



NATIONAL CONSERVATION LANDS

Alaska
2022: Annual Manager's Report

Steese National Conservation Area



Map



Introduction

The 1.22-million-acre Steese National Conservation Area (NCA) was designated by Congress through the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 to protect its outstanding values, particularly Birch Creek and important caribou habitat.

ANILCA section 401(a) establishes the NCA to provide for the immediate and future protection of these lands within the framework of multiple use and sustained yield for the maintenance of environmental quality. Birch Creek was also designated by Congress through ANILCA as wild pursuant to the Wild and Scenic Rivers Act. Birch Creek Wild and Scenic River (WSR) is 126 miles long with 77 miles flowing through the south unit of the Steese NCA.

Accomplishments

In fiscal year (FY) 2022 there was positive response to public outreach, organizations, and agencies to repair and reclaim off-highway vehicle (OHV) damage to the Pinnell Mountain National Recreation Trail (NRT). This outreach resulted in successful partnerships, great turnout for volunteer workdays, and successful efforts to repair, rebuild, and protect the trail from OHV use during busy caribou hunts.

Eastern Interior Field Office (EIFO) worked with Fairbanks District Office, Central Yukon Field Office, and other Bureau of Land Management (BLM) offices to manage and maintain recreation sites through very high use numbers during fall and winter caribou hunts.

The EIFO worked with the State of Alaska Department of Natural Resources to plan access routes for OHV's during the fall caribou hunt to minimize future impacts to the Pinnell Mountain NRT. The previous year's outreach and education efforts were effective in decreasing new adverse impacts caused by OHV's during the fall caribou hunt.

EIFO signed the record of decision for the Steese NCA Travel and Transportation Management Plan. EIFO began marking designated routes and signing boundary trails as first steps to implementing the plan.

In cooperation with the National Weather Service, the BLM hydrology staff continued operation and maintenance of a stream gage station at Birch Creek WSR Mile 0, BLM wayside area Steese Highway MP94, documenting streamflow and providing real-time water levels to the public for planning recreation float trips.

The EIFO water and aquatic resources staff worked cooperatively with the U.S. Geological Survey (USGS) to operate a stream gage at Birch Creek WSR Mile 126, upstream of the Birch Creek Bridge at Steese Highway MP147, documenting streamflow and providing water level, air temperature, and precipitation data to the public.

Seasonal water quality parameters were monitored at stream gage stations at Birch Creek WSR Mile 0 and Mile 126 using automated water quality meters during ice-free conditions, June-September.

Helicopter flyover missions were utilized to collect video and photograph documentation of aquatic habitat conditions. In June, BLM National Training Center (NTC) film crew members David Korzilius and Ryan Dent participated in a helicopter tour of Birch Creek WSR and the Steese NCA to collect photographs and video of landscape features and stressors for use in future BLM publications.

The Assessment, Inventory and Monitoring (AIM) of terrestrial habitats was successfully initiated in the Steese NCA with the inventory of 22 sites. All sites were remote and required access by helicopter. The riparian and wetlands protocol were utilized.

EIFO began working on the Birch Creek WSR comprehensive river management plan (CRMP). Decision record is expected to be signed in early FY24.



Figure 1. Early September scenic view of lower Birch Creek WSR.

Challenges

This year BLM continued habitat rehabilitation and public outreach in response to the OHV damage on the non-motorized Pinnell Mountain NRT that occurred during the Fortymile caribou hunt in the fall of 2020. EIFO capitalized on the successful outreach efforts from the previous year. This year EIFO participated in three in-person forums at Fort Wainwright to discuss hunting and access opportunities in Interior Alaska for Military personnel, families, and Department of Defense employees. During the summer of 2022, the BLM began installing permanent route markers and signage to educate the public on access opportunities.

EIFO staff and regional scientists are learning more about effective restoration methods in fragile tundra ecosystems. Plants in high alpine tundra ecosystems are typically slow growing. Lichen which are an important caribou food source typically grow less than 1 mm per year. It will likely take multiple decades to restore native vegetation to the areas that have been impacted and permafrost thaw may be permanent. In an effort to understand effectiveness in restoration efforts of the habitat adjacent to the Pinnell Mountain NRT, EIFO developed partnerships in 2021 with the University of Alaska and Salcha-Delta Soil and Water Conservation District. These partnerships are covered in more detail under the Partnership section of this report.

On August 24, 2018, the State of Alaska provided notice to the BLM of its intent to file a quiet title action to the submerged lands of Birch Creek WSR, designated by the BLM as non-navigable waters. The State of Alaska is asserting that title to these lands passed to Alaska at statehood based on the equal footing doctrine, the Submerged Lands Act, and the Alaska Statehood Act. A similar case, previously filed by the State of Alaska for portions of the Fortymile WSR, is currently working its way through the judicial system with the Department of Justice. Judicial navigability findings from the Fortymile WSR case, expected in 2023, could have impacts to future management of rivers on Federally Administered Lands in Alaska.

Visitors

Visitation in the Steese NCA decreased from last year's high visitor numbers, with an estimated 35,725 visits and 135,359 visitor days in FY2022 according to data from BLM's Recreation Management Information System. This is approximately a 2% decrease from the previous year. The decrease in visitors is likely linked to the decrease in the caribou harvest quota from the previous two years. Many Steese NCA visitors stay on the highway and enjoy the scenery from waysides during short visits. Others leave the highway to enjoy the NCA's undeveloped areas, where visitors generally stay a few days to a week.

The Steese NCA has become a prime destination for hunters seeking caribou, moose, sheep, bear, gamebirds, and waterfowl. Winter hunting and trapping are also common activities. The NCA sees its highest levels of visitation during the fall big-game hunts that attract hunters from many parts of the state and from around the world. This year, the BLM continued the hunter access outreach and education program that included contacting hunters near the highway to promote knowledge of the NCA and motor vehicle limitations. Patrolling the FY2022 caribou hunts along the Steese Highway, BLM staff made 480 outreach contacts.



Figure 2. Public outreach along the Pinnell Mountain NRT during hunting season.

Partnerships

This year EIFO continued established partnerships to respond to the damages from OHVs to the non-motorized Pinnell Mountain NRT that occurred during the August 2020 Fortymile caribou hunt. To understand successful techniques to restore alpine tundra habitats impacted by OHVs, EIFO continued partnerships with the University of Alaska and the Salcha-Delta Soil and Water Conservation District to restore the habitat and monitor the effectiveness of this work.

The University of Alaska, Fairbanks Geophysical Institute installed 36 additional temperature loggers at multiple depths to monitor changes in soil temperature through time along areas in the PMT that were disturbed by OHVs. High-resolution baseline imagery collected with a drone, allowing A ground surface profile (developed from baseline high-resolution imagery collected with a drone) will be used to monitor subsidence caused by permafrost degradation.

The Salcha-Delta Soil and Water Conservation District continued the second year of vegetation monitoring to measure success of reclamation measures and natural recovery of vegetation. Photo-points and vegetation cover transects previously established along the trail were revisited and condition documented.

The EIFO water and aquatic resources staff worked closely with the USGS Water Resource Division, National Weather Service's River Forecast Center, and Alaska Department of Environmental Conservation to inventory stream flow and monitor water quality and meteorological conditions in the Steese NCA. These collaborative working relationships benefit all cooperating agencies through data sharing and coordinated field logistics, significantly reducing individual agency costs for field-travel and equipment.

BLM collaborated with Alaska Department of Fish and Game and Yukon Environment to monitor Fortymile caribou distribution and movements (through satellite GPS collars), population condition and trend (including survival, parturition, animal condition, herd composition, and census). The BLM also continued a cooperative agreement with the Alaska Department of Fish and Game to facilitate those efforts. Results from this work are crucial to manage the State of Alaska caribou hunt and the Federal Subsistence Fortymile caribou hunt.

Science

In cooperation with the USGS and the National Weather Service, the BLM utilizes stream gauge stations to document water conditions on Birch Creek WSR providing real-time data to the public for planning recreational boating trips as well as monitoring flood hazards for public safety. The BLM continues to work with the Alaska Department of Environmental Conservation to better understand the extent to which natural versus anthropogenic sources contribute to elevated turbidity levels in Birch Creek WSR during high-water events. Erosion from land features disturbed by past mining activity in the upper Birch Creek WSR basin have been identified by the Alaska Department of Environmental Conservation as source areas contributing to increased turbidity, while the BLM has recently noted accelerated erosion in areas due to warmer annual temperatures resulting in instability and erosion of permafrost soils, which also contribute to elevated turbidity levels during high-water events.

In 2022, the EIFO water and aquatics staff monitored daily stream flow and water quality at the upstream (WSR Mile-0) and downstream extent (WSR Mile-126) of Birch Creek WSR utilizing automated stream gauge stations and automated multi-parameter water quality meters.

At the stream gauge station Birch Creek WSR Mile -0, peak water levels varied from 2.5 to 3 feet in late May to early June, associated with snowmelt and breakup of river ice. For July through August water levels were relatively low but stable between 1.0 to 1.5 feet. Storm events in early September resulted in increased water levels of 2 to 2.5 feet for several days. Stage of less than 1.0 foot is very low flow, meaning difficult floating, especially for large rafts (Figure 4). Stage of 2 feet is moderate flow --good float conditions. Water level data is available online to assist the public in planning float trips.

Timing of streamflow events recorded at the downstream monitoring station Birch Creek WSR Mile-126 were similar to those recorded at Birch Creek WSR Mile-0, but the magnitude of change in water levels was greater, by a factor of about two.

For 2022, from mid-June through September, recorded water quality at stream gauge station Birch Creek WSR Mile-0 is rated as good based on meeting Alaska Water Quality Standards for drinking water, except for elevated turbidity levels, which occurred periodically in early September during storm events. The Alaska turbidity standard for drinking water is “may not exceed” five (5) nephelometric turbidity units (NTU) and for aquaculture (fisheries) is “may not exceed” twenty-five (25) NTU above natural conditions.



Figure 3. Photograph of Upper Birch Creek at WSR Mile-0 showing float conditions at low water level 1.5 feet, with boaters lining inflatable canoes through shallow riffle section.

Two storms occurred in early September resulting in high-flows, September 5-16, where recorded daily mean turbidity values varied from 5 to 22 NTU, exceeding the Alaska drinking water standard a total of five days. For the 2022 open-water season period of record, 118 days, the daily mean turbidity was 1.4 NTU.

Continuous water quality data for 2022 is not available for the downstream monitoring station at WSR Mile-126 because equipment was vandalized. However, discrete turbidity measurements were recorded during site visits in early June (18 NTU) during high flows, and during low to moderate flows in August (3.3 NTU) and September, 3.4 NTU.

Water quality and quantity data are archived in the AQUARIUS time-series database on the BLM Alaska State Office server.

Stressors periodically contributing to Birch Creek WSR turbidity levels include debris slides, active and abandoned placer-mined areas as well as soil instability and erosion associated with melting permafrost.

Caribou Studies

EIFO continued collaboration with University of Montana to understand caribou and their use of the landscape through a Cooperative Agreement, in collaboration with Northern Arizona University, Alaska Department of Fish and Game, Yukon Environment, and National Park Service. Three additional papers were completed this year as a result of these collaborations, with additional works in process:

Spatial Behavior, Foraging, And Population Dynamics Of A Subarctic Ungulate. Ehlers, Elizabeth Parr Williamson. 2022. Graduate Student Theses, Dissertations, & Professional Papers. 11965. <https://scholarworks.umt.edu/etd/11965>

Discrete-Choice Models Reveal Density-Dependent Tradeoffs in Summer Foraging Choices for a Large Subarctic Herbivore. Ehlers, Libby; Palm, Eric; Herriges, Jim; Bentzen, Torsten ; Suitor, Mike; Joly, Kyle; Millspaugh, Joshua; Donnelly, Patrick; Gross, Jeffrey; Wells, Jeff; Hebblewhite, Mark. *In Revision*

Plant functional type aboveground biomass change within Alaska and northwest Canada mapped using a 35-year satellite timeseries from 1985 to 2020. 2022. Kathleen M Orndahl, Matthew J Macander, Logan T Berner and Scott J Goetz. Environmental Research Letters. <https://doi.org/10.1088/1748-9326/ac9d50>

A new study examining genetic relationships between nine caribou herds in eastern Alaska and Yukon Territory which surround the Fortymile caribou herd, including the White Mountains caribou herd, was prepared and submitted to a journal for publication. The small White Mountains caribou herd range is centered in the White Mountains National Recreation Area (NRA) and north unit of the Steese NCA. Prior to the late 1960s, the much larger Fortymile herd calved in this area, and over the last two decades has used this area heavily during late summer through winter. Despite a long history of shared range use, including during the fall rut, the White Mountains herd has somehow remained genetically distinct from the Fortymile herd and other regional herds studied.

Population genetics of caribou in the Alaska-Yukon border region: implications for designation of conservation units. Karen H. Mager, Michael J. Suitor, Thanh Khoa Nguyen, My Hoang, Jim Herriges, Jeff Stetz, and Kelsey L. Russell. *In Review.*



Figure 4. Caribou running on a ridge in alpine tundra with fall colors.

Climate Impacts

Thawing Permafrost

Much of Interior Alaska is underlain by discontinuous permafrost—frozen ground with highly variable ice content that restricts water drainage and strongly influences landscape water balance as well as the design and maintenance of infrastructure. Permafrost thaw results in the settling and/or slumping of soil and is one of the serious impacts of a warming climate in Alaska.

Increased surface erosion associated with thawing permafrost and melting ground ice results in thermokarst development in low gradient areas and increased thermal erosion on hill slopes. Detachments of seasonally thawed permafrost hill-slope areas and accelerated erosion of ice-rich river embankments are evident in the lower reaches of Birch Creek WSR, shown in figures 5 and 6.



Figure 5. Photograph of lower Birch Creek showing accelerated erosion of permafrost bank in June 2022. A recreation group and boats near base of embankment, provides scale.



Figure 6. Streamside photograph showing unstable embankment, melting permafrost area, lower Birch Creek WSR, June 2022.



Figure 7. Highly turbid, dark brown inflow from permafrost-rich tributary, top center of photograph, entering main channel of lower Birch Creek WSR. The flow is from right to left side of photograph, July 2020.

Climate Resiliency

There are no long-term climate data for the Steese NCA. However, as discussed in Wendler and Shulski (2009), global climate change is observed to be magnified in the polar regions, including Interior Alaska. These regions are more sensitive to change mainly due to the snow albedo feedback. As warming leads to a reduction of the snow and ice cover that is highly reflective to solar energy, it exposes more of the darker underlying surface that has lower albedo (reflectivity). The darker surface absorbs more of solar energy leading to further warming of the surface and greater snow and ice retreat.

Wendler and Shulski¹ (2009) reported most of the warming in Interior Alaska since 1976 has occurred in winter, approximately 8 degrees Fahrenheit (F), and spring, about 5 degrees F, with the least amount of change in autumn (0.2 degrees F). They also found precipitation decreased in Interior Alaska by about 11 percent, which they noted is not statistically significant; however, it was a somewhat counter-intuitive result, as warmer air can hold more water vapor.

The Steese NCA is situated in close proximity to other public lands managed by the U.S. Fish and Wildlife Service and the National Park Service. Yukon Flats National Wildlife Refuge is to the North of the Steese NCA and Yukon-Charley National Park and the Fortymile Wild and Scenic River is to the East. The White Mountains NRA managed by BLM is to the west of the Northern Steese unit. The White Mountains NRA is not part of the National Landscape Conservation System, however it is a large swath of land that is mostly undisturbed to the west of the Steese NCA and contains the Beaver Creek WSR. Managing the Steese NCA as part of the larger landscape provides connectivity for the flora and fauna that make up the Northern Boreal ecosystem, provides greater ecosystem services and allows more options for transition to a sustainable state under future climate conditions.

EIFO completed the Travel Management Plan (TTMP) for the Steese NCA simultaneously with the adjacent White Mountains NRA TTMP. These TTMPs were the first two completed in Alaska since the 2016 travel management regulation was published. During preparations of this plan, different alternatives were developed that balanced providing access to the public and minimizing landscape fragmentation. In response to input from the State of Alaska, a cooperating agency, EIFO worked extensively to address access concerns in an additional alternative in the environmental assessment. Implementation of this plan is expected to minimize landscape

¹ Wendler, G. & Shulski, Martha. (2009). *A Century of Climate Change for Fairbanks, Alaska*. ARCTIC. 62. 10.14430/arctic149.

fragmentation within the unit by changing some management areas from limited to cross country with weight and width restrictions travel to restricting travel to designated routes with weight and width restrictions.

Social and Environmental Justice

In FY2022 BLM worked with Alaska Department of Fish and Game and National Park Service to provide additional opportunities for Federally qualified subsistence users to hunt caribou on public lands. The field office manager set the Federal fall subsistence hunt for Fortymile and White Mountains caribou to open nine days earlier than the State of Alaska general season and allow two bull caribou to be taken (vs. one under State regulations). The winter season harvest limit under both State and Federal regulations was initially set to one caribou, but Federal subsistence harvest limit was later increased to two caribou. In addition, after State seasons were closed in some hunt zones to stay within reduced harvest quotas, Federal subsistence seasons remained open for the duration of each season. These measures provided additional harvest opportunities to rural communities impacted by complete salmon harvest closures on the Yukon River.



Figure 8. Group of Fortymile Caribou herd forage on the hillside where wind helps to expose the lichen rich tundra below.

Events

In February 2022, the Yukon Quest International Sled Dog Race, decided to conduct the Alaska and Canada races separate again. The course was modified, shortening the race to 550 miles. The course started in Fairbanks, Alaska passing through the Steese NCA and Birch Creek WSR to the Yukon River, and finishing in Fairbanks, Alaska. Checkpoints along the course provide rest, safety, and welfare checks for dogs and mushers. BLM sites along the Steese Highway and in Central are important for the success of the event and the safety of the competitors.

During summer 2022 EIFO hosted a volunteer trail work event on the Pinnell Mountain NRT for National Trails Day. Volunteers worked with BLM to reinforce boardwalk, seed and fertilize denuded areas, pick up trash, and remove temporary signs. Local groups such as Interior Alaska Trails and Parks Foundation, Resident Hunters of Alaska, Backcountry Hunters and Anglers, and local hiking groups helped recruit and feed volunteers to make the volunteer events a success.



Figure 9. Volunteers test the strength of the boardwalk after reinforcing it.



**NATIONAL
CONSERVATION
LANDS**

Steese

National Conservation Area

Fairbanks District Office
Bureau of Land Management
Eastern Interior Field Office
222 University Avenue
Fairbanks, AK 99709
Phone: 909-474-2200

<https://www.flickr.com/photos/blmalaska/albums/72157662274586342>

**Report compiled by: Teri Balser, Public Affairs Specialist
Tim Hammond, Field Manager/SNCA Manager
Jim Herriges, Wildlife Biologist
Ben Kennedy, Hydrologist
Levi Lewellyn, Assistant Field Manager**

The mention of company names, trade names, or commercial products does not constitute endorsement or recommendation for use by the federal government.