

Manifestly Insignificant Developments in Nahanni National Park Reserve: Annual Resource Conservation Operational Activities

Parks Canada is making the determination of "manifestly insignificant" concerning the following developments, pursuant to the *Mackenzie Valley Resource Management Act* section 124 (2)(a). Consequently, a preliminary screening is not required for these developments.

Development Description:

Parks Canada Resource Conservation staff conduct annual operational activities in Nahanni National Park Reserve (NNPR) (i.e., undertakings as per the *Mackenzie Valley Resource Management Act*) at locations throughout NNPR (**Figures 1 and 2**). These annual activities involve the monitoring and research of ecosystem components and ecological integrity in NNPR.

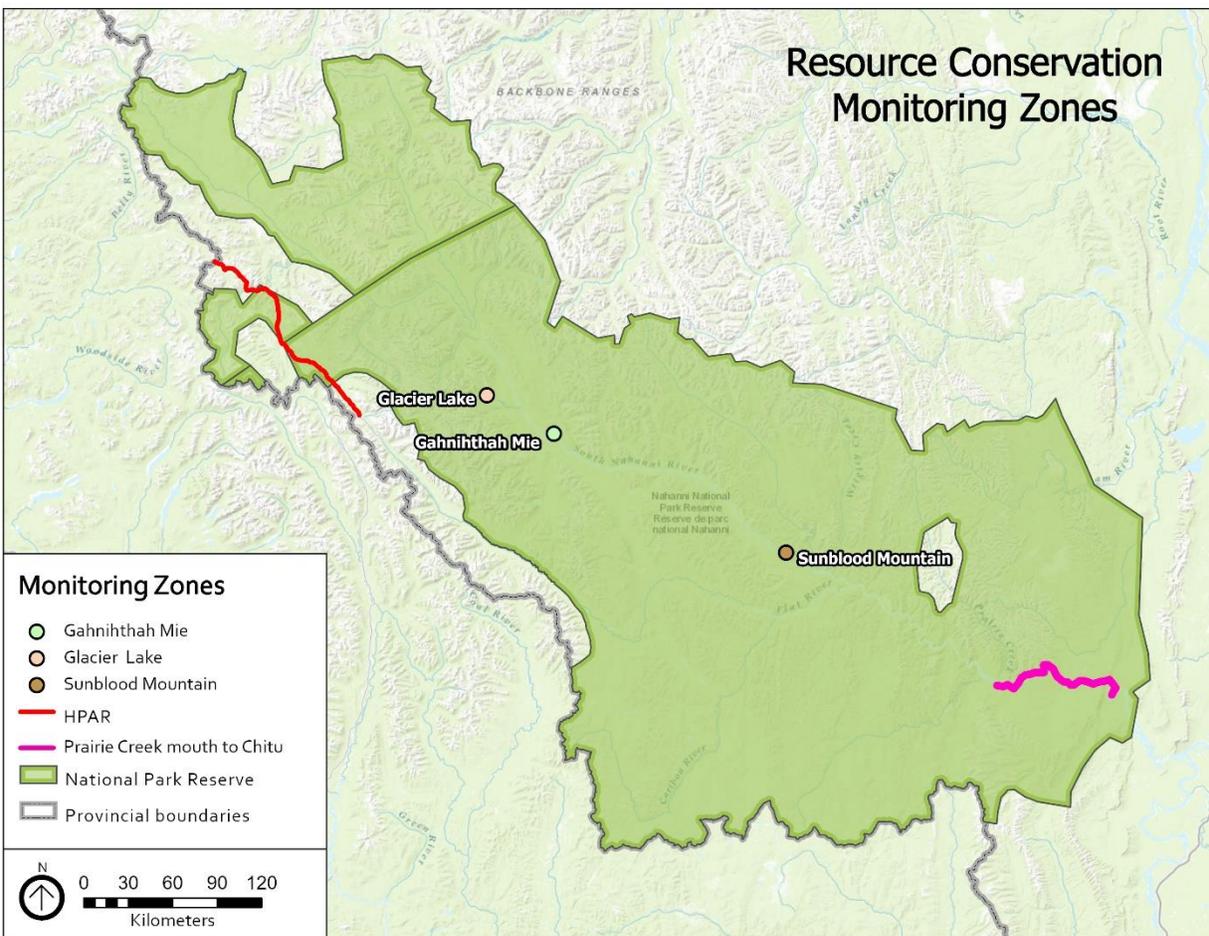


Figure 1: Locations of monitoring zones within Nahanni National Park Reserve.

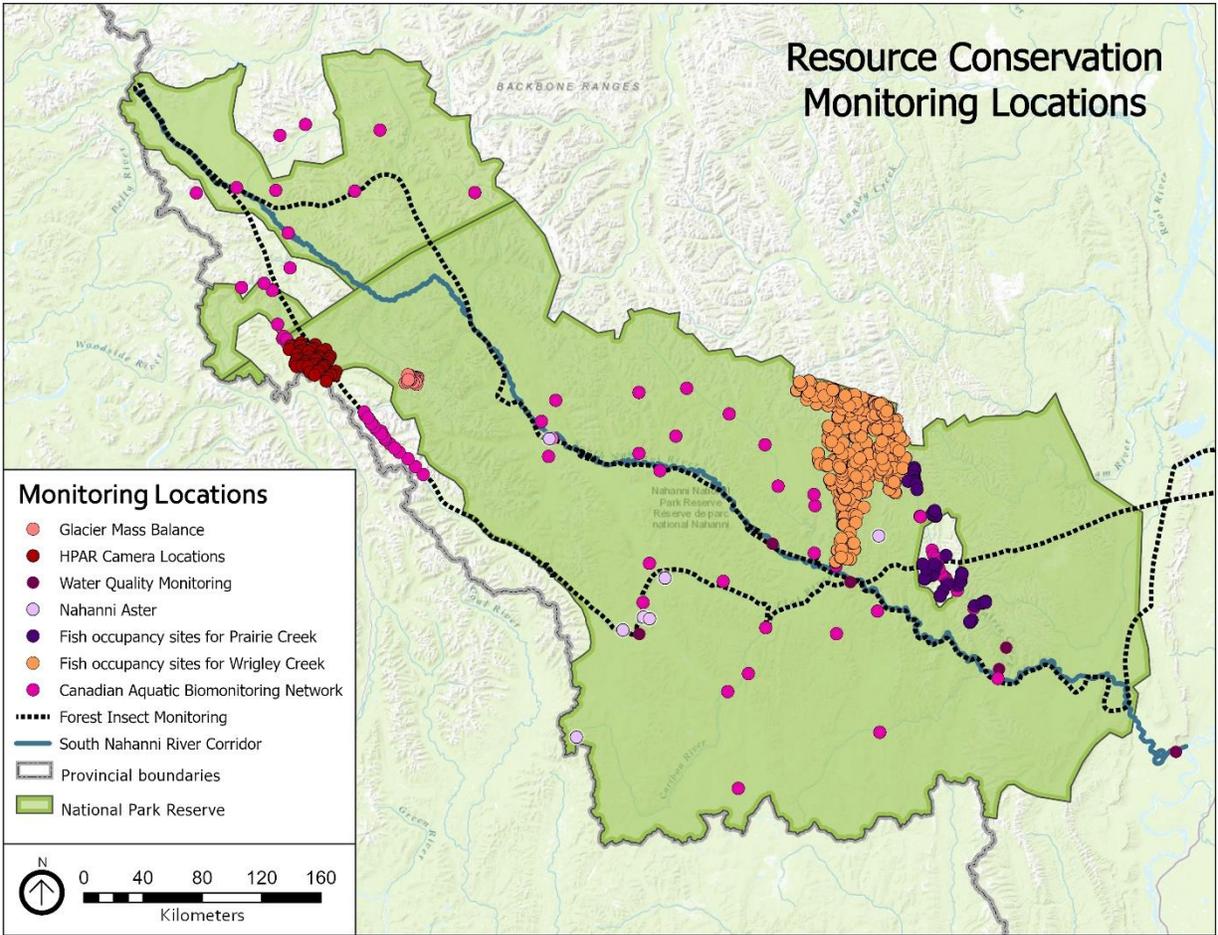


Figure 2: Locations of monitoring sites for forest insect, water quality, CABIN, fish occupancy, and Nahanni Aster measures.

Development Rationale:

The annual Resource Conservation operational activities of NNPR are consistent with direction in the Parks Canada mandate and charter (Appendix A) and the *Nahanni National Park Reserve Management Plan* (2021) to protect the ecological integrity of NNPR. In particular, the management plan's key strategies "Nah?ą Dehé K'eodhi – Taking Care of Nah?ą Dehé" and "Yundáa Gogha Tu K'ehodí - Waters for Life" provide three objectives related to Resource Conservation:

- **Objective 3.1:** Ecological integrity of Nah?ą Dehé is maintained without significant impact from resource development projects;
- **Objective 3.3:** The sustainability of the ecological integrity monitoring program is improved;
- **Objective 4.2:** The water quality of Nah?ą Dehé is maintained.

Development Activities:

Ecological Integrity Monitoring

To improve the sustainability of the ecological integrity monitoring program, NNPR has established monitoring zones (**Figure 1**) that allow for monitoring of a variety of ecological integrity measures from a centralized basecamp within each zone. Monitoring is conducted at four zones per year on a rotating basis. Basecamps are accessed by aircraft (floatplane or helicopter), jet boat, ATV or truck, while monitoring sites within zones are typically accessed on foot and/or canoe. Each monitoring trip is typically conducted by 2-4 NNPR staff over a 5 to 10-day period between mid-June and mid-September. Staff accommodation is tent camping or in park cabins. Current monitoring measures assessed in each zone include:

- Forest Birds
 - Automated recording units (ARUs) are deployed within each monitoring zone to assess changes in community composition and activity.
 - The data is also used by Environment and Climate Change Canada (ECCC) to contribute to regional monitoring.
- Bats
 - To monitor bat species occupancy and activity, ARUs are deployed in each monitoring zone in accordance with North American Bat protocols and Parks Canada's National Bat Monitoring Guidelines.
- Invasive species
 - Pullouts along the Howard's Pass Access Road and disturbed areas in each of the monitoring zones are surveyed on foot for invasive plants.
 - Staff record patch perimeters, and collect a voucher specimen of each invasive plant species identified.
- Hydrology
 - Depth loggers are deployed in suitable creek locations to monitor water levels.
- Ice phenology
 - Remote cameras and loggers are deployed near (cameras) or within (loggers) waterbodies (e.g., lakes, creeks, and rivers) to monitor the timing of ice-on and off and water temperature.

The following additional measures are currently in development:

- Collared Pika
 - This activity is currently being conducted annually or biennially as permanent monitoring locations are established in alpine areas.
 - Staff hike on talus slopes and record observations of pika and pika sign (haypiles, latrines, etc.).
 - Temperature loggers may be deployed within talus patches.
- Alpine Vegetation
 - This activity will be conducted annually or biennially in July as permanent monitoring plots are established in alpine/subalpine areas in NNPR; thereafter it is expected that revisits will occur less frequently.
 - In 2021, multiple quadrat assessment methods are being tested within alpine/subalpine areas in NNPR. It is expected that a method will be chosen from these to become the standard for monitoring alpine/subalpine vegetation in NNPR.
 - Staff will be placing quadrat clusters (four 1m² quadrats) at 20m elevation intervals along transect lines that cover 100m of elevation change in the alpine/subalpine zone.

- Staff will mark the corners of the sampling plots (quadrat clusters), and the corners of each individual quadrat with composite stakes.
- Staff will measure ground cover within the plot, including graminoid, bryophyte, lichen, shrub, forb and rock cover.
- Staff will record frequency of vascular plants within the plot
- Staff will record height of select shrubs within the plot
- Plant specimens are collected as necessary to identify unknown species and create a voucher collection for the park; collections of unknown or potential rare species follow ASPB best practices.
- Remote cameras will be deployed to monitor the timing of vegetation green-up and brown-down, complete snow cover, last day of snow cover and approximate snow depth.
- Large Mammals
 - This activity is being conducted on the Howard's Pass Access Road, as well as on hiking and game trails within each monitoring zone, to assess whether scat can be used as an index of large mammal activity.
 - Staff conduct scat transects, recording the species and location of each scat pile encountered.

Five monitoring measures cannot be monitored exclusively within the monitoring zones and require additional aircraft access (**Figure 2**). The development activities for these measures are as follows:

- Forest Insect Monitoring
 - This is an aerial survey completed by staff from the Canadian Forest Service and Parks Canada in a fixed-wing aircraft.
 - The survey follows the major river valleys in NNPR at heights between 300 m to 1000 m above ground level. Landing is required to re-fuel the aircraft, typically at Tungsten NWT if a wheeled aircraft is used, or within NNPR if a float plane is used.
- Water Quality Monitoring
 - Staff travel to monitoring locations within the South Nahanni watershed by helicopter.
 - Monitoring takes place 3 times annually in June, September, and March.
 - Site access is by helicopter, which lands on a gravel bar proximal to each sampling location.
 - At each location, staff collect several litres of water samples (grab samples).
 - During the March sampling, a battery-powered ice auger is required to drill a hole in the ice surface.
- Canadian Aquatic Biomonitoring Network (CABIN)
 - Monitoring following ECCC's national CABIN protocol takes place annually at streams within the South Nahanni watershed between late August and early September.
 - Site access is by helicopter, which typically lands on a gravel bar in close proximity to the monitoring location (stream reach).
 - At each monitoring site, staff wade into the main flow of the stream to collect a benthic invertebrate sample using a kick-net, collect water samples, measure stream flow and other site parameters. Benthic samples are preserved in 10% buffered formalin.
 - The project is being reviewed to determine whether the number of sites can be reduced going forward.
- Fish occupancy

- Bull trout occupancy is monitored at sites within the Prairie Creek watershed using environmental DNA (eDNA), in partnership with Fisheries and Oceans Canada (DFO). In 2021, the program will be expanded to the Wrigley Creek watershed as a control area (i.e., lacking upstream developments).
- Currently, monitoring occurs on an annual basis but the frequency will decrease once sufficient baseline data has been collected, as the project becomes part of the monitoring zone trips.
- Site access is by helicopter, which lands on a gravel bar proximal to each sampling location. Samples are filtered from several litres of water and shipped to DFO for analysis.
- Nahanni Aster
 - All known populations of Nahanni Aster were surveyed in a dedicated trip in 2019. Going forward, surveys will be conducted during regular trips to monitoring zones.
 - Access to sites is by helicopter, which lands on a predetermined location outside of Nahanni Aster patches.
 - Staff record patch perimeters on foot and perform aster counts at permanent plots to estimate the population of each site. Water characteristics and weather are measured with handheld meters.
- Glacier mass balance
 - Natural Resources Canada and park staff travel to Bologna Glacier twice per year in May and August.
 - The base camp below the foot of the glacier is accessed via helicopter, and monitoring sites are subsequently reached on foot. At each site, a metal stake is drilled into the ice surface to measure the amount of snow or ice that builds up or melts in each location.
 - A weather station on a nunatak collects data on temperature, wind, and precipitation.

Wildlife research¹

NNPR is participating in a regional woodland caribou (Northern Mountain population) genetics research project. The development activities associated with this project are as follows:

- Caribou fecal pellet collections
 - This activity typically takes place every 1-3 years in the winter.
 - Staff survey the ground from a helicopter for signs of caribou (tracks, cratering).
 - Locations with sufficient sign and an appropriate landing spot are identified opportunistically and visited.
 - Staff collect caribou fecal pellets for genetic analysis.
 - If caribou are located during the aerial survey, a collection location is selected >200m away from animals to minimize disturbance.
 - Note: staff also collect fecal pellets opportunistically on monitoring zone trips when fresh pellets are encountered.

¹ The remote (trail) camera study on the Howard's Pass Access Road (HPAR) which requires annual visits to camera locations for maintenance (light brush clearing to maintain sight lines, battery and memory card replacement) does not require a preliminary screening under the MVRMA under Schedule 2, exemption 5 (Exemption List Regulations).

Determination of "manifestly insignificant":

It is Parks Canada's opinion that the impact of these developments (annual Resource Conservation operational activities) on the environment is manifestly insignificant because:

1. Research and monitoring activities are developed in conjunction with the Nahʔą Dehé Consensus Team;
2. The majority of activities are below thresholds required by authorizations within national parks. In the cases where authorization would be required under the MVRMA (*Preliminary Screening Requirement Regulations: National Parks General Regulations*, section 11(1) - "taking of flora or natural objects for scientific purposes"), Parks Canada has determined that collection for the purposes of its Ecological Integrity Monitoring Program (EIMP), as described in this rationale, does not require permitting. The EIMP undergoes thorough evaluation by peer or external parties, and by the Consensus Team. It is designed specifically to enhance knowledge of the park's ecosystems. The amount of collection required has been deemed insignificant and will not have any adverse effects on ecological integrity.
3. Research and monitoring activities including minor collection are designed to monitor the ecological integrity of NNPR in a scientifically defensible manner; as such they use recognized methods and best practices for ecological monitoring and collection, and are developed in conjunction with subject-matter experts. For vegetation monitoring, plant specimens are collected only as necessary to identify unknown species and create a voucher collection for the park; collections of unknown or potential rare species follow Alberta Native Plant Council best practices². For CABIN monitoring, the transfer is completed away from the water body.
4. Park staff follow "Leave No Trace" camping etiquette when staying at park cabins and when camping (e.g.: grey water is strained before disposal, all garbage is packed out or completely burnt (if organic), where no pit privies or outhouses/composting toilets are available waste is buried in "cat-holes" away from aquatic environments, and personal hygiene products/used toilet paper are packed out with the garbage). Waste from outhouses and composting toilets is slung out of the park by helicopter and disposed of at the sewage lagoon in Fort Simpson.
5. Use of fixed and rotary wing aircraft follow Parks Canada's *Best Management Practice for Aircraft Operations and Landings in Nahanni and Nááts'ihch'oh National Park Reserves of Canada*, which includes mitigations for disturbance of wildlife and fuel storage/spill clean-up considerations.

² Alberta Native Plant Council Plant Collection Guidelines for Students, Researchers and Consultants (2006). http://anpc.ab.ca/wp-content/uploads/2015/01/researchers_students.pdf

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Appendix A: The Parks Canada mandate and charter

Mandate

On behalf of the people of Canada, we protect and present nationally significant examples of Canada's natural and cultural heritage, and foster public understanding, appreciation and enjoyment in ways that ensure the ecological and commemorative integrity of these places for present and future generations.

Our Role

We are guardians of the national parks, the national historic sites and the national marine conservation areas of Canada.

We are guides to visitors from around the world, opening doors to places of discovery and learning, reflection and recreation.

We are partners building on the rich traditions of our Aboriginal people, the strength of our diverse cultures and our commitments to the international community.

We are storytellers recounting the history of our land and our people - the stories of Canada.

Our Commitments

To protect, as a first priority, the natural and cultural heritage of our special places and ensure that they remain healthy and whole.

To present the beauty and significance of our natural world and to chronicle the human determination and ingenuity which have shaped our nation.

To celebrate the legacy of visionary Canadians whose passion and knowledge have inspired the character and values of our country.

To serve Canadians, working together to achieve excellence guided by values of competence, respect and fairness