisco (<i>Coregonus laurettae</i>), and Arctic lamprey (<i>Lampetra camtschatica</i>). The NPS does not currently monitor or manage fish in the Yukon River. Chinook salmon populations in the Yukon River drainage have been declining in size and number for the past 3 decades. No single cause for the decline has been identified; however, poor at-sea conditions, overharvest, disease, and climate change have all been connected with the decline.
Amphibians		Wood frog (<i>Rana sylvatica</i>) is the only documented amphibian in the preserve. The NPS Central Alaska Network monitors the timing and duration of the wood frog breeding season in a small pond near the mouth of Woodchopper Creek.
Plant Communities		The plant communities of the preserve are monitored through an extensive network of permanent vegetation plots. The majority of the preserve is covered in boreal forest. Few invasive species have been observed in Yukon-Charley.
Dark Night Sky		A photic environment is described as the physical amount and character of light at a particular location, irrespective of human perception. The NPS Night Sky Program characterizes a park's photic environment by measuring both anthropogenic and natural light. While no ground-based or modeled data are available for Yukon-Charley Rivers National Preserve, 2012 visible infrared imaging radiometer (VIIRS) satellite data, which uses a broadband imaging detector with high sensitivity, indicates that there is no visible upward radiance within the preserve boundary. The most significant source of upward radiance in the region originates from Fairbanks, west of the preserve.
Acoustic Environment		All sound resources, whether audible or not, are referred to as the <i>acoustic environment</i> of a park. The quality of the acoustic environment affects park resources including wildlife, cultural resources, visitor experience, and landscapes. The condition of the acoustic environment is assessed by determining how much man-made noise sources contribute to the acoustic environment through the use of a national noise pollution model. This measure is referred to as the <i>mean acoustic impact level</i> . Impact is measured in A-weighted decibels (dBA). The mean acoustic impact level at the preserve is 0.0 dBA, meaning that the acoustic environment is in good condition. Overall, long-term projected increases in ground-based and aircraft traffic indicate a deteriorating trend in the quality of acoustic resources at this location, as does an increase in development and steady tourism pressure throughout the state of Alaska (McDowell 2014).

Cultural Resources

[web](#) ▶

Archeological Resources		Archeological resources are considered a fundamental part of the preserve, as noted in the preserve's enabling legislation and Foundation Document. The scope of archeology within the preserve is well documented; the 500th archeological site in the preserve was recorded in 2015. Archeological knowledge is increasing due to the research and management activities being conducted by preserve staff and collaborators.
Cultural Anthropology		Research has been conducted to understand the relationship between the preserve's ethnographic resources and the historic context of the preserve; however, documentation about evolving cultural and modern connections to the land and its uses could be improved.
Cultural Landscapes		Yukon-Charley has identified and documented two cultural landscapes that best represent the most significant historic context of mining history in the preserve: Fourth of July Creek and Coal Creek. Documentation of these two landscapes is complete and thorough.

Priority Resource or Value	Condition Status/Trend	Rationale
Historic Structures		The majority of historic structures in the preserve are documented in ways that track condition and establish architectural features and historic context. Mining machinery and other non-structures have only recently received the attention they deserve. Some baseline historical documents need to be updated.
History		Research to document the history of Yukon-Charley has been inconsistent; however, recent efforts are currently underway to provide more systematic coverage. A study of mining machinery in the preserve was recently completed and broad research about the gold mining history of the preserve is planned.
Museum Collections		In recent years, the Yukon-Charley museum collections have grown. The collections have been the subject of ongoing research efforts to better understand the cultural and natural histories of the preserve and the ways that these histories are represented by the collection.
Visitor Experience web ▶		
Number of Visitors		The preserve has no road system and access is difficult. Visitors rely on commercial service (i.e., air taxi) to access the preserve. Visitation fluctuates as commercial tourism based in Fairbanks fluctuates. In 2015, the preserve recorded 1,133 visitors (based on commercial services activity reports).
Visitor Satisfaction		Visitor satisfaction surveys since 2010 show consistently high results. 98% to 100% of visitors are satisfied overall with facilities, services, and recreational opportunities.
Interpretive and Education Programs – Talks, Tours, and Special Events		Yukon-Charley offers a variety of ranger-led tours in the preserve. The Yukon Quest Sled Dog Race passes through Yukon-Charley. The preserve provides both visitor services and resource protection (primarily from Coal Creek Camp).
Interpretive Media – Brochures, Exhibits, Signs, and Website		Signage is purposely minimal, in order to preserve Yukon-Charley's remote nature. The park film, <i>Where Rivers Meet</i> , is shown at the Eagle Visitor Center. A new film about the history of mining in the Coal Creek area was completed in 2016.
Accessibility		The remote nature of the preserve makes access difficult. The preserve visitor center and public restrooms are Americans with Disabilities Act (ADA) compliant. Other facilities, including the public use cabins in the preserve, are not ADA compliant due to the remote nature of the preserve.
Safety		The safety of visitors is a park priority. The preserve works to quickly identify and mitigate potential hazards, and the number of accidents is very low.
Partnerships		The NPS partners with the Bureau of Land Management for visitor center operations and for providing information on the Fort Egbert National Historic Site. The NPS supports the Eagle Historical Society by providing tours of the town's historical district at least one day per week.
Scenic Resources		Many visitors come to Yukon-Charley to see nature and experience remoteness and unspoiled beauty. Yukon-Charley is one of the last undeveloped, untrammelled places in North America. Development on the preserve's border would be a huge detriment to the scenic character of the land.
Park Infrastructure web ▶		
Overall Facility Condition Index		Preserve facilities are in good condition. The recent completion of cyclic building maintenance projects has improved the physical condition of a number of historic structures. A variety of maintenance projects are planned to address ongoing facilities maintenance needs, pending funding.

Priority Resource or Value	Condition Status/Trend	Rationale
Subsistence web ▶		
Overall Condition, Opportunity, and Continuity for Subsistence Activities		Residents of rural communities associated with Yukon-Charley Rivers National Preserve are active in the harvest and use of wild foods and other subsistence resources, and there are continued opportunities available to harvest these resources. The major issue affecting these communities is the decline in Chinook salmon numbers within the Yukon River ecosystem and its drainages. In the past 10 years, communities along the Yukon River have been strictly regulated for Chinook salmon harvest.

Summary of Stewardship Activities and Key Accomplishments to Maintain or Improve Priority Resource Condition

The list below provides examples of stewardship activities and accomplishments by park staff and partners to maintain or improve the condition of priority park resources and values for this and future generations:

Natural Resources

- Preserve staff continues to conduct annual surveys of American peregrine falcons along the upper Yukon River. The NPS has been documenting the strong recovery of this once-endangered species for over 40 years, and will continue annual monitoring of this population for years to come.
- A Dall's sheep survey was completed in 2015 using minimum count survey methods. Abundance and composition of Dall's sheep in Yukon-Charley has been monitored a total of 7 times since 1997. The preserve has the intention to continue this survey into the future.
- The preserve installed a peregrine falcon webcam on Eagle Village Bluff in 2012 and collected images of nestlings hatching and fledging through the summer. The camera requires some upgrades and was not in operation in 2016.

Cultural Resources

- The preserve historian published a new book in 2015: *Gold, Steel & Ice: A History of Mining Machines in Yukon-Charley Rivers National Preserve* (Allan 2015). The book highlights the rich history of mining that is preserved in Yukon-Charley (and many other Alaskan parks).
- The stabilization of Sam Creek Cabin was completed.
- A reconnaissance survey of the newly acquired Woodchopper Creek structures and mining district was completed.
- The 500th archeological site in Yukon-Charley was recorded in 2015.

Visitor Experience

- Yukon-Charley continues to provide safety support for Yukon Quest, a sled dog race and a unique Alaskan winter event. The Slaven's Roadhouse Cabin, owned and preserved by the NPS is used heavily during the race.
- The preserve completed its photographic documentation project. Panorama tours give visitors an opportunity to see unique resources that are difficult to access due to the preserve's remoteness and lack of roads.

Park Infrastructure

- Cabins were acquired at Woodchopper Creek following the vacation of unpatented gold claims.
- In 2014 and 2015, trail and creek bank stabilization work was completed along the Coal Creek lower trail, maintaining access between Coal Creek Camp administrative facility and Slaven's Roadhouse public use cabin and Yukon River access.
- Hazardous fuels reduction was completed at Coal Creek Camp and Woodchopper Creek locations, to help protect facilities and historic buildings from wildfire.
- In 2011, Cheese Creek historic mining structures underwent a successful preservation project.

Subsistence

- Yukon-Charley continues to participate in the Eastern Interior Regional Advisory Council (RAC).
- Eagle and Eagle Village Subsistence Working Group was established. This is a formal working group used to guide decision making related to subsistence and traditional resource uses. The group includes preserve management and local residents. Preserve management solicits advice and counsel on decision making and management of preserve resources.

Key Issues and Challenges for Consideration in Management Planning

Some of the preserve's primary management challenges are listed below. For a more thorough description of these challenges, and to see what Yukon-Charley is doing about these issues, please see [Chapter 4](#).

Climate Change

Alaska has been warming at twice the rate of temperate latitudes, which has led to physical and ecological changes in Yukon-Charley. Models predict that northern Alaska is likely to experience warming of up to 10 °F mean annual temperature over the next 60 years. With a changing climate comes a host of current and potential issues requiring management approaches including thoughtful adaptation, mitigation, and education/communication strategies.

As the scope and intensity of climate change increases, the historical or “natural” conditions in parks will be difficult or impossible to maintain. What will it mean to protect park resources “unimpaired for future generations” in the face of climate change?

Intensive Management of Wolves outside the Preserve Boundary

Wolves are a key part of predator-prey systems in the 2.5 million acre preserve, and are highlighted in the preserve's enabling legislation. Yukon-Charley contains excellent wolf habitat because it is adjacent to and overlaps with calving grounds of the Fortymile Caribou Herd, one of the major herds in the state. The Fortymile Herd is also one of the most accessible to hunters, with road access relatively close to urban population centers. It has seen dramatic population fluctuations in recent decades. Wolf predation is considered by state biologists to be an important factor limiting herd size, and the State of Alaska has authorized predator control efforts (to increase caribou abundance and provide more harvest opportunities) within the Upper Tanana Predator Control Area—lands immediately surrounding much of the perimeter of Yukon-Charley—since 2004.

Intensive management of wolves conducted by the State of Alaska near the boundaries of Yukon-Charley has impacted wolf populations within the preserve and altered the natural abundance and behavior of wolves. With the competing mandates – natural processes for the preserve and achieving intensive management objectives for the State of Alaska—there are few management options with which to address the problem. Harvest restrictions are one option, but will have a limited biological effect. Cooperation between the NPS and the State of Alaska on this issue is improving, as is the outlook for collaborative solutions for management in the vicinity of Yukon-Charley's boundary.

Wildlife Management

There are several important challenges to wildlife management in Yukon-Charley. The preserve is always striving to assemble sufficient data on wildlife populations needed to meet ANILCA's mandates of protecting habitat for and populations of fish and wildlife, providing for subsistence, protecting resources related to subsistence needs, allowing sport hunting and trapping, and providing for non-consumptive uses. While some scientific data on these species and issues exists, a greater understanding of park wildlife populations and ecosystems would increase confidence in manager's judgments about these issues, allow for more engagement with stakeholders, and provide the ability to plan and respond to change in more effective and proactive ways.

While aerial surveys and monitoring are conducted for caribou, moose, wolves, and Dall's sheep to determine population trends over time, more comprehensive data would better enable the preserve to respond to proposed state and federal wildlife regulatory proposals that affect wildlife resources, including the intensive management of predators outside Yukon-Charley's southern boundary. Yukon-Charley lacks critical wildlife data primarily because of the lack of funding for wildlife studies. Although the preserve is visited and utilized by local residents and sportsmen, the preserve does not generate user fees. For many national park units, user fees help augment wildlife and other research projects.

The logistics of permitting guided hunts and enforcing wildlife regulations over the preserve's 2.5 million acres remains an ongoing challenge.

Wildland Fire

Fire is the major ecological process on the Yukon-Charley landscape. Episodic large and small-scale wildland fires burn across the preserve regularly. The preserve lies within the northern boreal forest ecological zone and a climatic region known as the interior basin. Mountains to the north and south tend to block moderating oceanic air masses, resulting in high temperatures, low precipitation, and

frequent lightning occurrences in the summer months. Due to these factors, fire persists as an inextricable environmental component and has been a constant force of change for thousands of years.

Yukon-Charley reveals a history of fire on the landscape, burned and unburned islands of vegetation—a fire mosaic. Patches of aspen and birch reveal recent burns while swaths of spruce indicate a lack of fire activity for at least 100 years. Without the routine occurrence of fire, organic matter accumulates, the permafrost table rises, and ecosystem productivity declines. Fire, the agent of change, removes some of the insulating organic matter, elicits a warming of the soil, and maintains and rejuvenates these systems. Wildfire plays an important role in maintaining diverse vegetation communities that are beneficial for wildlife habitat. Fire ecologists are currently examining the relationship between changes in burn frequency and fire severity with broad changes in climate patterns.

Logistical Challenges

Working in a remote and roadless preserve presents unique logistical challenges. Fieldwork in Yukon-Charley is often hampered by high costs of access and supplies, poor weather, and lack of infrastructure. The preserve struggles with staff recruitment and retention due its remote nature and subarctic climate, lack of housing, difficulty in hiring of local residents due to low federal wages (compared to the high cost of living in remote Alaska), and slow and expensive telecommunications.

Access Challenges

Access to and through Yukon-Charley creates both management and user challenges. Yukon-Charley can be accessed only by water (Yukon River) or air. This allows visitors and users to access the park in a limited number of ways. During the winter, access can be more complicated; a right-of-way (ROW) that travelers on foot, dog sled, or snowmobile use to reach the preserve from the east crosses private Native lands and a private inholding. The 17b easement (Alaska Native Claims Settlement Act, 43 U.S.C. 1616(b)) in question is near Six-Mile Bend of the Yukon River. The ROW comprises approximately fourteen miles of trail. Travelers currently using the easement are technically trespassing on private property for two of the fourteen miles of trail.

Chapter 1. Introduction

The purpose of this State of the Park report for Yukon-Charley Rivers National Preserve (Yukon-Charley, “the preserve”) is to assess the overall condition of the preserve’s priority resources and values, to communicate complex condition information to visitors and the American public in a clear and simple way, and to inform visitors and other stakeholders about stewardship actions being taken by preserve staff to maintain or improve the condition of priority resources for future generations. The State of the Park report uses a standardized approach to focus attention on the priority resources and values of the preserve, based on the preserve’s purpose and significance as described in the preserve’s Foundation Document or General Management Plan. The report:

- Provides to visitors and the American public a snapshot of the status and trend in the condition of a preserve’s priority resources and values.
- Summarizes and communicates complex scientific, scholarly, and operations factual information and expert opinion using non-technical language and a visual format.
- Highlights preserve stewardship activities and accomplishments to maintain or improve the state of the preserve.
- Identifies key issues and challenges facing the preserve to inform management planning.

The process of identifying priority resources by preserve staff and partners, tracking their condition, organizing and synthesizing data and information, and communicating the results will be closely coordinated with the planning process, including Natural and Cultural Resource Condition Assessments and Resource Stewardship Strategy development. The term “priority resources” is used to identify the fundamental and other important resources and values for the preserve, based on a preserve’s purpose and significance within the National Park System, as documented in the preserve’s Foundation Document and other planning documents. This report summarizes and communicates the overall condition of priority park resources and values based on the available scientific and scholarly information and expert opinion.

Located in eastern Alaska, along the Canadian border, Yukon-Charley preserves 2.5 million acres, including 115 miles along the Yukon River, and the entire Charley River basin, a tributary to the Yukon. There are no roads in the preserve, and the closest towns are the Village of Eagle to the southeast and Circle to the northwest. Gold miners flocked to the area for the Klondike and Nome gold rushes during the late-1800s. The landscape inspired Jack London’s stories. Travel into the preserve is primarily by small aircraft, river boat, snow machine, and dog sled. The purpose of Yukon-Charley is to maintain the environmental integrity of the undeveloped Charley River basin, and to protect the natural and cultural history of the upper Yukon River corridor for public enjoyment and scientific study.

Specifically, Section 201 of the Alaska National Interest Lands Conservation Act (ANILCA) states that the preserve shall be managed for the following purposes, among others:

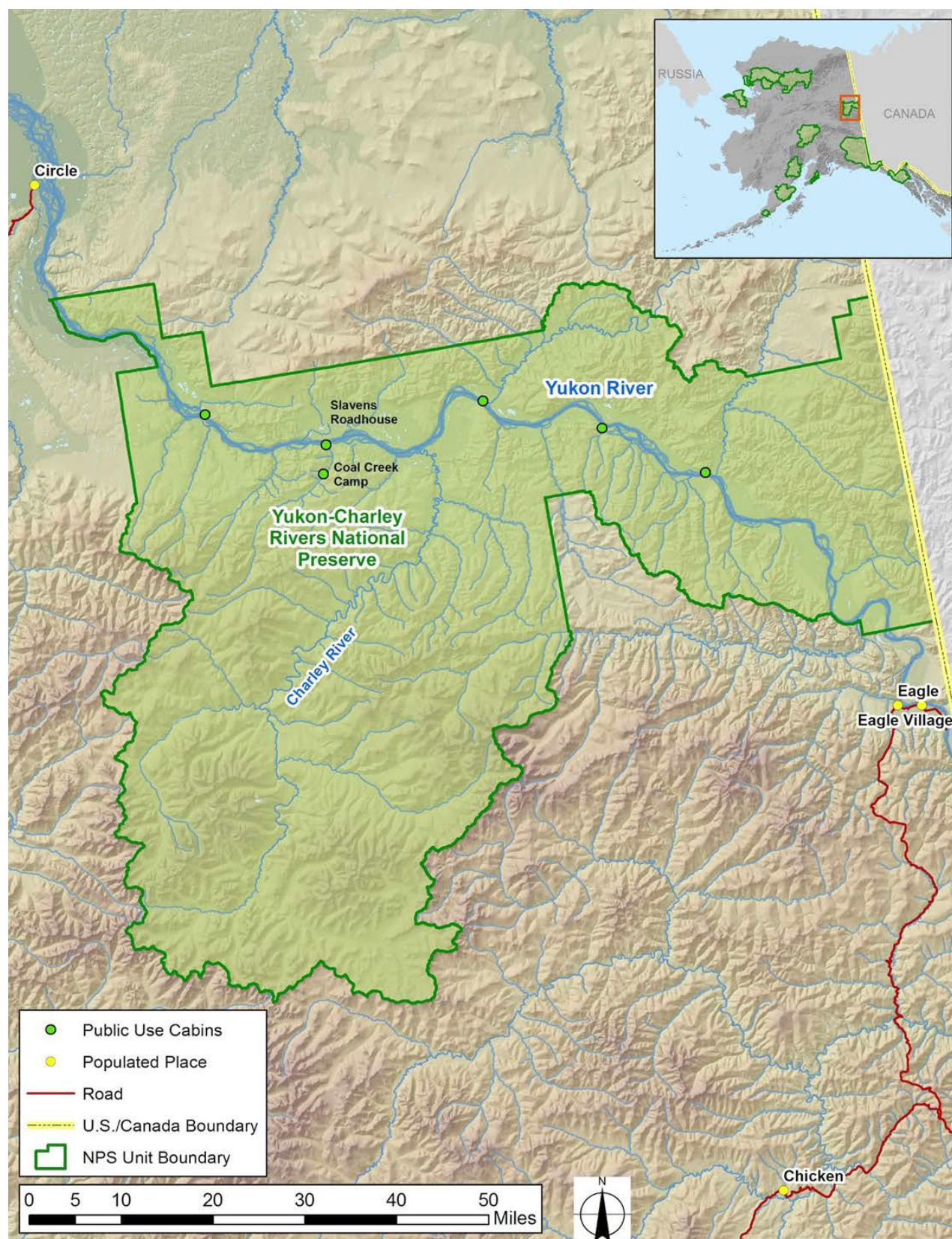
- To maintain the environmental integrity of the entire Charley River basin—including streams, lakes, and other natural features—in its undeveloped natural condition for public benefit and scientific study.
- To protect habitat for, and populations of, fish and wildlife, including but not limited to the peregrine falcons and other raptorial birds, caribou, moose, Dall’s sheep, grizzly bears, and wolves.
- To protect and interpret (in a manner consistent with the foregoing) historical sites and events associated with the gold rush on the Yukon River and the geological and paleontological history and cultural prehistory of the area.
- Except at such times when and locations where to do so would be inconsistent with the purposes of the preserve, the Secretary shall permit aircraft to continue to land at sites in the Upper Charley River watershed.

Significance statements express why the park unit’s resources and values are important enough to warrant national park unit designation. The preserve is significant because:

1. Yukon-Charley Rivers National Preserve maintains the environmental integrity of the Charley River, a designated Wild and Scenic River, including all of its major tributaries.
2. Yukon-Charley Rivers National Preserve protects endemic plant species, fire-driven boreal forests, and habitat for, and populations of, fish and wildlife, while offering extraordinary opportunities for scientific research.
3. Yukon-Charley Rivers National Preserve is one of the few locations in the world where over 600 million years of the earth’s geological history is exposed in an uninterrupted sequence of rock and sediment.

Chapter 1. Introduction (continued)

4. Yukon-Charley Rivers National Preserve protects and interprets a rich historical, archeological, and ethnographic record of changing lifeways in the upper Yukon River basin.
5. Yukon-Charley Rivers National Preserve provides for human use and enjoyment of an historic and natural landscape.



Map of the Park

Chapter 2. State of the Park

The State of the Park is summarized below for five categories—Natural Resources, Cultural Resources, Visitor Experience, Park Infrastructure, and Subsistence Use—based on a synthesis of the preserve’s monitoring, evaluation, management, and information programs, as well as expert opinion. Brief resource summaries are provided below for a selection of the priority resources and values of the preserve. Clicking on the [web ►](#) symbol found in the tables and resource briefs below will take you to the internet site that contains content associated with specific topics in the report.

The scientific and scholarly reports, publications, datasets, methodologies, and other information that were used as the basis for the assessments of resource condition are referenced and linked throughout the report and through the [internet version of this report](#) that is linked to the NPS [IRMA data system](#) (Integrated Resource Management Applications). The internet version of each report provides additional detail and sources of information about the findings summarized in the report, including references, accounts on the origin and quality of the data, and the methods and analytical approaches used in data collection and the assessments of condition. Resource condition assessments reported in this State of the Park report involve expert opinion and the professional judgment of preserve staff and subject matter experts involved in developing the report. This expert opinion and professional judgment are derived from the in-depth knowledge and expertise of preserve and regional staff involved in the day-to-day practice of all aspects of stewardship and from the professional experience of subject matter experts. This expert opinion and professional judgment utilized available factual information for the analyses and conclusions presented in this report. This State of the Park report was developed in a preserve-convened workshop.

The status and trends documented in Chapter 2 provide a useful point-in-time baseline measured against reference conditions that represent “healthy” ecosystem parameters, or regulatory standards (such as those related to air or water quality). Note that climate change adaptation requires managers to continue to learn from the past, but attempting to manage for conditions based on an understanding of the historical “natural” range of variation will be increasingly futile in many locations. Thus, these reference conditions, and/or judgment about resource condition or trend may evolve as the rate of climate change accelerates and managers respond to novel conditions. Management must be even more “forward looking,” to anticipate plausible but unprecedented conditions, also recognizing there will be surprises. In this context, the preserve will incorporate climate considerations into decision processes and management planning as it considers adaptation options that may deviate from traditional practices.

Climate impacts many aspects of preserve management, from ecological systems to infrastructure. The climate is changing and human influence is now detectable in nearly all major components of the climate system, including the atmosphere and oceans, snow and ice, and various aspects of the water cycle ([IPCC 2013](#)). Global patterns of change that demonstrate the human effects on climate are even more pronounced in high latitudes and Polar Regions ([Larsen et al. 2014](#)). As a region, Alaska has warmed more than twice as rapidly as the rest of the United States over the past 60 years, with average annual air temperature increasing by 3 °F and average winter temperature increasing by 6 °F ([Chapin et al. 2014](#)). The observed impacts of a warming climate in Alaska include declining sea ice, shrinking glaciers, thawing permafrost, changing ocean temperatures and chemistry, increased coastal erosion, and more extensive insect outbreaks and wildfire (e.g., [Larsen et al. 2014](#), [Chapin et al. 2014](#), [Markon et al. 2012](#)).

Even with multiple lines of evidence that Alaska is warming, interpreting temperature trends and other climatic indicators is complicated. Climate in Alaska is dynamic and nonlinear, with strong linkages to atmospheric and oceanic processes, such as the position of the polar jet stream or the frequency of El Niño events (Papineau 2001). An important climate pattern, evident in the relatively few long-term climate stations located in parks, is the Pacific Decadal Oscillation (PDO). Much of the warming that has occurred since the middle of the 20th century occurred in 1976 as a stepwise shift, attributed to a climatic transition from a cool to a warm phase in the PDO ([Chapin et al. 2014](#), [Bieniek et al. 2014](#)). In the early 2000s the PDO shifted back to a cooler phase resulting in statewide temperatures that were cooler than the previous decades ([Bieniek et al. 2014](#)). The most recent years have seen yet another shift back to a warm phase that may or may not persist, but has resulted in two of the warmest years on record for Alaska in 2014 and 2015 ([NOAA 2016](#)). The North Slope of Alaska has continued to warm, despite changes in the PDO.

Nonlinear responses and regional variations are expected to continue to occur as the planet adjusts to global scale change ([IPCC 2013](#), [Larsen et al. 2014](#)). Recent studies suggest that warming Arctic temperatures weaken the temperature gradient between the poles and lower latitudes leading to a wavier jet stream, which results in more persistent weather patterns and extreme conditions such as cold spells, heat waves, droughts, and flooding ([Francis and Vavrus 2015](#)). The data and information gathered from national parks provide an important piece of the puzzle in understanding both the drivers and effects of climate change.

2.1. Natural Resources

Snowpack  web ▶			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Snow Depth	Snow depth on April 1 (Coal Creek)		The snow depth at Coal Creek on April 1, 2015 was 58 cm. The average for the period of record (2007–2015) is 51 cm, with a range between 41 cm and 61 cm. The snow depth observed in April 2015 falls within the range of values for the seven-year period of record (NRCS 2015). The presence of a seasonal snowpack is important for the ecological health of the preserve; many plant and animal species have adapted to a snow-dominated landscape and any changes, whether positive or negative, could have implications. The confidence in this assessment is medium; the seven-year record is relatively short as a reference period.
Snow Water Equivalent	Snow water equivalent on April 1 (Coal Creek)		The snow water equivalent on April 1, 2015 was 13 cm. The average for the period of record (2007–2015) is 10 cm with a range between 6 cm and 13 cm (NRCS 2015). The snow water equivalent observed in April 2015 is on the high end of the seven-year range of values (Sousanes 2015). The confidence in this assessment is medium; the seven-year record available at Coal Creek is relatively short.

Resource Brief: Historical and Projected Changes in Climate for Yukon-Charley Rivers National Preserve

Climate, by determining the temperature and precipitation regimes for any ecosystem, is widely recognized as one of the most fundamental drivers of ecological condition. The climate patterns of Alaska are primarily influenced by latitude, continentality, and elevation. The high latitude drives the seasonal pendulum of available solar radiation; areas farther north have limited incoming solar warmth in the winter and an abundance of available light in the summer. Major mountain ranges act as barriers to the moisture spinning off of the Pacific Ocean to the south. The warm, moist air masses deposit precipitation on the windward sides of the mountains—rain at low elevations and snow at higher elevations. Large scale atmospheric and oceanic circulation patterns influence seasonal and annual weather patterns in the park, like the repositioning of the polar jet stream and the Aleutian low pressure system or the frequency of La Niñas and El Niños (Papineau 2001).

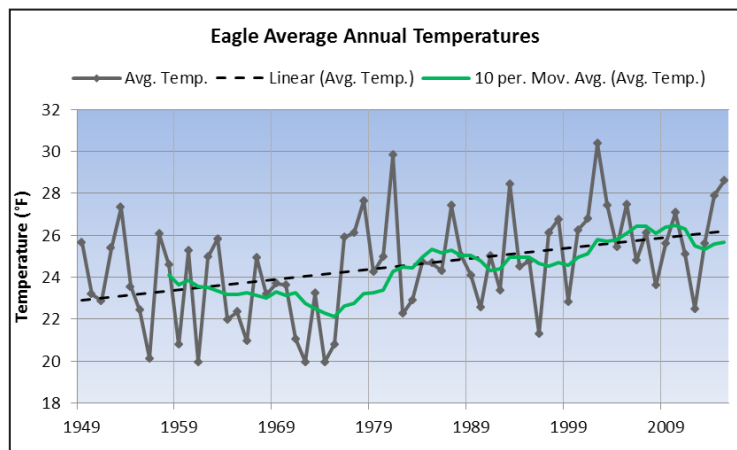
Yukon-Charley Rivers National Preserve encompasses two Alaska climate divisions; the Northeast Interior climate division includes the Yukon River and preserve lands to the north and the Southeast Interior climate division includes land to the south. Both regions are characterized by large variations in seasonal temperatures. The preserve is subject to long, very cold winters and short, warm summers. The higher elevations are cooler than the river valleys in the summer and are often warmer in the winter due to persistent inversions. Annual precipitation totals are low, which contributes to the role of fire as a major natural disturbance. The seasonal snowpack begins to develop in early to mid-October and reaches its peak in March. Generally, by the end of April, warmer temperatures return and the snowpack melts out quickly.

There is a long-term climate station in Eagle that provides the climate context for Yukon-Charley Rivers; the record dates back to 1918 with many gaps, especially in the earlier years. A climate station analysis was done in 2011 and data from that source are used to generate the average seasonal and annual temperatures graphs for this resource brief ([Keen 2013](#)). The continuous precipitation record for this site is much shorter (1990–2015). Temperature and precipitation projections over the next century have been calculated on a monthly time scale. The projections are based on the PRISM model historical baseline projected at a 2-km resolution using the mid-range emissions scenario (representative concentration pathway RCP 6.0). These graphs are useful in looking at overall trends in temperature increases versus specific values due to the uncertainty in models and natural climate variability ([SNAP 2016](#)).

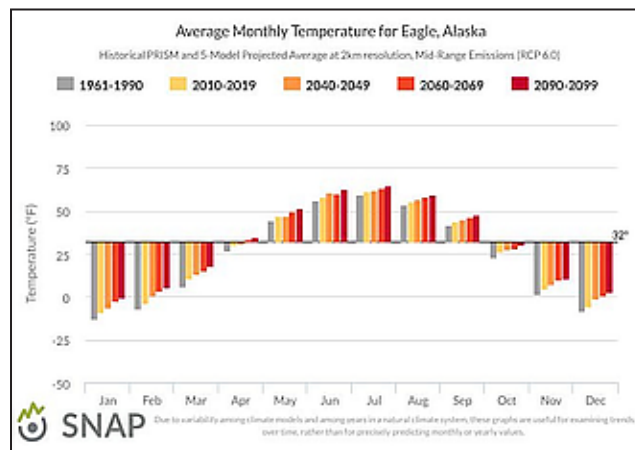
Resource Brief: Historical and Projected Changes in Climate for Yukon-Charley Rivers National Preserve (continued)

Historical trends and future projection for temperature

The observed temperature trend is non-linear, with multi-decadal variations (graph below left). The increase in mean annual temperatures is significant with temperatures warming $> 3.0^{\circ}\text{F}$ when a simple linear regression is applied to the > 40 -year record. Considering just a linear trend masks important variability in the time series; this record spans the phase shift of the Pacific Decadal Oscillation (PDO) in 1976 where annual temperatures at this location, and at most locations around the state, abruptly shifted up by $\approx 2.0^{\circ}\text{F}$ in a single year and then persisted in this warmer phase for the next several decades. The trend in annual temperatures since 1977 has been relatively stable. However, over the past several years the PDO index has had the highest, most persistent positive values since the 1980s, coinciding with a strong El Niño pattern, resulting in two of the warmest years on record for the state of Alaska in 2014 and 2015.



Average annual temperatures at Eagle (Keen 2011). The green lines show the 10-year moving averages. The dotted lines show a simple linear regression trend.



The Scenarios Network for Alaska and Arctic Planning (SNAP) monthly temperature projections for the next century are shown for Eagle (SNAP 2016).

Seasonally, winter temperatures show the most significant increase at Eagle; summer temperatures have also increased significantly over the period of record. Temperatures are projected to increase for all seasons by mid-century, with the greatest increases likely in winter (graph above right). There is general agreement among individual climate models in the direction and magnitude of warming over the coming decades. Warming temperatures pose serious threats to park resources when the average annual temperatures are near freezing.

Persistent warm periods and temperatures that reach above freezing in winter can pose problems to an ecosystem that is dominated by snowcover for a good portion of the year: snow turns to rain, which leads to icing, which makes foraging difficult; plants are subject to desiccation because of low or no snow cover; and subnivean fauna are left unprotected. Extremes in spring temperatures, especially in late spring can have repercussions related to the timing of many phenological events that are triggered by the return of warmer temperatures in May. An increase in summer temperatures can lead to many scenarios that fall outside the “normal” range of expectations, including impacts to the fire season, insect outbreaks, wildlife migrations, aquatic ecosystems, active layer thawing, etc. Changes in early fall season temperatures can once again impact the timing of many phenological events that are triggered by cooler temperatures and decreasing daylight.

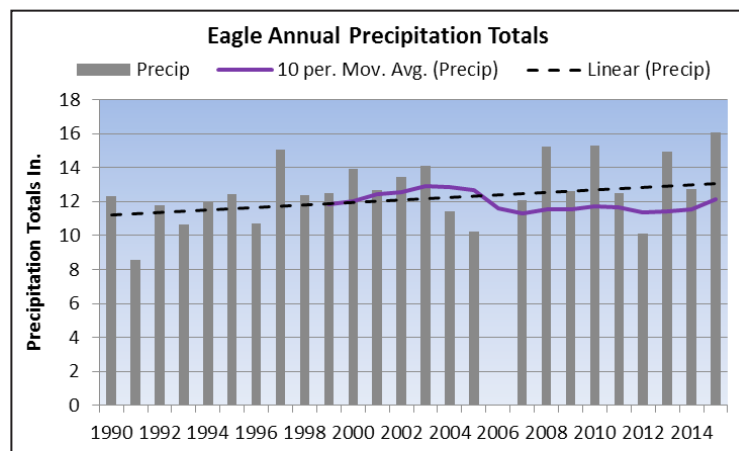
Historical trends and future projection for precipitation

The precipitation record for Eagle has many missing values prior to 1990. Observed annual precipitation since 1990 shows an increasing linear trend for the 25-year record (graph below left). Snowfall totals have decreased over the same period of record although not significantly. Total annual precipitation is projected to increase throughout the next century, particularly in the summer season (graph below right) (SNAP 2016). Precipitation variability is likely to remain large over the coming decades (larger uncertainty in precipitation than in temperature projections) (Stewart et al. 2013).

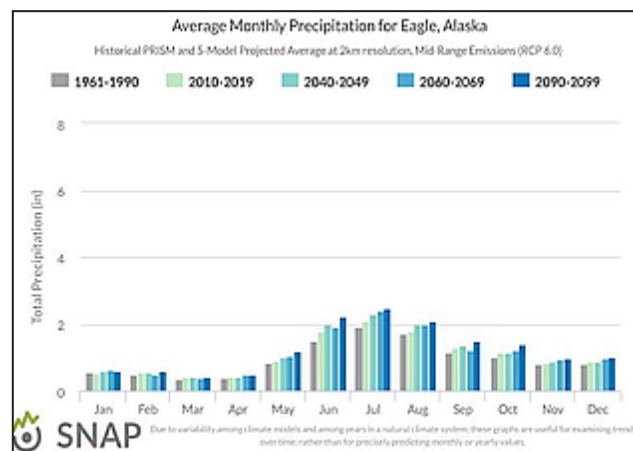
Seasonal trends show the extreme variability in precipitation between seasons and among seasons, and can also be used to highlight extreme events that have large ecological implications for humans (i.e., floods, droughts) and wildlife (i.e., high or low snowfall). Increasing winter temperatures can lead to an increase in the number or intensity of rain-on-snow events that could potentially disrupt the path to the food supply for wildlife. The precipitation projections indicate that late spring may see an increase in precipitation amounts. Late spring snowfall events can interfere with the timing of bird migrations, wildlife health, green-up, and other ecological

Resource Brief: Historical and Projected Changes in Climate for Yukon-Charley Rivers National Preserve (continued)

processes that begin once the snow has melted. The precipitation projections show that precipitation will increase the most during the summer and fall in Eagle; more rain and more intense rain events can lead to flooding, landslides, and soil instability.



Total annual precipitation at Eagle. The purple line shows the 10-year moving average. The dotted line shows a simple linear regression trend.



The Scenarios Network for Alaska and Arctic Planning (SNAP) monthly precipitation projections for the next century are shown for Eagle (SNAP 2016).

Other projections

In addition to warmer mean temperatures and changes in annual precipitation, climate change will exhibit itself in many other ways. Permafrost, which is present throughout the preserve, is projected to thaw across large portions of Interior Alaska by 2100 under both low and high emissions scenarios, altering local hydrology and potentially impacting roads, buildings, and other infrastructure (Stewart et al. 2013). The growing season is projected to increase 15–25 days by mid-century, and warmer spring temperatures are already linked to increased wildfire activity in Alaska (Stewart et al. 2013). Global climate change will interact with regional phenomena, such as the Pacific Decadal Oscillation (PDO). The phase of the PDO (negative or positive) may modify observed climate trends, with the negative phase dampening and the positive phase exacerbating overall climate change trends. Significantly warmer temperatures and a more variable precipitation regime may lead to both more frequent droughts and more severe flooding and erosion processes that begin once the snow has melted. The precipitation projections show that precipitation will increase the most during the summer and fall in Eagle; more rain and more intense rain events can lead to flooding, landslides, and soil instability.

Air Quality web ▶			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Air Quality	Visibility and contaminants		Overall air quality at Yukon-Charley is in good condition and park scenic views are rarely affected by air pollution- caused haze; however, the steady input of contaminants from both local and global sources make pollution a primary concern for managers. Sources of contaminants in parklands include point sources, regional sources, and trans-Pacific and transpolar global pollution sources. Airborne toxics, including mercury, can deposit with rain or snow and accumulate in birds, mammals, amphibians, and fish, resulting in reduced foraging efficiency, survival, and reproductive success. Some vegetation communities and surface water in the preserve may be susceptible to acidification and nutrient enrichment effects of excess sulfur and nitrogen deposition. There are no air quality monitoring stations currently in the vicinity of Yukon- Charley.

Geologic Features and Processes


[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Geologic Record and Paleontological Resources	Area of undisturbed resources, available unbroken geologic record		The rocks north of the Yukon River within Yukon-Charley are the only rocks in Alaska that have always been tied to the North American continent. They contain a remarkably unbroken and well-preserved history from the Precambrian Era 800 million years ago to the Cenozoic Era 40 million years ago. In terms of occurrence in a relatively small geographic area, completeness of record, and persistent presence of fossils, the Yukon-Charley Rivers vicinity has no peer in America (NPS 1985, 2011). Yukon-Charley contains the oldest fossils (over 600 million years ago) in the Alaska Region. A possible dinosaur track has been found in younger rocks in the preserve (Fiorillo et al. 2014). A formal paleontological resource survey has not been conducted, but a preliminary paleontological inventory was completed by the NPS Central Alaska Network (Santucci et al. 2011).
Mineral Development and Oil Exploration	Historic mineral development and oil exploration		The streams on the south side of the Yukon River are the source of placer deposited gold in the preserve. Creeks such as Coal Creek, Woodchopper Creek, Ben Creek, Sam Creek, and Fourth of July Creek all supported gold mining efforts in the early- to mid-twentieth centuries. Mining was done by hand until the 1930s when dredging began in the preserve area. Mining occurred as recently as 1977, when operations ceased at the Coal Creek Dredge. Currently, there are 15 patented claims and 113 unpatented claims (patented/unpatented data from NPS Geological Resources Division mining database 12/03). There are 6 mine sites in need of reclamation in the preserve. The physical remains of historic mining activity are significant cultural resource in Yukon-Charley, and in turn a driver of park visitation and tourism on the Yukon River. Bucket dredges, mail trails, trappers' cabins, boats, roadhouses, water ditches, machinery, and dredge tailings all speak to the complex and fascinating story of mineral development history in Alaska. Preserve staff continues to document these resources. Important administrative and public facilities include historic mining buildings that have been adapted for contemporary use. The Nation River basin in the northern portion of the preserve has been a target for oil exploration in the past.
Geologic Inventory	Geologic maps and inventory		Yukon-Charley has no preserve-specific geologic maps and there has not been a geologic inventory of the preserve.

Geologic Features and Processes (continued)

[web ▶](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Permafrost	Condition and extent		Permafrost refers to the layer of permanently frozen soil material beneath the intermittent freeze-thaw zone known as the active layer. Maintaining permafrost requires sub-freezing mean annual temperatures (21 °F to 10.4 °F locally). Permafrost is particularly sensitive to changes in climate. Degradation of permafrost occurs due to a myriad of factors including climate change, groundwater movement, ice morphology, ice content, and landscape position. The University of Alaska Fairbanks Geophysical Institute Permafrost Laboratory permafrost model is scheduled for application to Yukon-Charley in 2016 and results are pending. In other Interior Alaska parks (Denali and Wrangell-St. Elias; Panda et al. 2014a, b), the model shows minor permafrost loss since the 1950s, with greater losses expected in the future. Ground temperature monitoring across North America (Smith et al. 2010) indicates gradually warming permafrost.
Number and Area of Thermokarst Features	Number of landslides observed		Staff reports and observations of small landslides caused by permafrost thaw have been relatively few and all are associated with wildfire. These are a natural fire effect in the preserve. Thermokarst feature development over a broad area and its interaction with normal, large scale landscape processes is poorly understood.
Human-Initiated Erosion and Soil Degradation	Area of disturbance		Off-road vehicle use is minimal. Little new construction-related ground disturbance has occurred in areas lacking permafrost.

Resource Brief: Mining and Mitigation

When the National Park Service took ownership of a former gold camp along the Yukon River in 1986, the agency also inherited the mixed legacy of Alaska's mining past. The new property at Coal Creek included wonderful examples of a historic roadhouse, the camp itself, and a gold dredge used from the mid-1930s to the 1970s to pull gold dust and nuggets from the earth. However, the agency also faced the challenge of cleaning up industrial contaminants and restoring the local ecosystem health. Over a period of several years, teams of experts removed steel drums, lead-acid batteries, and other waste from Coal Creek. An elaborate on-site soil washing facility was also built to remove spilled mercury from locations in the camp where gold processing took place.

Today, as the creek returns to a more natural condition, a colony of beavers is building lodges and dams along the waterway and steps are being taken to protect a section of the stream known to be a sanctuary for juvenile Chinook salmon. The Chinook's significant decline in the Yukon River over the past decade is of great concern to the NPS and to local residents who rely on salmon as a part of their subsistence lifestyle. The mission of the NPS has never been easy to implement as it seeks balance between concern for nature and the historical past in ways that protect both in perpetuity. At Coal Creek, the agency has been successful at finding that balance.

Water Quantity and Quality


[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Quality of Lakes and Streams	Dissolved oxygen (mg/L), pH, temperature (°F), nitrogen (mg/L), phosphorus (mg/L), specific conductance (µS/cm)		Overall, the water quality of lakes and streams in Yukon-Charley is thought to be in good, stable condition. Most Yukon-Charley lakes have low nutrient concentrations (Larsen 2010). Water chemistry in the preserve is most susceptible to climate change, fire, and other disturbances. Small changes in temperature can alter the thermal regime and nutrient cycling in these subarctic ecosystems. Fires appear to have a large impact on nutrient concentration and specific conductance in lakes and streams in Yukon-Charley. Continuous data collected on a lake within a 2004 fire in Yukon-Charley indicates that specific conductance has increased annually since that time (Larsen et al. 2017).
Biological Quality	Macroinvertebrate taxa richness		Types of macroinvertebrates present are indicative of the physical and chemical conditions within a lake or stream. Their short life span makes them an excellent bio-indicator of ecological change. A variety of researchers have collected macroinvertebrate data over the years. The NPS is consolidating these data and will analyze for trends.
Hydrology	Discharge		Yukon-Charley is an area with vast amounts of flowing surface water. Thirteen sub-basins, representing eight major tributaries and lowland areas, combine to form the Yukon River Basin. Yukon-Charley is located in the East Central Yukon Drainage Basin, which encompasses an area of more than 17.5 million acres (7.1 million ha) (Brabets et al. 2000). The Yukon and Charley Rivers are the two major water bodies in the preserve, in addition to a number of smaller tributaries that feed them. The Charley River is a designated Wild and Scenic River (Brabets 2001). The entire Charley River watershed is contained within Yukon-Charley boundaries. Yukon-Charley also has numerous shallow lakes within its boundaries. The preserve includes approximately 260 km (160 miles) of the Yukon River between Eagle and Circle, Alaska. The only river gaged in the preserve is the Yukon River, which is gaged upstream at Eagle and downstream at the Yukon River Bridge on the Dalton Highway. The United States Geological Survey (USGS) operates both gages and tracks water height in feet. Major floods are documented at the gage. The Yukon River water volume is influenced by snow melt and glacial melt.

Water Quantity and Quality (continued)

[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Hydrology	Channel disturbance from historic placer mining		Two streams in Yukon-Charley have been severely mined by heavy equipment: Woodchopper Creek and Coal Creek. This physical mining disrupted stream ecology, changed the shape of channel bed and banks, and changed water chemistry. The mined reaches and reaches downstream have not recovered to natural conditions, as compared to streams that haven't been mined. A handful of other streams in Yukon-Charley have had short reaches mined by heavy equipment and are also likely far from pre-mined natural conditions. Other short reaches in some streams were mined by hand, and were minimally disturbed. A comprehensive study of the characteristics of mined streams has not been conducted. Ideally, these data could be compared to non-mined streams to provide a better sense of mining impacts. Natural recovery of mined streams has been slow; however, the Bureau of Land Management in Alaska is developing reclamation principles and practices which could be applied to mined reaches to expedite stream recovery.
	Ice thickness		Freeze-up has important ecological and social implications for a river system. After freeze-up, rainfall runoff will generally no longer increase the water supply in a system (Williams 1965). Dissolved oxygen levels also generally decrease under the ice, with potential implications for overwintering fish. Freeze-up also marks the end of the Yukon River's navigation season for boats, while travel by snow machine and dog sled becomes possible. Ice thickness is monitored by National Weather Service River Forecast Center. There is no detectable measured change in ice thickness in recent years.
Lake Ecosystems	Total acres of lake surface area		Lakes and wetlands are among the world's most productive environments and provide a wide variety of ecological benefits. They are important for water storage, flood mitigation, erosion control, groundwater recharge, water filtration, and climate stabilization (Mitsch and Gosselink 1986). Lakes and wetlands also support large populations of mammals and waterfowl, which are important subsistence resources (Larsen et al. 2004). The NPS has developed a standardized method for tracking lake surface area and natural fluctuations in lake size. Completion of this study is ongoing.

Birds


[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Peregrine Falcons	Number of pairs and adults		The formerly endangered American peregrine falcon population has been monitored since 1973 (11 pairs) and has been increasing. In 2013, the American peregrine falcon population in Yukon-Charley reached 53 pairs and 54 occupied territories, totaling 115 adults and 66 nestlings. It should be noted, however, that between 2003 and 2010 the Yukon-Charley peregrine population has fluctuated between 100–115 adults. Whether or not this is indicative of the population approaching stabilization or plateau is yet to be determined. Population size has dramatically rebounded since the decline from the late 1960s to the early 1970s. Nest occupancy has continued to increase, and productivity appears to reflect that of a healthy population (although this is speculation and cannot be confirmed with an established Alaskan population threshold). Available survey data suggest that this local peregrine population is in good condition.

Mammals


[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Moose	Population density		Fall moose surveys have been conducted in the preserve for more than 25 years (Sorum and Joly 2016). The last survey, in 2015, reported a moose density of 0.37 moose per square mile. This density is very similar to the average (1997–2009) density of 0.31 moose per square mile in Yukon-Charley. This low moose density is expected in the local ecosystem.
	Composition (bull:cow ratio)		Bull-to-cow ratios can be determined based on fall moose surveys. A low ratio can be an indicator that hunting is impacting the population. The last survey conducted in 2015 reported a ratio of 64 bulls per 100 cows (Sorum and Joly 2015). This ratio is slightly higher than the long-term (1997–2009) average of 61 bulls per 100 cows.
Fortymile Caribou Herd	Birth rate		The birth rate (parturition rate) of cows 3+ years old can be used as an indicator of herd nutrition (Valkenburg et al. 2000). Parturition rates < 55% could indicate nutritional stress (Boertje et al. 2012). In 2012, the 5-year moving average parturition rate was 54% (Boertje et al. 2012). Inclusion of 2013 data increased the rate to 59% but the nutritional status of the herd is still in question (Gross 2013).
	Composition (bull: cow ratio)		Bull-to-cow ratios can be an index of harvest pressure. The number of bulls per 100 cows has been declining (43, 42, and 40 for 2010, 2011, and 2012, respectively) and is below the previous 5-year average (Gross 2013). 40 bulls per 100 cows is typically used as an indicator that harvest pressure is negatively affecting the composition of the herd.
	Fall calf weights		Calf weight is an index of herd nutrition. Fall calf weights have been declining from 1990–2010 (Boertje et al. 2012) and calf weight from 2011 and 2012 were relatively low, which indicates a continued decline (Gross 2013).

Mammals (continued)

[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Dall's Sheep	Population size		Minimum count surveys have been used to monitor this population since 1997. The 2015 survey reported a 48% decline in sheep abundance since the last survey in 2009, which represented the lowest population estimate since 1997 (173 sheep, July 2015).
Wolves	Population size		The decline in wolf abundance from fall counts to the counts in the following spring is used to track wolf population size (Burch 2013). The drop from fall 2012 to spring 2013 was the largest drop ever recorded (Burch, <i>unpublished data</i>). This decline was driven heavily by State of Alaska wolf control projects on lands immediately adjacent to Yukon-Charley.
	Number of packs		As of April 2014, 37 wolves in 6 packs were being monitored as compared to 81 wolves in 9 packs in the fall of 2012 (Burch, <i>unpublished data</i>). Entire packs were eliminated by wolf control activities adjacent to the preserve.
Invasive Wildlife Species	Presence/absence		There are no known invasive wildlife species in the preserve.

Resource Brief: Remote Automated Weather Stations

The Ben Creek Remote Automated Weather Station (RAWS) site was established in 1990 but only has three calendar years (1994, 1997, and 2001) with a complete record of data from every month of the year (Redmond and Simeral 2006). RAWS sites were also established at Coal Creek in 2004 and Upper Charley River in 2005. These monitoring stations collect temperature, precipitation, wind and other data for future analyses of climate and climate change within Yukon-Charley. Climate in Alaska is constantly fluctuating on multiple temporal scales (Redmond and Simeral 2006). One climate fluctuation of particular importance in Alaska is the Pacific Decadal Oscillation (PDO) (Keen 2008). Researchers formally identified this pattern of climate variability in a study relating climate oscillation to salmon production (Mantua et al. 1997).

The Pacific Decadal Oscillation, which is related to sea surface temperatures in the northern Pacific Ocean, affects atmospheric circulation patterns and alternates between positive and negative phases (Wendler and Shulski 2009). A positive phase is associated with a relatively strong low pressure center over the Aleutian Islands, which moves warmer air into the state, particularly during the winter (Wendler and Shulski 2009). Some of the variation in Alaska's climate over time can be explained by major shifts in the PDO, which occurred in 1925 (negative to positive), 1947 (positive to negative), and 1977 (negative to positive) (Mantua et al. 1997). Researchers found that much of the warming that occurred in Alaska during the last half of the twentieth century was likely due to the PDO shift in 1976–1977 ([Hartmann and Wendler 2005](#)).



The Coal Creek RAWS station. NPS photo by Pam Sousanes.

Fish


[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Chinook Salmon	Escapement		There have been no NPS-sponsored fisheries programs in the preserve since the last fish inventory in 2004, which documented fish presence in a small selection of lakes and streams. The NPS does not monitor or manage fish in the Yukon River. The Alaska Department of Fish and Game monitors Chinook salmon populations to meet an international fish management agreement with Canada. The average Chinook salmon escapement has declined precipitously since 2000. Escapement prior to 2000 was estimated at nearly 300,000 fish and today it is closer to 125,000 fish. The Alaska Department of Fish and Game, Fish and Wildlife Service, and the Yukon River Fisheries Association have been taking measures to reduce further declines in the fish population by managing harvest along the Yukon River. In 2011, the State of Alaska and its partners passed regulations to reduce gill net mesh size to limit the selective harvest of large fish. The Department of Commerce sponsored a net replacement program to provide incentives for the replacement of large mesh used by subsistence fishermen throughout the drainage. For the past 5 years, subsistence harvest has been limited in length and duration to help increase fish escapement and increase the brood stock. Small increases in escapement suggest the fishery is slowly recovering; harvest restrictions were reduced in 2015 and again in 2016.
Chum Salmon	Escapement		The Alaska Department of Fish and Game monitors chum salmon populations to meet an international agreement with Canada. According to the Alaska Department of Fish and Game, both summer and fall chum numbers have been stable and escapement into Canada has consistently been met (ADF&G 2016).
Other Anadromous Fish	Prevalence		The NPS does not currently monitor or manage fish in the Yukon River. The anadromous species that use the waters within Yukon-Charley for spawning, rearing, or migrating include: Chinook salmon (<i>Oncorhynchus tshawytscha</i>), chum salmon (<i>O. keta</i>), coho salmon (<i>O. kisutch</i>), Bering cisco (<i>Coregonus laurettae</i>), and Arctic lamprey (<i>Lampetra camtschatica</i>).

Amphibians  web ▶			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Wood Frogs	Timing and duration of calling season		The NPS Central Alaska Network has been monitoring the timing and duration of the calling season of the wood frog (<i>Rana sylvatica</i>) breeding season since 2011. To date, there no detectable trends in these two parameters.

Resource Brief: Monitoring Land Cover

Land cover is the physical surface of the earth, often described using classes of vegetation and land use (e.g., vegetation: alpine tundra, closed needleleaf; land use: developed, transportation). Land cover is portrayed in maps created through field surveys and/or analyses of remotely sensed imagery ([Comber et al. 2005](#)). The size and shape of land cover types is important because land cover is associated with habitat. The reduction in size of available habitat is often correlated with a decline in species richness ([EPA 2002](#)). Some species are also sensitive to the shape of available habitat (edge to core ratio). Habitat fragmentation or aggregation changes the size and configuration of habitat patches, altering species abundance patterns and potentially threatening biodiversity ([EPA 2002](#)).

Yukon-Charley's land surface is primarily vegetated with boreal forests that transition to mountain slopes and alpine tundra (generally above 915 m in elevation) ([Boggs and Sturdy 2005](#)). Fire and flooding are the primary natural disturbances that drive changes in the vegetation over time. Land cover is also influenced by permafrost dynamics, surface hydrology, and climate variables. Land cover in turn affects wildlife habitat and hydrology. Land cover has been designated as a "Vital Sign" by the NPS ([MacCluskie and Oakley 2005](#)). The NPS plans to monitor land cover by measuring changes in area of each land cover type in the preserve ([MacCluskie and Oakley 2005](#)).



Aerial view of the Charley River entering the Yukon River. USGS photo.

Landscape-scale human disturbances in Yukon-Charley are small in area. There are no roads or maintained trails within the preserve, and human disturbance and development is primarily limited to historic mining activity and historic structures such as roadhouses and cabins. Today, Yukon-Charley maintains historic structures related to mining and several public use cabins. Visitor numbers are low compared with many Alaska NPS units. Visitation is largely centered on float trips (e.g., canoeing, rafting, kayaking) on the Yukon and Charley Rivers. NPS goals are to monitor the movements, distribution, and health of these caribou. The caribou traverse all of the parks in northern and western Alaska—Gates of the Arctic, Noatak National Preserve, Kobuk Valley National Park, Cape Krusenstern National Monument, and Bering Land Bridge National Preserve—moving across them and residing in different park units at different times of year. Further, the timing and spatial pattern of the herd's migration plays a critical role in the harvest of caribou by rural villages. Changes to these patterns may affect these subsistence users, the vitality of the herd and the ecosystem as a whole.

Plant Communities


[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Native Plant Communities	Plant health and variety		The plant communities of the preserve are monitored through an extensive network of permanent vegetation plots (Roland et al. 2005). Baseline data has not yielded trend information for the vegetation mosaic in the preserve. Change in preserve ecosystems may occur in response to the effects of anthropogenic climate change. These possible changes would come as a result of numerous possible stressors, including but not limited to: increasing fire frequency and intensity altering the successional mosaic; degradation of permafrost resulting in alteration of habitat attributes for plant species; expansion of woody plants upwards in elevation with warming temperatures; and increasing drought stress imposed across the landscape by warmer summer temperatures, longer growing seasons, or both.
Forest Fires	Lack of fire suppression		Geographic and climatic factors at Yukon-Charley enable wildland fire to ignite and burn. The preserve lies within an interior basin, surrounded by mountains to the north and south. This area experiences high lightning occurrence, low precipitation, and high temperatures in the summer months. Wildland fire has been an inextricable component of this ecosystem for thousands of years. An annual average of 20,000 acres burns each year in Yukon-Charley, nearly all ignited by natural sources such as lightning. While human life and specific resources are protected, fires that start on these designated lands are not aggressively attacked but allowed to burn so that fire continues to play its natural role as a dynamic natural process within this fire-dependent ecosystem. In the past 65 years, there have been four large fire years (> 200 km² burned, > 49,421 acres burned): 1950, 1970, 1999, and 2004. 1970 was by far the largest single fire year with 1,360 km² burned (336,063 acres). The period between 1999 and 2007 was comparable, with 1,380 km² (341,005 acres) total area burned.
Invasive Plant Species	Effects on ecosystem		Non-native invasive plants can alter native plant communities by outcompeting native species. The present-day extent of non-native invasive plants appears limited in Yukon-Charley; invasive plants predominantly occur in preserve access points and high use areas. Elodea, a freshwater aquatic plant that has become established in southern and interior Alaska lakes has not been observed in Yukon-Charley. This plant is often transported unknowingly between lakes by floatplanes.

Resource Brief: NPS Leads Elodea Survey in the Tanana River Watershed



The common aquarium plant, Elodea. NPS Photo.

Elodea spp. is a highly invasive aquatic plant that has been found in 22 lakes and streams throughout the state. Elodea is not currently documented in Alaska park units, but that doesn't necessarily mean it isn't there. Elodea is a common aquarium plant and is likely introduced by people dumping their aquaria contents into rivers, lakes, and ponds. Once introduced, it can spread by small fragments transported among water bodies on waders, boats and boat trailers, floatplanes, and other equipment.

In September, Yukon-Charley and Gates of the Arctic staff spearheaded an extensive survey with the U.S. Fish and Wildlife Service, the Fairbanks Soil and Water Conservation District, the U.S. Forest Service, the Alaska Cooperative Fish and Wildlife Unit, and the Bonanza Creek Long Term Ecological Research Station. The survey was prompted by the discovery of a large infestation of Elodea in Totchaket Slough, a popular site for subsistence and recreational activities located 12 miles downstream from Nenana. This survey was designed to inventory sites susceptible to such downstream migration. Crews surveyed sloughs, wetlands, ponds, and creeks within the Tanana River floodplain that would provide good habitat for Elodea. No additional populations of Elodea were detected in the 104 sites inspected between Fairbanks and Minto Village, nor in any of the lakes, ponds, and creeks heavily used by the public east of North Pole to Delta Junction.

Elodea impacts waterfowl, freshwater fish, and insect habitats by altering cover, levels of dissolved oxygen, stream velocity, sedimentation and turbidity, and nutrient availability. Recreation impacts include declines in fisheries and water quality in recreation areas, and boat damage from vegetation-fouled propellers and clogged jet intakes. It impacts shorelines and may hinder boat or float plane access to private property. Management and eradication is expensive and time intensive. Multiple applications of systemic herbicides is the most effective method of eradication; physical or mechanical control methods are often ineffective. The introduction of Elodea to non-native waters has severely altered aquatic ecosystems throughout Europe, Australia, New Zealand, Japan, and North America. Due to the high density of wetlands in Alaska, and the heavy use of boats and airplanes to access these ecosystems, Elodea poses an enormous threat to the integrity of aquatic ecosystems in parklands.

Dark Night Sky



[web](#) ▶

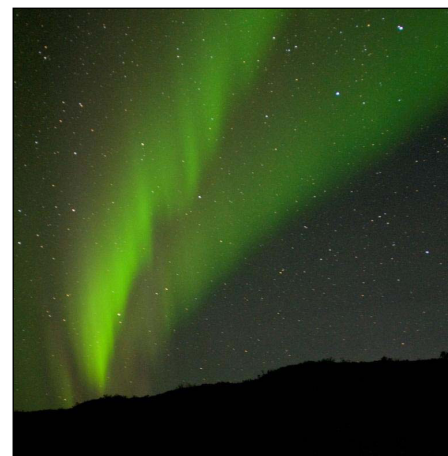
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Anthropogenic Light	Anthropogenic light ratio (ALR) — average anthropogenic sky glow: average natural sky luminance		A photic environment is described as the physical amount and character of light at a particular location, irrespective of human perception. The NPS Night Sky Program characterizes a park's photic environment by measuring both anthropogenic and natural light. While no ground-based or modeled data are available for Yukon-Charley Rivers National Preserve, 2012 visible infrared imaging radiometer (VIIRS) satellite data, which uses a broadband imaging detector with high sensitivity, indicates that there is no visible upward radiance within the preserve boundary. The most significant source of upward radiance in the region originates from Fairbanks, west of the preserve.

Resource Brief: Night Sky Resources at Yukon-Charley Rivers National Preserve

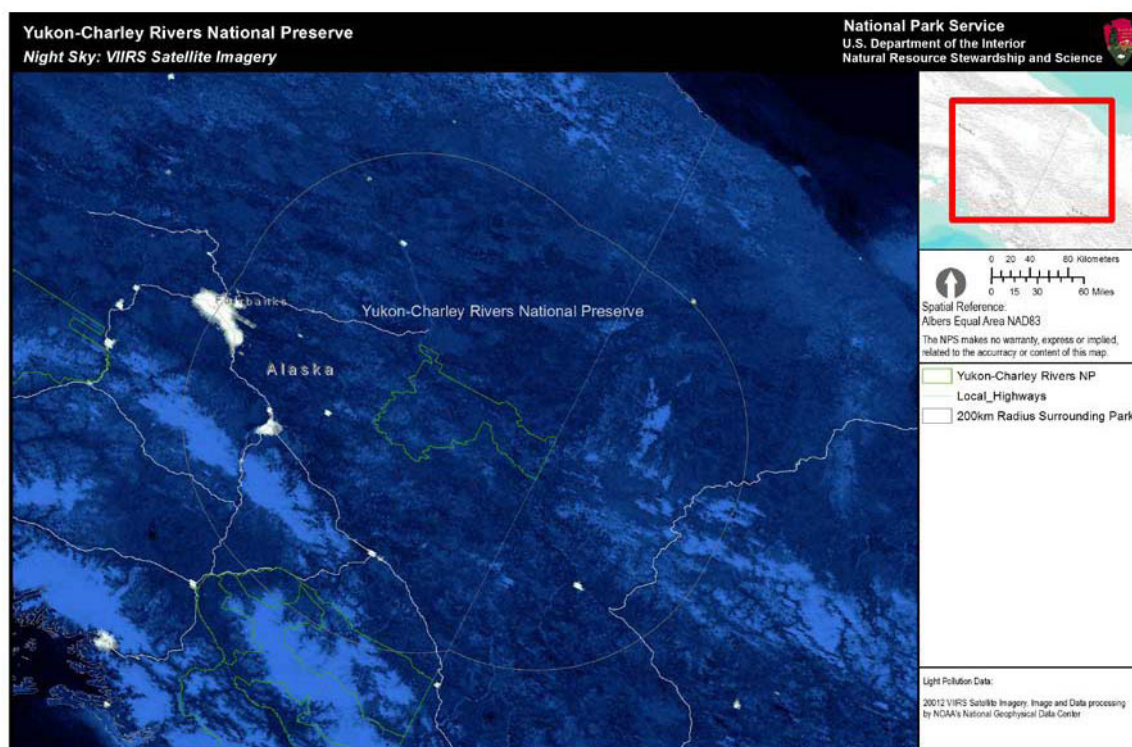
The night sky has been a source of wonder, inspiration, and knowledge for thousands of years. Unfettered night skies with naturally occurring cycles of light and dark are integral to ecosystem function as evidenced by the fact that nearly half the species on earth are nocturnal. The quality of the nighttime environment is relevant to nearly every unit of the NPS system as the nighttime photic environment and its perception of it by humans (the lightscape) are both a natural and a cultural resource and are critical aspects of scenery, visitor enjoyment, and wilderness character.

Condition and Functional Consequences

Night sky quality at Yukon-Charley is in good condition. 2012 visible infrared imaging radiometer (VIIRS) satellite data, which uses a broadband imaging detector with high sensitivity, suitable for detecting anthropogenic sources of light on the earth's surface, reveals no upward light within the preserve. Additionally, very little anthropogenic light is detected in an area within a 200-km radius around the preserve except for substantial upward radiance from Fairbanks, Alaska—close to 200 km west of the park. Given the absence of anthropogenic light originating within the preserve boundaries, and the limited upward radiance within 200 km of the preserve, the photic environment of Yukon-Charley is subject to the natural regime of dark/light patterns allowing visitors to the preserve to experience pristine night sky resources. At these light levels, most observers feel they are in a natural environment. The Milky Way is visible from horizon to horizon and may show great detail, with fine details such as the Prancing Horse. Zodiacal light (or “false dawn” which is faint glow at the horizon just before dawn or just after dusk) can be seen under favorable conditions, and there is negligible impact to dark adaptation looking in any direction.



Northern lights over Yukon-Charley in the dark winter sky. NPS photo.



Created by NPS Natural Sounds & Night Skies Division and NPS Inventory and Monitoring Program MAS Group on 20151026

Regional view of anthropogenic light near Yukon-Charley Rivers National Preserve. White and red represent more environmental influence from artificial lights while blues and black represent natural conditions. This scale shows regional context and how far-reaching the impacts of artificial lighting can be. With no visible upward radiance originating within the preserve boundary and limited visible upward radiance within 200 km of the park, Yukon-Charley Rivers National Preserve serves as a harbor of dark skies.

Assessment

No ground-based or modeled data are available for Yukon-Charley. However, 2012 visible infrared imaging radiometer (VIIRS) satellite data, which uses a broadband imaging detector with high sensitivity, is suitable for detecting direct or reflected sources of upward radiance of anthropogenic sources of light on the earth's surface. These data are qualitative and are not calibrated to known thresholds or reference conditions.

Acoustic Environment 			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Acoustic Impact Level	A modeled measure of the noise (in dBA) contributed to the acoustic environment by man-made sources		The condition of the acoustic environment is assessed by determining how much noise man-made sources contribute to the environment through the use of a national noise pollution model. The mean acoustic impact level at the preserve is 0.0 dBA, meaning that the acoustic environment is in good condition. Acoustic conditions in national parks are largely driven by transportation activity, and overall, long-term projected increases in ground-based (Federal Highway Administration 2013) and aircraft traffic (Federal Aviation Administration 2010) indicate a deteriorating trend in the quality of acoustic resources at this location. Discrete areas of motor boat and snow machine traffic on waterways fluctuate seasonally, and may generate impacts (for instance, scared wildlife) not captured by the scale of this model.

Resource Brief: Acoustic Environment

To characterize the acoustic environment, the NPS has developed a national model of noise pollution (Mennitt et al. 2014). This model predicts the increase in sound level due to human activity on an average summer day. The model is based on measured sound levels from hundreds of national park sites and approximately 100 additional variables such as location, climate, vegetation, hydrology, wind speed, and proximity to noise sources such as roads, railroads, and airports. The model reveals how much quieter parks would be in the absence of human activities. The quality of the acoustic environment affects visitor experience and ecological health. Acoustic resource condition, both natural and cultural, should be evaluated in relation to visitor enjoyment, wilderness character, ecosystem health, and wildlife interactions. Learn more in the document [Recommended indicators and thresholds of acoustic resources quality for NPS State of the Park Reports](#), and the NPS Natural Sounds & Night Skies Division [website](#). Additionally, long term acoustical measurements were made in the park to establish natural ambient sound levels in several landcover types in 2002 and 2003. Results from this analysis are available in an internal NPS report (Ambrose et al. 2003).

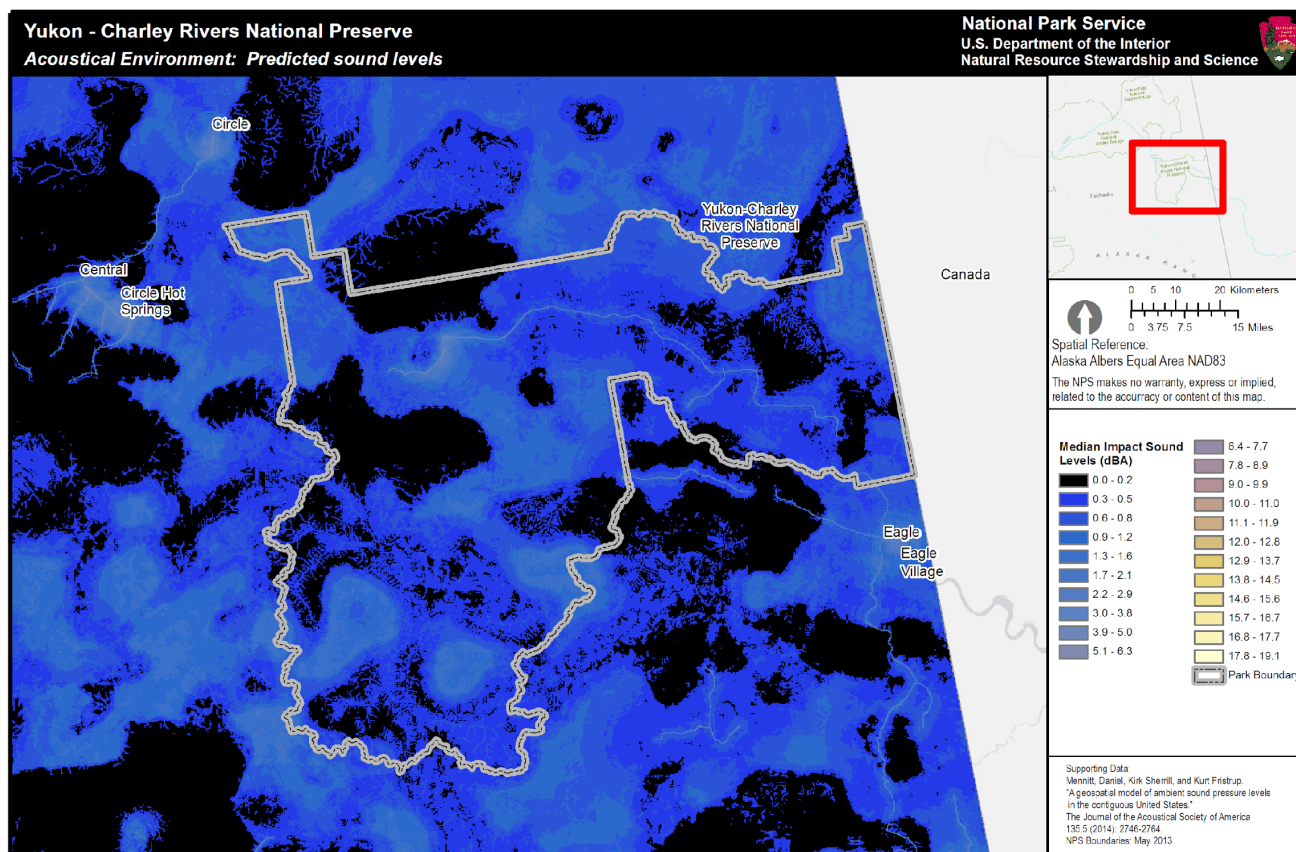
Criteria for Condition Status/Trend

For State of the Park reports, NPS has established acoustic standards (green, amber, red) and two sets of impact criteria for urban parks and non-urban parks. A park's status (urban or non-urban) is based on data from the U.S. Census Bureau ([U.S. Census 2010](#)). Parks outside designated urban areas typically possess lower sound levels, and exhibit less divergence between existing sound levels and predicted natural sound levels. These quiet areas are susceptible to even subtle noise intrusions, so care should be taken to maintain low impact conditions in these places. Park units inside designated urban areas typically experience more interference from noise sources. Based on these assumptions, all Alaska parks will be assessed using the non-urban criteria. Condition thresholds are listed in the table to the right. Just as smog limits one's ability to survey a landscape, noise reduces the area in which important sound cues can be heard. Therefore, thresholds in the table are also explained in terms of listening area.

Indicator	Threshold (dBA)
Acoustic Impact Level A modeled measure of the noise (in dBA) contributed to the acoustic environment by man-made sources.	Threshold ≤ 1.5 Listening area reduced by $\leq 30\%$
	$1.5 < \text{Threshold} \leq 3.0$ Listening area reduced by 30 – 50%
	$3.0 < \text{Threshold}$ Listening area reduced by $> 50\%$

Condition thresholds for the acoustic environment in non-urban parks

Just as smog limits one's ability to survey a landscape, noise reduces the area in which important sound cues can be heard. Therefore, thresholds in the table are also explained in terms of listening area.



NPS Natural Sounds & Night Skies Division and NPS Inventory and Monitoring Program MAS Group 20151124

Map of predicted acoustic impact levels in the preserve for an average summer day. The color scale indicates how much man-made noise increases the sound level (in A-weighted decibels, or dBA), with 250-meter resolution. Black or dark blue colors indicate low impacts while yellow or white colors indicate greater impacts. Note that this graphic may not reflect recent localized changes such as new access roads or development.

2.2. Cultural Resources

Archeological Resources  web ▶			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Scope of archeological resources in the park is understood and a determination has been made whether or not they are a fundamental or other important resource.		Archeological resources are considered a fundamental part of the preserve, and are mentioned in the preserve's enabling legislation and Foundation Document. The scope of archeology within the preserve is understood, and knowledge is increasing due to research and management activities being conducted by preserve staff and collaborators.
	The distribution and types of archeology sites is understood.		General understanding of the distribution and types of archeological sites throughout the preserve is well documented. A more detailed understanding exists for some areas of the preserve, including well known lakes and portions of major drainages. At the scale of 2.5 million acres, there are still unknowns and room for improvement.
Inventory	Percentage of archeological resources with complete, accurate, and reliable State site forms.		Archeological discoveries and assessments are entered into the Alaska state database by professional archeologists in a timely manner.
	Percentage of known sites with Determination of Eligibility (DOE) documentation.		53 of 690 known sites (7%) have completed DOE documentation. In an expansive national preserve, Yukon-Charley staff has recently transitioned from a basic inventory mode to projects focusing on DOEs. These projects are slated to continue for the next two to three years.
Documentation	Park base maps are prepared showing the location and distribution of archeological resources, the nature and extent of archeological identification activities, and the types and degree of threats and damages.		GIS data such as archeological site locations, survey transects, and ASMIS information are updated annually after the close of the field season. Maps displaying this information can be created on demand.
	Percentage of archeological reports and publications entered in the Integrated Resource Management Applications (IRMA) database with appropriate restrictions for access to sensitive information.		94% (17 of 18) of reports related to Yukon-Charley archeology are available in IRMA.

Archeological Resources (continued)

[web](#) ►

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Certified Condition	Percentage of archeological resources certified as complete, accurate, and reliable in the Archeological Sites Management Information System (ASMIS) in good condition.		47% of archeological sites within the preserve are in good condition. Generally, site revisits show no change in condition, leading to a “good” classification.

Cultural Anthropology


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand the relationship of the park’s ethnographic resources to the historic context(s) for the park.		Current and complete cultural anthropology information is lacking for Yukon-Charley. No anthropological or ethnographic research has been conducted in recent years. Ethnographic information is available via University of Alaska Fairbanks Oral History Program . An Ethnographic Overview and Assessment was completed in 2012. The full scope of the sources of available knowledge is large and evolving with each generation.
	The scope of resources significant to affiliated groups associated with the park is understood and a determination has been made whether or not they are a fundamental resource or other important resource or value.		Documentation about evolving cultural and modern connections to the land and its uses could be improved. There is understanding of cultural resources that are historically significant to affiliated groups linked to Yukon-Charley. This understanding is based on historic written reports and books compiled when the preserve was established.
Inventory	Appropriate studies and consultations document resources and uses, traditionally associated people, and other affected groups, and cultural affiliations.		There are existing documents that contain information about traditionally associated people and other affected groups with cultural affiliations to Yukon-Charley. The most current available document is an Ethnographic Overview and Assessment (Koskey et al. 2012). A comprehensive subsistence harvest survey will be conducted in all four affiliated communities in 2016–2017.
Documentation	Planning documents contain current information on traditional resource users and uses, the status of ethnographic data, and the legislative, regulatory, policy, or other bases for use.		Cultural uses and themes (modern and historic) are actively incorporated into the preserve’s limited planning documents. The preserve’s Foundation Document recognizes local cultural elements, and the relationship between local people and the landscape.

Resource Brief: Before the Flood – Unearthing an Historic Han Gwich'in Athabaskan Village

Yukon-Charley preserves a collection of historic, archeological, and natural history specimens amounting to some 83,281 items in the Fairbanks Administrative Office. Items are used in research and public education efforts. In the absence of public exhibit space, park staff has emphasized web-based exhibits and an online catalog as ways to share the scientific, cultural, and historic information that the collections embody.

A recent exhibit entitled, “Before the Flood: Unearthing an Historic Han Gwich'in Athabaskan Village” explains the history of a once important village site, the historic home of Chief Charley and his Han Gwich'in Athabaskan followers. According to the historic accounts of the Episcopal archdeacon Hudson Stuck, “phenomenally high water” resulting from spring break-up on the Yukon in 1914 washed away the last remnants of a small cluster of houses near the mouth of the Kandik River. The former occupants of these houses are said to have then scattered to other villages up and down the Yukon, but the place once known as Charley’s Village was ultimately destroyed. Or so it was thought until the 1990s, when archeologists found evidence of the village preserved in riverbank deposits. A small assemblage of artifacts from the site is held in the Yukon-Charley Rivers National Preserve museum collections. Fortunately, Charley and the village that bears his name achieved a certain notoriety in the history of the Yukon-Charley region. The resulting historic accounts serve to breathe new life into what might otherwise have been rather mundane archeological finds. Such research provides an opportunity to learn more about this particular segment of history.



First known photo of Chief Charley, center, 1883. Photo used with permission. Alaska State Library, Wickersham State Historic Sites Photo Collection (P277-017-019).

Cultural Landscapes


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research exists to understand the relationship of the park's cultural landscapes to the historic context(s) for the park.		Yukon-Charley has identified and documented two cultural landscapes that are the best representative of the most significant historic contexts (mining history) in the preserve: Fourth of July Creek and Coal Creek.
	Percentage of cultural landscape baseline documents with current and complete information.		100% of cultural landscapes in the preserve have been documented. The resource is well understood.
Inventory	Percentage of Cultural Landscapes Inventory (CLI) data included in the Geographic Information System (GIS) meeting current cultural resource standards.		100% of the cultural landscapes defined in Yukon-Charley have been captured in a GIS format. Data is professionally collected and managed, and is of high resolution. Structures have been mapped with high precision.
Documentation	Percentage of cultural landscapes with adequate National Register documentation.		100% of the cultural landscapes in the preserve have been evaluated using National Register criteria. The Fourth of July Creek landscape has been determined eligible, but has not yet been nominated for National Register listing. The Coal Creek landscape has been determined eligible, and is listed on the National Register.
Certified Condition	Percentage of cultural landscapes certified as complete, accurate, and reliable in the Cultural Landscapes Inventory (CLI) in good condition.		100% of cultural landscapes are in good condition. Ongoing assessment and updating of CLI data occurs annually and documentation is complete and thorough.

Resource Brief: Mining at Woodchopper Creek

During the Klondike-Alaska Gold Rush of 1898, stampeder who arrived too late to profit from claims on the Canadian side of the border moved to the American side and found creeks that produced gold dust and nuggets. In the early days, rugged miners like Jack Boyle, Abe Fisher, and Frank Slaven gathered just enough gold from Woodchopper Creek and neighboring Coal Creek to pay for a grubstake (supplies for the following year). Using picks and shovels and primitive sluice boxes, they washed as much gravel as they could manage during short summers. During the winter, they sunk mining shafts along the creeks to reach bedrock and, with luck, found the thin layer of gold dust and nuggets called a paystreak. Woodchopper Creek got its name because it served as a refueling stop for paddlewheel steamboats needing wood along the Yukon River.

In 1935, Canadian investor General Alexander McRae was scouting for locations for mining on an industrial scale, and with the help of Ernest Patty of the Alaska School of Mines, he selected both Coal Creek and Woodchopper Creek. Soon the price of gold rose from \$24 to \$35 per ounce and McRae's enormous dredges were doing the work of hundreds of men, processing 3,000 cubic yards of gravel every day. By operating non-stop under the midnight sun, McRae's twin companies—Gold Placers, Inc. and Alluvial Golds, Inc.—could make relatively poor ground pay handsomely. The dredge at Woodchopper Creek operated until 1960 when diminishing returns and high operating costs spelled the end of an era.



Ernest Patty with two bags of Woodchopper Creek gold, June 1953. UAF Archives, Ernest Patty Collection.

Historic Structures


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand the relationship of the park's historic structures to the historic context(s) for the park.		The majority of historic structures in the preserve are documented to record condition and document architectural features and historic context. The means of documentation include the List of Classified Structures, National Register nominations and determinations of eligibility, and cultural landscape inventories. Mining machinery and other non-buildings have only recently received the attention they deserve.
	Historic structures are identified and evaluated using historical contexts.		National Register nominations for Coal Creek Mining District (1994) and Yukon River Lifeways Regional Area (1987) provide historical contexts for the majority of park unit structures. <i>Gold, Steel & Ice</i> , a book published by the preserve historian, offers context for six categories of mining machinery located within the preserve boundaries (Allan 2015). National Register determinations of eligibility (46 total) document historic context for the remaining park structures.
	Scope of historic structures in the park is understood and a determination has been made whether or not they are a fundamental or other important resource.		A Historic Context Study to further detail the importance of the historic structures in the preserve and history of the gold rush on the Yukon River would be useful. On a smaller scale, one-page factsheets focusing on historic structures are available at visitor centers and online; new topics are added annually.
	Percentage of historic structure baseline documents with current and complete information.		Some of the preserve's baseline documents, including <i>The World Turned Upside Down</i> (Beckstead 2003) and National Register nominations, could be improved and updated. Newly acquired properties in the Woodchopper Creek drainage have added ten buildings to the historic landscape, and require documentation.
Inventory	Research results are disseminated to park managers, planners, interpreters, and other NPS specialists and incorporated into appropriate park planning documents.		Research related to the preserve's history is dispersed by various methods, including the preserve website, one-page factsheets, books, and presentations. All information about the preserve's history is available for incorporation into park planning documents.
	Percentage of historic structures certified as complete, accurate, and reliable in the List of Classified Structures (LCS) in good condition.		In the preserve's List of Classified Structures, 33 of 66 structures are listed in good condition (50%). Some historic preservation efforts in recent years have improved the condition of historic buildings. Routine maintenance of historic public-use cabins and buildings on National Register properties ensure that many remain in good condition.

Resource Brief: Circle City, Log Cabin Metropolis

For many years before the Klondike-Alaska Gold Rush, a handful of prospectors used the Yukon River as a highway on their restless search for gold. In 1893, eighty men left their gold mines on the Fortymile River in Canada when they heard news of a gold discovery at Birch Creek on the American side of the border. In the spring, they staked claims and started mining on tributaries they called Mastodon, Hog'em, Miller, Greenhorn, and Independence. The riverside metropolis that sprang up to supply the miners became known as Circle City (for its proximity to the Arctic Circle) and gained a reputation as “the largest log cabin city in the world.”

Before long, the population rose to 700, including a group of Athabaskan Alaska natives who settled on the edge of town. Steamboats stopped at the town regularly, and each summer miners trekked inland sixty to eighty miles to their claims across swampy land known for the ferocity of its mosquitoes.

Once the pace of gold stampedes slowed in Alaska, Athabaskan families and a few fur trappers and small-scale gold miners helped “Circle” to survive. Over time, the Yukon River shifted and swallowed most of the town’s original log buildings and the residents simply built farther back from the banks. By 1927, the Steese Highway was completed, linking Circle and neighboring Central with Fairbanks, and today many people drive to Circle to put in or take boats out of the Yukon River. Visitors to Yukon-Charley Rivers National Preserve often use Circle as the end-point of float trips that start upriver at Eagle or beyond.



A crowd in front of Jack McQuesten’s store and warehouse, 1895. University of Washington, Asahel Curtis Collection.

History  web ▶			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand the national significance and historical contexts for the park.		Research efforts to document the history of Yukon-Charley has been inconsistent. However, recent efforts are underway now to provide more systematic coverage. A study of mining machinery in the preserve was recently completed and broad research into the gold mining history of the preserve is planned.
	Sufficient research is conducted to establish the reasons for park establishment and a history of the NPS management of the site.		The preserve does not yet have an administrative history, though the reasons for the establishment of the preserve are well established in the enabling legislation (ANILCA) and the preserve's Foundation Document (2012).
	Research at the appropriate level of investigation (exhaustive, thorough, or limited) precedes planning decisions involving cultural resources.		The preserve could improve communication and consultation internally. Section 106 of National Historic Preservation Act needs are addressed when maintenance decisions are made in consultation between the preserve's facilities management and resources staff. All facility upkeep projects on historic structures in Yukon-Charley are submitted to the Planning, Environment, and Public Comment (PEPC) review process and cleared before work commences.
	Research is conducted by qualified scholars.		The park historian holds a doctorate in public history and has over ten years of experience working for Alaska's national parks.
Inventory	Percentage of historic properties with adequate National Register documentation.		The preserve's two National Register nominations and 46 determinations of eligibility (DOEs) cover approximately ninety percent of the historic structures in the park unit. However, the National Register nominations should be updated, and some of the DOE-documented properties should be integrated into the larger nominations.
	Research results are disseminated to park managers, planners, interpreters, and other NPS specialists and incorporated into appropriate park planning documents.		Research related to the preserve's history is disseminated by various methods, including the park website, one-page factsheets, books, and presentations. All information about the preserve's history is available for incorporation into park planning documents.

Resource Brief: Amundsen on the Yukon River, 1905

In the community of Eagle on the banks of the Yukon River one can visit a small park and a gleaming metallic monument dedicated to the Norwegian explorer Roald Amundsen. 500 miles from the Arctic Coast, Amundsen traveled to Eagle for its telegraph station. European explorers yearned to discover a sea route across North America that would deliver them easily to rich Asian markets. However, the quest for this “northwest passage” remained a dream beyond reach until Amundsen and his crew sailed over the top of the continent in 1905. The reason he needed the telegraph station was to announce this achievement to the world.

After a month of hard travel, they arrived at Fort Yukon, a village at the northernmost bend in the river. After saying goodbye to their guides, Amundsen and a companion started out again for the town of Eagle—another 200 miles upriver near the U.S.-Canada border. When Amundsen finally stumbled into Eagle, he had no money to pay for a telegram and he looked like just another discouraged prospector. Fortunately, the locals soon realized they had a celebrity in their midst and offered to send his now-famous telegram.



Amundsen remained in Eagle for two months, resting and reading messages of congratulations wired in from around the world. He was a guest of Alaska Commercial Company agent Frank Smith and participated in the town’s winter social functions. In early February 1906, he left Eagle and followed his previous route back to the Gjoa, and five months later the ship and its crew reached Nome to become the first expedition ever to travel from the Atlantic to the Pacific via the Arctic. In the coming years Amundsen joined the race to reach both the North Pole and the South Pole and went on to become one of the most famous explorers of all time. Today Amundsen’s 1,000-mile detour to reach a telegraph station on the Yukon River has become part of the history of Yukon-Charley Rivers National Preserve.

Norwegian explorer Roald Amundsen poses with his sled dogs on the Yukon River at Eagle, 1905. After announcing the success of his mission to the world by telegraph, Amundsen spent two months in the town before returning to the Arctic coast to rejoin his crew. University of Oregon Digital Collections.

Museum Collections


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research and analysis exists to understand the relationship of the park's museum collection to the historic context(s) for the park.		In recent years, the Yukon-Charley museum collections have grown. Collections have been the subject of ongoing research efforts to better understand the cultural and natural histories of the preserve and how these histories are represented by the collection.
	Scope of museum collection in the park is understood and a determination has been made whether or not they are a fundamental or other important resource.		The Yukon-Charley collection is considered to be a significant aspect of the cultural and natural histories of the preserve. It is actively maintained and collections are part of ongoing research projects to further understand preserve resources.
Inventory	Archival and manuscript collections are surveyed and described in the Interior Collections Management System (ICMS Catalog Database) and finding aids are produced.		In 2013, the Yukon-Charley archives collection was processed and reorganized to current, best practice standards. However, the collection has continued to grow and is currently in need of additional processing effort. The current percentage of existing collections that is accessioned and cataloged is 98.4%. In general, the collection has little to no backlog and new materials are processed and cataloged soon after they are accessioned.
	Scope of Collection is consistently implemented; items or objects are researched to determine their appropriateness for inclusion in the museum/archive collection.		The current curator is the only museum staff and author of the current Scope of Collections Statement. The Scope of Collections Statement defines appropriateness of items for addition to the collection. All new accessions (formal additions to the museum collection) are held to the guidelines outlined therein.
Documentation	Accession and deaccession files are complete with all appropriate signatures.		Before most records at the preserve were digital, some paper accession files were not completed. While there are now current digital records in ICMS, there is no supporting physical documentation for many of these files. Currently, physical document files have been organized, and all new documentation created is completed with appropriate signatures.
Certified Condition	Percentage of museum collection reported in Collections Management Report (CMR) and checklist report in good condition.		86% of collections reported in the Collections Management Report and checklist report are in good condition.

Resource Brief: Johnson Dredges

During the Klondike-Alaska Gold Rush of 1898, the tools used in mining were rudimentary: picks, shovels, gold pans, box sluices, and hydraulic hoses. If they were lucky, miners had steam boilers that helped to thaw frozen ground to get at the placer gold beneath. From the beginning, men dreamed of machines that could increase their profits and relieve the back-breaking labor involved in “pick and shovel mining.” Early in the new century, that dream was realized when mammoth gold dredges were shipped north and began pulling millions from sand and gravel in the Far North.

Born in Farmer’s City, Illinois in 1882, Walter W. Johnson came from a modest background. After earning a degree in mechanical engineering at the University of Illinois, he moved to California in 1905 where he began work in the dredge manufacturing industry. By 1910, Johnson had formed his own enterprise—the Union Construction Company—to design and build bucket-type dredges, prospecting drills, and other placer mining equipment. Mining companies purchased Johnson’s dredges for use in Alaska, Canada, Siberia, Portugal, Bolivia, and across the United States. Thirty-two of the company’s dredges (of a total production of fifty-eight) went to Alaska, twice as many as from any other dredge manufacturer. Johnson adapted his machines to Far North conditions, making him a gold dredge pioneer for Alaska.

Starting in 1909, Johnson began traveling to Alaska to direct the construction of dredges near Nome and throughout the Seward Peninsula as well as in the Alaskan interior at Ruby, McGrath, Iditarod, Circle, and Fairbanks. The dredges that the Union Construction Company produced were built in San Francisco and then dismantled and shipped in pieces to Alaska. The parts were then transported to a specific gold claim and reassembled.

In 1935, the wealthy Canadian investor Alexander McRae was scouting locations for mining Alaskan gold on an industrial scale. After crisscrossing the territory, he selected a Yukon River tributary called Coal Creek where small-scale placer miners had been active for decades. At a cost of \$156,000, McRae purchased a dredge from what was by that time called the Walter W. Johnson Company. The dredge began operation in 1936, and the following year McRae purchased a second (nearly identical) dredge for nearby Woodchopper Creek. Over the next three decades, the twin dredges collected over \$6,000,000 in gold and small amounts of silver, and today they remain, largely unchanged, inside Yukon-Charley Rivers National Preserve.



The Coal Creek dredge arrived in Alaska in 1935 and was still operating when this photo was taken in 1974. NPS Photo.

2.3. Visitor Experience

Visitor Numbers and Visitor Satisfaction

[web ▶](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Number of Visitors	Number of visitors per year		The number of visitors rose in the early 2000s, peaking around 12,750 in 2005, then declining to around 6,400 in 2009 and 1,133 in 2015 (NPS 2015). The preserve has no road system and access is difficult. Visitation fluctuates as commercial tourism based in Fairbanks fluctuates. There is less variation in visitor numbers from people visiting the preserve's more remote areas, mostly to hunt and fish. It is difficult to capture true park visitation numbers as visitor contact points are remote (Slaven's Roadhouse and Coal Creek Camp). Winter recreation is the primary visitation draw, and commercial sled dog tours are popular. Many people following the Yukon Quest Sled Dog Race route pass through the preserve.
Visitor Satisfaction	Percent of visitors who were satisfied with their visit		Visitor satisfaction surveys since 2010 show consistently high results; 98% to 100% of visitors are satisfied overall with facilities, services, and recreational opportunities.

Interpretive and Education Programs – Talks, Tours, and Special Events


[web ▶](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Ranger-led Programs	Number and quality of programs and attendance		Yukon-Charley offers a variety of ranger-led tours in the preserve. Walking tours include visits to the Coal Creek dredge, Slaven's Roadhouse, and Fort Egbert. Program attendance is limited, as access to these areas requires travel by boat or air.
Special Events	Variety and longevity of events, community involvement		The Yukon Quest Sled Dog Race passes through Yukon-Charley. The preserve provides both visitor services and resource protection (primarily out of Coal Creek Camp). The preserve creates an airstrip on the frozen river to improve safe access to the race and provide a place for emergency medical service for dogs. The preserve hosts and assists with the Fourth of July events in the town of Eagle, the closest town to the preserve. The preserve also sponsored the Annual Community Potlatch in Eagle Village.
Educational Hosts	Number and quality of programs, and number of participants		Yukon-Charley hosts a variety of programs administered by partner institutions. Available programs include teaching natural sciences, outdoor painting and art classes, and classical music in the preserve.

Resource Brief: NPS Hosts Yukon Quest Teams at Slaven's Roadhouse

For dog mushers traveling in the 1,000-mile Yukon Quest Sled Dog Race, Slaven's Roadhouse in the heart of Yukon-Charley is like an oasis in a frozen desert. They arrive with a sense of relief after a day's travel from Eagle, and with heightened anticipation of hot food, a comfortable bed, and warm water for their dogs. At Slaven's Roadhouse, a public use cabin in the preserve, mushers step into a scene that is practically the same as it was 80 years ago, only today they are greeted by National Park Service staff and Yukon Quest officials instead of Frank Slaven himself.

The roadhouse was first built as a hospitality stop along the Yukon and used by early mail travelers en route from Circle to Eagle. Today, water is hauled from the Yukon River through a hole cut in the jumble ice, while propane lanterns, headlamps, and the aurora provide the only source of light through the long night.

NPS staff and Yukon Quest officials work side-by-side in a partnership that has lasted 28 years. In 2015, preserve staff once again partnered with University Park Elementary School's 3rd grade class to foster volunteering and participation in winter activities by bringing out a poster created for the mushers by the 3rd graders. Thank you to all who followed on Facebook and those who participated in preparations and staffing to accomplish another safe, successful venture!



Sled dogs in the 2015 Yukon Quest Sled Dog Race rest outside Slaven's Roadhouse within Yukon-Charley Rivers National Preserve. The National Park Service has hosted an official dog drop each year during the 1,000-mile race between Whitehorse, Yukon, and Fairbanks, Alaska. NPS photo.

Interpretive Media – Brochures, Exhibits, Signs, and Website


[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Wayside Signs	Condition and currency of signs		New waysides outside of the visitor center in Eagle are in good condition and are up-to-date. Interpretive panels at Slaven's Roadhouse are also in good condition. Signage in the preserve is purposely minimal, to preserve its remote nature. Signage about subsistence lifestyles and rural traditions may be appropriate along the river corridor, where tourism and visitor traffic is concentrated.
Exhibits	Eagle Visitor Center		Interpretive displays and artifacts are on display in the Eagle Visitor Center.
	Coal Creek Dredge		This historic dredge offers visitors an authentic interactive visit to a historic mining machine that can be explored.
Print Media	Accuracy and availability of primary park publications		A park map update is scheduled for completion in 2016. The park map is available online and at park visitor centers. Yukon-Charley offers a wide variety of informational handouts (i.e., dredge tour, historic structures, natural resources, etc.), which are available online and at visitor centers. Handouts are up-to-date. Photo albums are present in the Coal Creek Visitor Center. Photo albums contain historic photos of people visiting the camp and dredge; these photos were donated to the preserve. Several books have been written recently about the cultural resources and history in Yukon-Charley.
Audio-visual Media	Orientation films		<i>Where Two Rivers Meet</i> is the preserve informational film. This video is available in the Eagle Visitor Center and is available for purchase from Alaska Geographic. An updated orientation film about the preserve is scheduled for completion in 2016.
	Other AV material		Media in a tablet format is being developed for Coal Creek and Slaven's Roadhouse, and will be available in the Eagle Visitor Center. Virtual/panoramic tours of the Coal Creek dredge, the blacksmith shop at Cheese Creek, and other locations are available online. A time-lapse video of a trip down the Yukon River is also available (and popular!).

Interpretive Media – Brochures, Exhibits, Signs, and Website (continued)

[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Websites	Currency and scope of website; number of website visitors		The Yukon-Charley website is current. The website provides information about all significant park resources, as well as information about resources immediately adjacent to the preserve. Website visits for 2015 totaled 13,900. Web traffic is relatively high compared to the number of actual visitor in the park. The preserve is remote and access is difficult—web presence allows visitors to learn about the park and its resources from afar.
	Social media: Facebook updates and “likes,” overall activity		Yukon-Charley has a Facebook and Twitter presence. Posts to Facebook are made daily, often with photos taken recently in the preserve. The preserve Facebook page has over 5,000 “likes.” Preserve alerts are posted to social media. Social media allows people to be virtual visitors and learn about this remote preserve and its unique, wild resources.

Accessibility


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Mobility	ADA compliance		The Eagle Visitor Center and Public Comfort Station are Americans with Disabilities Act (ADA) compliant. Due to the remote nature of the preserve, access is difficult for all visitors. The preserve’s front country structures underwent an accessibility review in 2013.
Visual Accommodation	ADA compliance		Some but not all interpretive materials are presented in a hands-on display. The preserve website is Section 508-compliant.
Auditory Accommodation	ADA compliance		Some but not all interpretive materials have auditory accommodation. The upcoming update to the preserve movie will include auditory accommodation. The preserve website is Section 508-compliant.
Multi-lingual Resources	Audio and print materials in multiple languages, bi-lingual staff		Some but not all printed park materials are available in German and Japanese.

Safety


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Visitor Safety	Recordable incidents		The safety of visitors is a park priority. The preserve works to quickly identify and mitigate potential hazards, and the number of accidents is very low. <i>Kids Don't Float</i>, a State of Alaska program that provides free lifejackets for use, is present at the boat launches in Eagle and Circle City. Backcountry safety orientation is provided to visitors before entering the preserve. Bear-resistant food canisters are provided to backcountry visitors. Staff and emergency responders are stationed at Slaven's Roadhouse during the Yukon Quest Sled Dog Race. A ranger may be present at Slaven's during the summer to assist with any emergency or search-and-rescue needs of visitors. Public use cabins that utilize wood stoves for heat and cooking have been outfitted with smoke alarms.
Staff Safety and Training	Number of staff trained		Operational Leadership Training has been completed by preserve staff, and CPR, First Aid, and AED training are also offered to staff. Job Hazard Analysis is conducted before jobs throughout the park. Regular safety messages are given and distributed to staff members. The preserve has a designated collateral duty safety officer. Facilities staff has authored field operations plans and safety plans addressing personal protective equipment, respiratory protection, and hearing conservation. In addition, the preserve has a library of standard task Job Hazard Analyses, all available for staff review. Summer (pre-season) training is conducted annually, and is focused on employee and visitor safety. NPS staff complete required boat safety and aviation safety training. Appropriate personal protective equipment is provided and use is required. The Safety Action Team for the preserve meets regularly to assess safety concerns and mitigate hazards as they are identified. The team also recognizes people with safe work practices who are setting an example for others. Safety-Seconds (buddy system) is required during backcountry travel. Staff is required to check in at least daily by phone (satellite phones, radios, and emergency locator beacons are issued to staff). The preserve created the Northern Aviation Hub to enhance aviation safety in areas where planes are the primary means of transportation.

Partnerships


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Volunteers	Number and hours contributed		Volunteers play an important role in many facets of preserve operations and augment staff in an appropriate manner. The preserve has approximately 30 volunteers annually (5-year average); volunteers contribute a total of about 5,000 hours per year. These volunteers work mostly in interpretation and natural resource management.
Partnerships	Number of partnerships		The preserve partners with a wide range of agencies and organizations to help meet its mission and to assist others. A primary partner is the Eagle Historical Society. Located just outside the preserve boundary, Yukon-Charley partners with the small town of Eagle to provide weekly tours and other activities and support. Other partners include: • Summer Arts Festival in Fairbanks – this event has brought over a dozen composers to the preserve, creating music inspired by or written for national parks. • Alaska Geographic – this partner provides print materials for the preserve’s visitor center shop. • Summer Sessions at University of Alaska, Fairbanks (UAF) – unique classes at UAF offer opportunities for educational and recreational experiences in the preserve. • Yukon Quest Sled Dog Race – 1,000 miles long, this challenging race draws mushers from many countries. The race route passes through the preserve. • Doyon Limited Native Corporation, Eagle Village Tribe, and Tanana Chiefs Conference. • Academic partners that participate in natural resource management. • Federal agencies including the Department of the Interior Bureau of Land Management, the U.S. Fish and Wildlife Service and the Federal Subsistence Management Program. • State agencies including the Alaska Division of Subsistence, Alaska State Troopers; Alaska Fire Service; and Alaska Department of Fish and Game.

Scenic Resources


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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Scenic Views	Scenic views quality & protection		Scenic resources are a fundamental resource of the preserve, and are currently in good condition; however, proposed development adjacent to the preserve could impact this pristine resource. Many visitors come to Yukon-Charley to see nature and experience the preserve's remoteness and unspoiled beauty. Yukon-Charley is one of the last undeveloped, untrammelled places in North America. Development on the preserve's border would be a huge detriment to the scenic character of the land. Small changes in ambient dust or noise would have a large impact on an area where these things are naturally absent. In recent years, development of roads and mineral extraction in areas around the preserve has been proposed.

2.4. Park Infrastructure

Facility Condition Index

The National Park Service uses a facility condition index (FCI) to indicate the condition of its facilities and infrastructure. FCI is the cost of repairing an asset, such as a building, road, trail, or water system, divided by the cost of replacing it. The lower the FCI number, the better the condition of the asset. The condition of the buildings and other infrastructure assets at each park is determined by regular facility inspections, or “condition assessments,” including daily informal inspections and formal yearly inspections. Deficiencies identified from these assessments are documented in the NPS Facility Management Software System and the cost for each repair determined. Repairs that cannot be completed within the year count against the condition of a structure. The total cost of these deferred repairs divided by the total cost to replace the structure results in the FCI, with values between 0 and 1 (the lower the decimal number, the better the condition). The FCI is assigned a condition category of Good, Fair, Poor, or Serious based on industry and NPS standards. Deferred maintenance projects that require additional funding are identified based on FCI. Planned preventive maintenance on critical components occurs during the year, using a park’s base budget. For additional information about how park managers use information about the condition of facilities and infrastructure to make decisions about the efficient use of funding for maintenance and restoration activities at the park, [Click Here](#).

Overall Facility Condition Index 				web ▶
Asset Category	Number of Assets 2010/ 2015	FCI 2010/ 2015	Condition Status/Trend	Rationale
Buildings	65 / 69	0.065 / 0.038		In general, preserve buildings are in good condition and improving. Many of these buildings are historic structures. There are a number of cyclic projects awaiting funding and cyclic project work on historic cabins and buildings at Coal Creek Camp was successfully completed in 2016.
Trails	2 / 2	0.000 / 0.000		Trails in the preserve are generally in good condition. There are no actively maintained hiking trails in the preserve.
Waste Water Systems	2 / 3	0.000 / 0.000		Preserve water systems receive regular maintenance and are in good condition. A dried-up water well was replaced with a staff- designed and built surface water system utilizing three-stage filtration and ultraviolet light disinfection run by solar power at Coal Creek Camp in 2014.
Water Systems	3 / 3	0.0003 / 0.000		Preserve wastewater septic systems require little maintenance and are in good condition. The camp graywater system is planned for cyclic replacement in 2021.
All Others	20 / 21	0.000 / 0.000		This category includes the preserve’s historic gold dredges and other facilities such as airstrips, fuel systems, radio systems, and power generating/solar systems. These facilities are in good condition.

2.5. Subsistence

Overall Condition, Opportunity, and Continuity for Subsistence Activities			
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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Up-to-date documentation is available about subsistence resources and their uses in communities eligible to harvest resources in the preserve		Comprehensive subsistence harvest surveys have never been conducted for the communities associated with the preserve (Central, Circle, Eagle, Eagle Village). Subsistence resource use information is strongly needed at this time. Surveys conducted by the Alaska Department of Fish and Game Division of Subsistence will begin in 2016.
	Proportion of users who are able to engage in all the subsistence uses they would like to pursue		Opportunities for subsistence activities continue to be available, yet there may be competition between sport hunters and local users for resources such as caribou and moose. Subsistence use of Chinook salmon is limited due to decreased fish stocks.
Opportunity and Continuity for Subsistence Activities	Subsistence users are engaged in subsistence management		The Federal Subsistence Eastern Interior Regional Advisory Council has members representing local communities. Through this council, they are able to make recommendations about management of subsistence resources within Yukon-Charley. There is not a Subsistence Resource Commission specifically for Yukon-Charley, but there is an informal subsistence working group composed of residents of Eagle. Through this working group, local users are able to share their concerns about subsistence resources with preserve managers.
	Continuity of subsistence uses		The harvest and use of wild foods and other subsistence uses continues to be important for residents of communities in and around the preserve. There is some competition between sport hunters and local users for resources such as caribou and moose. Historically and extending into present day, the lands within the preserve have been used for subsistence for more than 10,000 years.
Harvest of Fish, Wildlife, and Vegetation	Fish resource availability		The major issue affecting subsistence communities is the decline in Chinook salmon numbers within the Yukon River ecosystem and its drainages. In the past 10 years, communities along the Yukon River have been strictly regulated for Chinook salmon harvest.
	Wildlife resource availability		The population size of the Fortymile Caribou Herd is classified as stable and local users have considerable opportunity to harvest from this herd, although recent studies have raised concerns about caribou body condition and the possibility of range impacts. Amount of permitted caribou harvest in the preserve varies by location. According to past moose surveys, Yukon-Charley has never had an abundant moose population, but local users are able to harvest moose without being overly regulated.
	Vegetation resource availability		Berries, mushrooms, and firewood are valued vegetation subsistence resources. These resources appear to be stable, but data on the status of these resources is lacking.

Resource Brief: Subsistence and Traditional Uses

Today, as in the past, many Alaskans live off the land, relying on fish, wildlife, and other wild resources. Alaska's natural abundance forms the backbone of life and economy for many people in the state. Native people in Alaska have used these subsistence resources for food, shelter, clothing, transportation, handicrafts, and trade for thousands of years. Subsistence, and all it entails, is critical to sustaining the physical and spiritual culture of Alaska Native peoples and to making life on the land possible for many of Alaska's rural residents.

In the years that followed statehood, the pace of change accelerated and development abounded in Alaska's remote areas. In response, rural residents began to organize, and before long they petitioned government officials in the hopes of retaining some protection for their land base and their subsistence way of life. In deliberations leading to the Alaska Native Claims Settlement Act of 1971, the U.S. Congress acknowledged the importance of subsistence hunting and fishing to Alaska Natives but provided no specific protection on federal public lands. In 1980, Congress formally recognized the social and cultural importance of protecting subsistence for both Native and non-Native rural residents when it passed the Alaska National Interest Lands Conservation Act (ANILCA). This legislation established millions of acres of new national park and national preserve lands in Alaska and helped to preserve subsistence use and a unique connection to the land fostered by tradition and lifelong experience.

ANILCA defined subsistence as: "Customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

With the passage of ANILCA, the American people made a promise: to protect some of the nation's most splendid natural ecosystems and treasured landscapes while providing the opportunity for those engaged in a traditional subsistence way of life to continue to do so. In this way, the landmark law that established many of Alaska's national park units confirms the strong connection between local residents and the land.



Salmon smoking on fish racks. NPS Photo.

Chapter 3. Summary of Key Stewardship Activities and Accomplishments

Activities and Accomplishments

The list below provides examples of stewardship activities and accomplishments by park staff and partners to maintain or improve the condition of priority park resources and values for this and future generations:

Natural Resources

- Preserve staff continues to conduct annual surveys of American peregrine falcons along the upper Yukon River. The NPS has been documenting the strong recovery of this once-endangered species for over 40 years, and will continue annual monitoring of this population for years to come. The population has increased from 11 nesting pairs in the mid-1970s to almost 60 nesting pairs in recent years.
- A Dall's sheep survey was completed in 2015 using minimum count survey methods. Abundance and composition of Dall's sheep in Yukon-Charley has been monitored a total of 7 times since 1997. In the survey area, 173 sheep were detected, which constitutes a 48% decline since the last survey in 2009 and was the lowest reported abundance. The preserve has the intention to continue this survey into the future.
- The preserve installed a peregrine falcon webcam on Eagle Village Bluff in 2012 and collected images of nestlings hatching and fledging through the summer. The camera requires some upgrades and was not in operation in 2016.
- The preserve installed a peregrine falcon viewing platform with a spotting scope in front of the Eagle Visitor Center in 2013.
- Fire management staff managed four lightning-ignited fires for resource benefit of a total of 1,670 acres in 2016.

Cultural Resources

- The preserve historian published a new book in 2015: *Gold, Steel & Ice: A History of Mining Machines in Yukon-Charley Rivers National Preserve* (Allan 2015). The book highlights the rich history of mining that is preserved in Yukon-Charley (and many other Alaskan parks).
- A reconnaissance survey of the newly acquired Woodchopper Creek structures and mining district was completed. The 2015 survey found resources there in good condition and identified no major concerns with contaminants or hazardous materials.
- The 500th archeological site in Yukon-Charley was recorded in 2015.
- A right-of-way (ROW) trail easement was realigned to allow local use without trespassing on private lands. This trail was a historical mail trail. The new ROW pens a travel route and provides access as it was used traditionally.
- The Washington Creek Steam Tractor historic site was determined to be eligible for the National Register of Historic Places.
- From 2013–2015, the preserve conducted a pioneering geophysical and geoarcheological study of deeply buried archeological deposits at the Slaven's Roadhouse site, which revealed a 7,000-year record of Yukon River flood history and ancient prehistoric human occupation.
- In 2015, historic road/trail improvements were completed along Coal Creek Upper Road.
- The stabilization of Sam Creek Cabin was completed.

Visitor Experience

- Yukon-Charley continues to provide safety support for Yukon Quest, a sled dog race and a unique Alaskan winter event. The Slaven's Roadhouse Cabin, owned and preserved by the NPS is used heavily during the race.
- The preserve completed its photographic documentation project. Panorama tours give visitors an opportunity to see unique resources that are difficult to access due to the preserve's remoteness and lack of roads.

- The preserve's Facebook and other social media accounts continue to be successful, providing a new way for visitors to connect with the preserve.
- A new movie about the preserve is planned for completion in 2016.
- Since the preserve had been involved in the Summer Arts Festival, approximately 36 new classical and chamber music compositions have been inspired by and created in the preserve.
- There is ongoing close coordination between interpretive and resources staff to present educational programs and make information accessible to visitors.

Park Infrastructure

- Cabins were acquired at Woodchopper Creek following the vacation of unpatented gold claims.
- In 2014 and 2015, trail and creek bank stabilization work was completed along the Coal Creek lower trail, maintaining access between Coal Creek Camp administrative facility and Slaven's Roadhouse public use cabin and Yukon River access.
- Hazardous fuels reduction was completed at Coal Creek Camp and Woodchopper Creek locations, which will protect facilities and historic buildings from wildfire.
- In 2011, Cheese Creek historic mining structures underwent a successful preservation project.
- In 2010, preserve staff and a volunteer rebuilt the Kandik River site public use cabin and privy after they were destroyed during a 2009 spring break-up flood event.
- In 2014, preserve staff, with assistance from the NPS Alaska Regional Office, designed and constructed an above-ground water treatment plant to replace a dried up well providing drinking water at Coal Creek Camp. The system utilizes three stage filtration and UV disinfection.
- In 2015, the Coal Creek Camp gravel air strip was leveled and obstacles were removed. New wind socks were also installed.
- Obsolete employee housing in Eagle was replaced with a two-bedroom modular home in 2010.
- In 2014, using materials on hand, preserve staff converted two tent frame structures into finished cabins in Eagle for use as seasonal employee housing.
- The Slaven's Road House garage-leveling project was completed in 2014.
- The roof on the Coal Creek Camp incinerator building was replaced after storm damage from sustained winds that blew the roofing completely off the building in 2014.
- Stabilization work at Ben Creek Cabin was completed in 2015.
- A facilities project replaced two unauthorized 55-gallon drums (being used as fuel storage supply tanks) at Coal Creek Camp with purpose-designed fuel storage and distribution tanks in 2013–2014.
- General improvements to preserve public use cabins from 2012 to 2016 have included: safety improvements; replacement of stove exhaust pipes; bear protection; replacement of broken glass; reconstruction of/repair to caches; leveling and repair of associated porches and privies; and outfitting the cabins with bunks, mattresses, lamps, saws, axes and mauls.
- A crew removed and recycled more than a dozen drums of old gasoline from the Coal Creek Camp airstrip. The drums were abandoned on the site prior to 2008.
- A small area contaminated with diesel fuel was successfully remediated at Slaven's Roadhouse.
- New privies were constructed for public use at the Coal Creek Camp airstrip and dredge site.
- Facilities staff removed more than a ton of refuse abandoned at Slaven's Roadhouse. Refuse was generated by river travelers and the Yukon Quest Sled Dog Race.

Subsistence

- Yukon-Charley continues to participate in the Eastern Interior Regional Advisory Council (RAC).
- Eagle and Eagle Village Subsistence Working Group was established. This is a formal working group used to guide decision making related to subsistence and traditional resource uses. The group includes preserve management and local residents. Preserve management solicits advice and counsel on decision making and management of preserve resources.
- The preserve continues to work at maintaining a presence in Eagle to facilitate community discussions and foster relationships with subsistence users and area residents.

Chapter 4. Key Issues and Challenges for Consideration in Management Planning

Yukon-Charley Rivers National Preserve, located in northeastern Alaska, was established in 1980 to protect the environmental integrity of the undeveloped Charley River basin and the natural and cultural history of the upper Yukon River corridor for public enjoyment and scientific study. The preserve is one of the few locations in the world where over 600 million years of the earth's geologic history is recorded in an uninterrupted sequence of rock and sediment. In addition to providing protected natural habitat for wildlife including bears, caribou, wolves, and peregrine falcons, visitors may also experience paleontological and prehistorical cultural resources, as well as historical sites associated with the gold rush on the Yukon River. Issues described below provide background for some of the challenges facing preserve managers.

Climate Change

Alaska has been warming at twice the rate of that of temperate latitudes, which has led to physical and ecological changes in Yukon-Charley Rivers. Downscaled models (Rupp and Loya 2009a, b, c) predict that northern Alaska is likely to experience warming of up to 10 °F mean annual temperature over the next 60 years. With a changing climate comes a host of current and potential issues requiring management approaches including thoughtful adaptation, mitigation, and education/communication strategies.

As the scope and intensity of climate change increase, the historical or “natural” conditions in parks will be difficult or impossible to maintain. What will it mean to protect park resources “unimpaired for future generations” in the face of climate change?

Yukon-Charley is responding to climate change in four primary areas. Accomplishments within each area include the following:

Science

- Monitoring climate at carefully sited weather stations that contribute year-round real-time data to national climate databases.
- Analyzing data from vegetation plots to establish a baseline for future changes.
- Documenting the phenology of aspen leaf-out and fall color change in relation to climate data.
- Conducting social science interviews with rural community members and preserve staff to collect knowledge about how climate change has affected resources.

Adaptation

- Developing plant diversity maps for use in scenario planning and visualization, e.g., encroachment of woody vegetation upslope into tundra would pose a major threat to vulnerable tundra plant species that are already rare.
- Discussing potential use of prescribed fire to decrease the probability for large severe fires and to allow ecosystems to adjust to new climatic conditions.

Mitigation

- Using solar power at Coal Creek Camp to supplement the propane generator.
- Hiking to wilderness work sites when feasible instead of using a helicopter.
- Reusing and recycling paper, cans, and metal.

Communication

- Offering training sessions on climate change for park rangers (interpreters).
- Including climate change messages in many interpretive programs.
- Providing webpage and social media updates about how field and support operations are achieving “greener” results that help protect the environment and the preserve's resources.

What more can the park do about the issue?

While recognizing that preventing climate-induced changes is beyond the control of the National Park Service, Yukon-Charley managers will continue to engage with stakeholders and partners to study and implement evolving strategies for assessing natural and cultural resource conditions. An emphasis will be placed on the preserve values determined to be at the highest risk(s) due to the rapidly changing climate.

Intensive Management of Wolves outside the Park Boundary

Wolves are a key part of predator-prey systems in 2.5 million acre Yukon-Charley, and are highlighted in the preserve's enabling legislation. Yukon-Charley contains excellent wolf habitat because it is adjacent to and overlaps with calving grounds of the Fortymile Caribou Herd, one of Alaska's major herds. The Fortymile Herd is also one of the most accessible to hunters, with road access relatively close to urban population centers. It has seen dramatic population fluctuations in recent decades. Wolf predation is considered by state biologists to be an important factor limiting herd size, and the State of Alaska has authorized predator control efforts within the Upper Tanana Predator Control Area—lands immediately surrounding much of the perimeter of Yukon-Charley—since 2004 to increase caribou population and provide more harvest opportunities.

Intensive management of wolves conducted by the State of Alaska near the boundaries of Yukon-Charley has impacted wolf populations within the preserve and altered the natural abundance and behavior of wolves. With the competing mandates—natural processes for the preserve and achieving intensive management objectives for the State of Alaska—there are few management options with which to address the problem. Harvest restrictions are one option, but will have a limited biological effect. Cooperation between the NPS and the State of Alaska on this issue is improving, as is the outlook for collaborative solutions for management in the vicinity of Yukon-Charley's boundary.

What more can the park do about the issue?

With wolves traveling outside the preserve, managers have limited options to address concerns about Yukon-Charley wolf populations. A closure to sport hunting of wolves within Yukon-Charley was implemented in 2010. Sport harvest of wolves, however, is typically low, averaging about 6.7 wolves per year over the past 27 years and 4.6 wolves per year over the last 5 years. Recently, managers from the NPS and State of Alaska have discussed viable ways in which wolves with home ranges in the preserve could be spared from intensive management actions when located outside the Yukon-Charley boundary. These discussions, while still ongoing, have resulted in a new sense of collaboration and problem solving to help protect Yukon-Charley wolf packs in the future.

Wildlife Management

There are several important challenges to wildlife management in Yukon-Charley. The preserve is always striving to assemble sufficient data on wildlife populations needed to meet ANILCA's mandates of protecting habitat for and populations of fish and wildlife, providing for subsistence, protecting resources related to subsistence needs, allowing sport hunting and trapping, and providing for non-consumptive uses. While some scientific data on these species and issues exists, a greater understanding of park wildlife populations and ecosystems would increase confidence in manager's judgments about these issues, allow for more engagement with stakeholders, and provide the ability to plan and respond to change in more effective and proactive ways.

While aerial surveys and monitoring are conducted for caribou, moose, wolves, and Dall's sheep to determine population trends over time, more comprehensive data would better enable the preserve to respond to proposed state and federal wildlife regulatory proposals that affect wildlife resources, including the intensive management of predators outside Yukon-Charley's southern boundary. Yukon-Charley lacks critical wildlife data primarily because of the lack of funding for wildlife studies. Although the preserve is visited and utilized by local residents and sportsmen, the preserve does not generate user fees. For many national park units, user fees help augment wildlife and other research projects.

Additional challenges stem from divergent preserve uses including subsistence hunting and gathering, recreational boating, wildlife watching, and sport hunting and trapping. Some of these uses can be at odds with others, depending on the location and season of the year, which presents management challenges of mitigating the effects of these activities on natural resources, as well as mitigating the impacts of the different user groups on each other's activities.

Other challenges relating to wildlife management are appropriate staffing to provide for the logistics of permitting guided hunts and enforcement of wildlife regulations over the park's 2.5 million acres.

What more can the park do about the issue?

Yukon-Charley continues to support wildlife projects in order to better respond to proposed wildlife actions and to protect habitat for and populations of fish and wildlife. Protecting habitat for and populations of fish and wildlife is a critical value of the preserve, and a central tenet of ANILCA.

ANILCA also protects resources related to subsistence needs, provides for subsistence use by rural residents of Alaska, and provides for guided and unguided sport hunting opportunities. Collaborating with Tribal governments, area residents, local rural communities, and wildlife advisory groups (both consumptive and non-consumptive users) will continue to be important facets of wildlife management in the preserve.

Wildland Fire

Fire is the major ecological process on the landscape in Yukon-Charley Rivers National Preserve. Episodic large and small-scale wildland fires burn across the preserve regularly. The preserve lies within the northern boreal forest ecological zone and a climatic region known as the interior basin. Mountains to the north and south tend to block moderating oceanic air masses, resulting in high temperatures, low precipitation, and frequent lightning occurrences in the summer months. Due to these factors, fire persists as an inextricable environmental factor and has been a constant force of change for thousands of years.

Yukon-Charley reveals a history of fire on its landscape, burned and unburned islands of vegetation—a fire mosaic. Patches of aspen and birch reveal recent burns while swaths of spruce indicate a lack of fire activity for 100–200 years. Without the routine occurrence of fire, organic matter accumulates, the permafrost table rises, and ecosystem productivity declines. Fire, the agent of change, removes some of the insulating organic matter, elicits a warming of the soil, and maintains and rejuvenates these systems. Wildfire plays an important role in maintaining diverse vegetation communities that are beneficial for wildlife habitat.

The preserve encompasses over 2.5 million acres, 95% of which is managed as a Limited Management Option. This category recognizes areas where the cost of fire suppression may exceed the value of the resources to be protected and the exclusion of fire may be detrimental to the fire-dependent ecosystem. The primary management strategies protect human life and specific resources and allow fire to play its natural role in the ecosystem. National Park Service, Eastern Area Fire Management staff manages these fires through routine surveillance, assessment, and monitoring.

What is the park doing about the issue?

Historically, the boreal forest zone recovery rate between large wild fires has been relatively slow; spruce and reindeer lichen may require 100–150 years to recover. Now that the interval time between large fires appears to be decreasing, the forests within the preserve boundaries are changing. Less time in between fires means less plant succession from broadleaf forest to the climax stage of white or black spruce, which means the wildlife that inhabit a spruce forest environment may find survival more challenging in the future. Managers will continue to monitor wildfires. In the future, managers may need to suppress more fire to help protect the natural and cultural values for which the preserve was established.

Logistical Challenges

Working in a remote and roadless preserve presents unique logistical challenges. Fieldwork in Yukon-Charley is often hampered by high costs of access and supplies, poor weather, and lack of park infrastructure. The preserve struggles with staff recruitment and retention due its remote nature and subarctic climate, lack of housing, difficulty in hiring of local residents due to low federal wages (compared to the high cost of living in remote Alaska), and slow and expensive telecommunications.

Since 2006, Yukon-Charley has used creative arrangements for basing certain operations (e.g., aviation management, law enforcement, science, administration) in Fairbanks to help offset turnover and costs (especially in Eagle), but this strategy adds to the time, distance, weather, and economic challenges of working in a vast, landscape-scale conservation unit with needs for resource monitoring, resource protection, and public use facilitation.

What is the park doing about the issue?

Yukon-Charley will continue to utilize shared employee arrangements, basing its administrative, logistical, and other support services out of Fairbanks. This approach will help offset high turnover rates and the lack of housing and other infrastructure near the preserve itself.

Preserve Access Challenges

Access to and through Yukon-Charley creates both management and user challenges. Yukon-Charley can be accessed only by water (Yukon River) or air. This allows visitors and users to access the park in a limited number of ways. In winter, access can be more complicated; a right-of-way (ROW) that travelers on foot, dog sled, or snowmobile use to reach the preserve from the east crosses private Native lands and a private inholding. The 17(b) easement (Alaska Native Claims Settlement Act, 43 U.S.C. 1616(b)) in question is near Six-Mile Bend of the Yukon River. The ROW comprises approximately fourteen miles of trail. Travelers currently using the easement are technically in trespass on private property for two of the fourteen miles of trail.

What is the park doing about the issue?

A recognized challenge for the preserve is to acquire the 17(b) easement where it crosses private Native and inholder lands, or to trade or reconfigure public access near Six-Mile Bend of the Yukon River. In the meantime, preserve managers are respectfully negotiating with Native Corporation neighbors and the private landowner to maintain public access to the preserve during the winter.

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See the [State of the Park Report for the Park website](#) for a more complete list of references to documents and data sets upon which the assessments in this State of the Park report are based. References for several of the key documents cited in this report are as follows:

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See Also:

[Collection of Natural Resource-Related References](#)

[Collection of Cultural Resource-Related References](#)

[Collection of Visitor Experience-Related References](#)

Glossary

See the [State of the Parks home page](#) for a link to a complete glossary of terms used in State of the Park reports. Definitions of key terms used in this report are as follows:

Key Term	Definition
Americans with Disabilities Act (ADA) and American Barriers Act (ABA)	Laws enacted by the federal government that include provisions to remove barriers that limit a disabled person's ability to engage in normal daily activity in the physical, public environment.
Archeological Sites Management Information System (ASMIS)	The National Park Service's standardized database for the basic registration and management of park prehistoric and historical archeological resources. ASMIS site records contain data on condition, threats and disturbances, site location, date of site discovery and documentation, description, proposed treatments, and management actions for known park archeological sites. It serves as a tool to support improved archeological resources preservation, protection, planning, and decision-making by parks, centers, regional offices, and the national program offices.
Baseline Documentation	Baseline documentation records the physical condition of a structure, object, or landscape at a specific point in time. A baseline provides a starting point against which future changes can be measured.
Central Alaska Network (CAKN)	One of 32 I&M networks established as part of the NPS Inventory and Monitoring Program . The Central Alaska Network provides scientific data and expertise for natural resources in three parks, Denali National Park and Preserve, Yukon-Charley Rivers National Preserve and Wrangell-St. Elias National Park and Preserve located in the interior Alaska Range, eastern Alaska bordering Yukon Territory, Canada and southeastern Alaska bordering Yukon Territory and British Columbia, Canada.
Cultural Landscapes Inventory (CLI)	A Cultural Landscapes Inventory describes historically significant landscapes within a park. The inventory identifies and documents each landscape's location, size, physical development, condition, characteristics, and features, as well as other information useful to park management.
Cultural Landscape Report (CLR)	A Cultural Landscape Report is the principal treatment document for cultural landscapes and the primary tool for long-term management of those landscapes. It guides management and treatment decisions about a landscape's physical attributes, biotic systems, and use when that use contributes to historical significance.
Curation	National parks are the stewards of numerous types of objects, field notes, publications, maps, artifacts, photographs, and more. The assemblage of these materials comprises a museum collection. Curation is the process of managing, preserving, and safeguarding a collection according to professional museum and archival practices.
Facility Condition Index (FCI)	FCI is the cost of repairing an asset (e.g., a building, road, bridge, or trail) divided by the cost of replacing it. The lower the FCI number, the better the condition of the resource.
Foundation Document	A park Foundation Document summarizes a park's purpose, significance, resources and values, primary interpretive themes, and special mandates. The document identifies a park's unique characteristics and what is most important about a park. The Foundation Document is fundamental to guiding park management and is an important component of a park's General Management Plan.
Fundamental and Other Important Resources and Values	Fundamental resources and values are the particular systems, processes, experiences, scenery, sounds, and other features that are key to achieving the park's purposes and maintaining its significance. Other important resources and values are those attributes that are determined to be particularly important to park management and planning, although they are not central to the park's purpose and significance. These priority resources are identified in the Park Foundation Document and/or General Management Plan. The short-cut name that will be used for this will be Priority Resources.
General Management Plan (GMP)	A General Management Plan is a strategic planning document that outlines the future management of a National Park Service site for the next 15 to 20 years. The plan will set the basic philosophy and broad guidance for management decisions that affect the park's resources and the visitor's experience.

Key Term	Definition
Historic Integrity	Historic Integrity is the assemblage of physical values of a site, building, structure, or object and is a key element in assessing historical value and significance. The assessment of integrity is required to determine the eligibility of a property for listing in the National Register.
Historic Resource Study (HRS)	The historic resource study is the primary document used to identify and manage the historic resources in a park. It is the basis for understanding their significance and interrelationships, a point of departure for development of interpretive plans, and the framework within which additional research should be initiated.
Historic Structures Report (HSR)	The historic structure report is the primary guide to treatment and use of a historic structure and may also be used in managing a prehistoric structure.
Indicator of Condition	A selected subset of components or elements of a Priority Resource that are particularly “information rich” and that represent or “indicate” the overall condition of the Priority Resource. There may be one or several Indicators of Condition for a particular Priority Resource.
Integrated Resource Management Applications (IRMA)	The NPS-wide repository for documents, publications, and data sets that are related to NPS natural and cultural resources.
Interpretation	Interpretation is the explanation of the major features and significance of a park to visitors. Interpretation can include field trips, presentations, exhibits, and publications, as well as informal conversations with park visitors. A key feature of successful interpretation is allowing a person to form his or her own personal connection with the meaning and significance inherent in a resource.
Invasive Species	Invasive species are non-indigenous (or non-native) plants or animals that can spread widely and cause harm to an area, habitat, or bioregion. Invasive species can dominate a region or habitat, out-compete native or beneficial species, and threaten biological diversity.
List of Classified Structures (LCS)	LCS is an inventory system that records and tracks the condition of the approximately 27,000 historic structures listed in the National Register of Historic Places that are the responsibility of NPS.
Museum Collection	NPS is the steward of the largest network of museums in the United States. NPS museum collections document American, tribal, and ethnic histories; park cultural and natural resources; park histories; and other aspects of human experience. Collections are managed by professionally-trained NPS staff, who ensure long-term maintenance of collections in specialized facilities.
National Register of Historic Places (NRHP)	The National Register of Historic Places is the official list of the Nation’s historic properties worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service’s National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America’s historic and archeological resources. Listing in the National Register of Historic Places provides formal recognition of a property’s historical, architectural, or archeological significance based on national standards used by every state. The National Register is a public, searchable database about the places.
Native American Graves Protection and Repatriation Act (NAGPRA)	A federal law passed in 1990. NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items (e.g., human remains, funerary objects, sacred objects, objects of cultural patrimony) to lineal descendants and culturally-affiliated Indian tribes and Native Hawaiian organizations.
Natural Resource Condition Assessment (NRCA)	A synthesis of existing scientific data and knowledge, from multiple sources, that helps answer the question: what are current conditions of important park natural resources? NRCAs provide a mix of new insights and useful scientific data about current park resource conditions and factors influencing those conditions. NRCAs have practical value to park managers and help them conduct formal planning and develop strategies on how to best protect or restore park resources.
Off-Road Vehicle (ORV)	Includes All-Terrain Vehicles (ATV) and Off-Highway vehicles (OHV).

Key Term	Definition
Priority Resource or Value	This term refers to the Fundamental and Other Important Resources and Values of a park. These can include natural, cultural, and historic resources as well as opportunities for learning, discovery, and enjoyment. Priority Resources or Values include features that have been identified in park Foundation Documents, as well as other park assets or values that have been developed or recognized over the course of park operations. Priority Resources or Values warrant primary consideration during park planning and management because they are critical to a park's purpose and significance.
Project Management Information System (PMIS)	A servicewide intranet application within the National Park Service to manage information about requests for project funding. It enables parks and NPS offices to submit project proposals to be reviewed, approved, and prioritized at park units, regional directorates, and the Washington Office.
Resource Management	The term "resources" in NPS encompasses the many natural, cultural, historical, or sociological features and assets associated with parks. Resource management includes the knowledge, understanding, and long-term stewardship and preservation of these resources.
Specific Measure of Condition	One or more specific measurements used to quantify or qualitatively evaluate the condition of an Indicator at a particular place and time. There may be one or more Specific Measures of Condition for each Indicator of Condition.
Wilderness	A designation applied to certain federal lands set aside for preservation and protection in their natural condition, in accordance with the Wilderness Act of 1964 .