Nahanni National Park

2020 Conservation Outlook Assessment

SITE INFORMATION

Country: Canada
Inscribed in: 1978
Criteria: (vii) (viii)

Located along the South Nahanni River, one of the most spectacular wild rivers in North America, this park contains deep canyons and huge waterfalls, as well as a unique limestone cave system. The park is also home to animals of the boreal forest, such as wolves, grizzly bears and caribou. Dall's sheep and mountain goats are found in the park's alpine environment. © UNESCO

SUMMARY

2020 Conservation Outlook

Finalised on 02 Dec 2020

GOOD WITH SOME CONCERNS

The geological features of the site and its outstanding scenic beauty have been well preserved and remain in a good condition. Protection and management of the site is mostly effective and therefore the Outstanding Universal Value of the site can be expected to remain in good condition. The main threats facing the site are climate change and water pollution; the latter as result of mining activities located outside of both the World Heritage site and the wider Nahanni National Park Reserve boundaries. With robust regulatory frameworks in place, the impacts on the site can be anticipated to be mitigated but concerns for their potential individual and cumulative impacts persist.
FULL ASSESSMENT

Description of values

Values

World Heritage values

► Exceptional natural beauty

Nahʔą Dehé (the South Nahanni River) is one of the most spectacular wild rivers in North America, with deep canyons, huge waterfalls, and spectacular karst terrain, cave systems and hot springs. Exposure of geologic and geomorphologic features includes the meanders of ancient rivers, now raised high above present river levels (World Heritage Committee, 2018).

► Exceptional representation of on-going geological processes

In Nahanni National Park, there is exceptional representation of on-going geological processes, notably fluvial erosion, tectonic uplift, folding and canyon development, wind erosion, karst and pseudo-karst landforms, and a variety of hot springs. The major geologic and geomorphologic features provide a combination of geological processes that are globally unique (World Heritage Committee, 2018).

Nahanni offers the greatest diversity of geomorphic erosional landforms seen in any Canadian park, due to a nearly unique mixture of (i) alpine glacial sculpture on granitic rock and softer sedimentary rocks; (ii) a central zone of never-glaciated terrain (very rare in Canada) that displays three magnificent examples of antecedent meandering river canyons with paleocutoff meanders along the South Nahanni River plus many lesser canyons on tributaries; remnants of multiple glacial lakes caused by downstream blockages in the eastern zone are seen as deep and colourful cliffs and hoodoos of unconsolidated sediments in this zone; (iii) an eastern zone that was repeatedly overrun by ice of the continental Laurentide Ice Sheet; glacial scour was weaker than in the alpine zone but erratic rocks from the Shield 400 km to the east are abundant. Along and around the juncture of the central and eastern zones are the most accentuated limestone karstlands known anywhere in the arctic and sub-arctic regions of Earth, including giant sinkholes, poljes, karst corridors, the finest arctic relict caves that also contain long records of paleoclimate and ecology, plus dramatically rapid modern drainage through underlying cave systems that are inaccessible.

Other important biodiversity values

► Biodiversity

The park reserve is the only known location of a rare and an endemic plant species: The Nahanni Aster. The diversity of vegetation is far greater than any other area of comparable size in the Northwest Territories. The vegetation community is predominantly boreal forest, with a transition from lowland wet areas to alpine tundra. Over 230 genera and 700 species of vascular plants have been documented, which provides important habitat for 42 different species of mammals such as bears, wolves, woodland caribou (northern mountain population), Dall Sheep, mountain goats, moose, and wood bison. Further, the park reserve includes a diversity of birds with a mixture of cordilleran, boreal and great plain species. Sixteen fish species have been recorded within the South Nahanni watershed including three species that are unique to the region: spoonhead sculpin, trout-perch, and spottail shiner Hibernacula for two endangered myotis bat species were discovered and they are currently the northern most known bat hibernacula (Parks Canada, 2020).

► An outstanding landscape of high ecological integrity

Nahanni National Park (and the larger South Nahanni River watershed) exhibits a globally outstanding landscape of high ecological integrity. Due to its remoteness, the ecosystem appears to function...
naturally with intact assemblage of native species, natural movements of wide-ranging wildlife, natural river dynamics, etc. It also provides extraordinary wilderness experiences. Nahʔą Dehé (the South Nahanni River) is considered perhaps the world’s most iconic canoe trip and the Cirque of the Unclimbables (where the Lotus Flower Tower is located) is one of the world’s most iconic rock climbing areas. Nahanni National Park offers important cultural and spiritual value to Dene and Metis people as well as recreational values to visitors. Dene Culture is intimately linked to the ecology of Naha Dehe, is respected in this place of mystery, spirituality and healing (Parks Canada, 2020).

**Assessment information**

**Threats**

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<th>Current Threats</th>
<th>High Threat</th>
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<td>There are threats to natural ecological and geological processes as a result of climate change, but this extends beyond the site level. Threats from existing mine sites and exploration activities exist, especially due to their upstream location in relation to the World Heritage site. The Tungsten legacy and tailings pond stability presents a safety and environmental concern that requires careful monitoring. The primary concern of these activities therefore are the possible impacts to water quality in the World Heritage site.</td>
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**Avalanches/ Landslides**

(Occasional natural landslides)

There are occasional natural landslides in bedrocks and unconsolidated glacial, etc. deposits occasionally throughout the area. Melting of permafrost (Ford, 2010) that now appears to be widespread above 500m asl may further contribute to the frequency in future.

**Water Pollution**

(Effluent quality at Prairie Creek mine)

Northern Zinc has all necessary permits for their mine site including a water licence to allow discharge into Prairie Creek, a direct tributary to the South Nahanni River (IUCN Consultation, 2020). Under their licence there is a requirement to manage water outflows from an inactive mine portal. This requires storage and treatment prior to discharge. Northern Zinc have tried different treatment options but have experienced difficulty meeting their effluent quality criteria outlined in their water licence. There have been predictable seasonal exceedances of effluent. Water quality monitoring is another ongoing issue as the mine site is remote and their care and maintenance operations are seasonal. Government regulators are monitoring the situation and working with the developer to find solutions for water treatment and monitoring. Parks Canada is not a regulator for the mine site, but works closely with other government Agencies to support outcomes for protecting values in the World Heritage site and the larger Nahanni National Park Reserve. Monitoring has reportedly shown there have not been impacts to water quality within Nahanni National Park Reserve and the World Heritage site (IUCN Consultation, 2020). Ongoing monitoring is therefore important to ensure this continues to be the case and there is a need to remain vigilant.

**Mining/ Quarrying**

(Mineral exploration, and maintenance at two non-producing mines)

There are currently two non-producing mine sites and one exploration camp in the South Nahanni Watershed (IUCN Consultation, 2020). The most significant and immediate concern lies with Tungsten where tailings have accumulated. The structures holding tailings have expanded numerous times over the project and now require ongoing monitoring to address concerns about their safety and stability. The tailings are immediately adjacent to the Flat River which flows into Nahanni National Park Reserve. The Prairie Creek mine is in care and maintenance. Exploration activities associated with mineral leases held by Northern Zinc and Selwyn Chihong Ltd are outside the boundaries of the World Heritage site and are relatively small scale but downstream implications are a concern. Collectively the primary concern...
as a result of mineral exploration and care and maintenance activities are potential impacts to water quality in the World Heritage site (State Party of Canada, 2006).

**Roads/ Railroads**

*Inside site, scattered (5-15%)*

Access to the Prairie Creek mine site was permitted by a winter road, which crosses the main karst belt upstream of ‘Bubbling Springs’ and then follows a varied route through the Ram River headwaters and across a divide into the Prairie Creek watershed. Canadian Zinc Corporation (now NorZinc Corporation) acquired the Prairie Creek mine in 1995 and received licences and permits for full mine operation with a winter road. In 2014 NorZinc applied for permits to construct and operate an all-season road in place of the permitted winter road. In November 2019 this application was approved by the Mackenzie Valley Land and Water Review Board, Parks Canada, and First Nation elected representatives in Fort Simpson and Nahanni Butte. In early 2020 the Corporation proposed to build the all-season road and conduct other field work in 2020-21, with mining scheduled to begin in 2022 (IUCN Consultation, 2020). The current COVID-19 crisis makes this timetable moot. The Nahanni National Park Reserve Draft Management Plan of 2020 indicates (in Map #3) that the line of three karst poljes immediately upstream of Bubbling Springs are sites of exceptional geomorphological significance (Parks Canada, 2020). The winter road followed a narrow natural causeway between the First (furthest upstream) and Second poljes. There was a major landslide (>1 million tonnes, caused by melt of permafrost in thick silts on top of karst) at some time between August 2007 and September 2008 (noted by surveyors en route to the mine). The slide has compelled this part of the road to be re-routed downstream of the springs, where a bridge must be installed. The new route threatens karst aquifers draining the main karst belt and SW sector of Ram Plateau (IUCN Consultation, 2020). The aquatic fauna of these aquifers have never been studied but, from precedent elsewhere, will almost certainly include new species. Passage of heavy haulage vehicles over the aquifers will be a serious hazard to them. The upgraded road would provide year-round access for hunters/poachers to sites used by woodland caribou, grizzly bears, and Dall’s sheep, and additional risk of human-caused mortality to grizzly bears. While the road has not yet been constructed, with all necessary permits already issued for construction to proceed, this is categorised into the current threat.

**Potential Threats**

**Mining/ Quarrying**

*Data Deficient*

Future mining activities adjacent to the park and associated roads pose the highest potential threat to the values of the World Heritage site. Timing of full development of mining projects are unknown and difficult to predict. The existing projects are unlikely to reach full production in the next 5 to 10 years. Existing residual effects from mining and mineral exploration activities has been identified as a concern. These projects occur in jurisdictions that have some of the highest standards for protecting people and the environment. In consideration of the unpredictability and unknown timing of mining activities the threat can be considered data deficient.
slightly in future.

Temperature extremes
(Impacts of climate change)

Threats linked to climate change include permafrost degradation (Ford, 2010), increased frequency/severity of wildfires, changes to temperature and precipitation (which have implications for stream hydrology, biodiversity – especially in alpine ecosystems), reduced glacier mass balances, and forest insect outbreaks (IUCN Consultation, 2020).

Overall assessment of threats

There are threats to natural, ecological and geological processes as a result of climate change, which are challenges that extend beyond the site level. Hazards from existing mine sites, exploration activities and tailings pond are currently present however, and require carefully monitoring and management to ensure that the values of the World Heritage site are protected. Further mining activities adjacent to the Nahanni National Park Reserve and associated roads that will run through NNPR, but outside the World Heritage site, pose future threats to the site. While noting that activities will be subject to regulatory regime, the individual and cumulative impacts especially on water quality is of concern.

Protection and management

Assessing Protection and Management

Management system

The site is managed by Parks Canada. The most recent Management Plan was developed in 2010 by the Naha Dehé Consensus Team. A new plan is nearing final stages of approvals in Parliament. The Nahʔą Dehé Consensus Team is involved in the ongoing cooperative management of the park according to the Interim Park Management Arrangement. The ultimate goal is to establish a permanent management regime between Parks Canada and Dehcho First Nations through completion of the Parks Chapter of the Dehcho Final Agreement (Parks Canada, 2010).

Effectiveness of management system

The 2016 State of the Parks Report concluded the ecological integrity indicators were good to fair and that the condition was stable. The 2018 assessment concluded that most of the management objectives were met (State of the Park Assessment, 2018) and the ecological integrity indicators were good to fair and that the condition was stable.

Boundaries

When the site was inscribed on the World Heritage List in 1978 it was considered of sufficient size to protect its values. However, it was noted that it would be desirable to incorporate the entire upstream watershed in the World Heritage site (IUCN, 1978). The area of Nahanni National Park was expanded in 2009 (Parks Canada, 2010). Ecological criteria were used in the expansion including the range of 500 grizzly bears which is thought to be a viable population as part of a larger meta-population. The national park now also includes the spectacular karst areas of the Ram Plateau (the largest Arctic and Sub-Arctic karst area in the world), the Ram River watershed and the Cirque of the Unclimbables. The new park protects roughly 75% of the entire 38,000 sq km watershed.

Integration into regional and national planning systems

Additional protection for the South Nahanni watershed came in 2012 with the creation of the 4895 sq
km Nááts’įhch’oh National Park Reserve immediately adjacent and upstream of the expanded Nahanni National Park Reserve. Nahanni and Nááts’įhch’oh National Park Reserves protect 93% of the watershed which benefits the World Heritage Site values.

**Relationships with local people**  
Some Concern

Dehcho First Nations have been involved in the ongoing cooperative management of the site since 2000 when the Nahʔą Dehé Consensus Team was created by Parks Canada and the Dehcho First Nations. This process excluded other indigenous rights-holders who were not included as a result of park expansion. This requires further work by Parks Canada. Community and stakeholder involvement played an important role in the development of the 2010 Management Plan and the draft 2020 management plan (Parks Canada, 2010; 2020). Negotiations for an Impact and Benefits Agreement with Dehcho First Nations and Nahʔą Dehé Dene Band are still ongoing but believed to be in advanced stages.

**Legal framework**  
Mostly Effective

The site is managed by Parks Canada under the Canada National Parks Act of 2000 and the Parks Canada Agency Act of 1998 through the Agency’s Guiding Principles and Operational Policies (UNEP-WCMC, 2011). The legal framework for the WH site and the larger Nahanni National Park Reserve is therefore present. There are threats that originate from beyond the park boundaries however, that has no legal framework.

**Law enforcement**  
Some Concern

Nahanni National Park Reserve has one Park Warden located in Fort Simpson. Additional law enforcement support is provided from Broader Parks Canada resources as required. These patrols are coordinated through work planning with Parks Canada resources throughout northern and western Canada.

**Implementation of Committee decisions and recommendations**  
Mostly Effective

In 2006, the World Heritage Committee encouraged the State Party of Canada “to proceed with the expansion of Nahanni National Park to protect the entire South Nahanni watershed and the karstlands of the Ram Plateau”. The area of the national park was expanded in 2009, however no boundary modifications were applied to the World Heritage site.

**Sustainable use**  
Mostly Effective

According to the Nahanni National Park Reserve Management Plan (2010) “subsistence harvest occurs in a respectful and sustainable manner, in accordance with Dene laws, values and principles”.

**Sustainable finance**  
Data Deficient

The State Party reports that the annual operating budget for Nahanni is sufficient to meet Parks Canada’s mandate for ecological integrity and presentation of natural and cultural heritage values. In the absence of figures and data to independently verify the information, this is assessed as data deficient.

**Staff capacity, training, and development**  
Mostly Effective

Parks Canada has an appropriate structural organizational model to deliver on its mandated responsibilities in Nahanni. Training and development can be a challenge in a remote northern setting as a result of capacity gaps resulting from staff turnover.

**Education and interpretation programs**  
Highly Effective

Interpretation and education programs are provided to Park visitors on site at Gahnįhthah Mie (Rabbitkettle Lake), Virginia Falls and Nahanni Butte during the summer. The World Heritage site Plaque is located at Náįlįcho (Virginia falls) and it is interpreted to visitors on site.
Tourism and visitation management

Interpretation is provided through various media which include website, print materials and displays, as well as through staff. Visitor surveys have shown high levels of satisfaction with interpretation (State of the Park Assessment 2018).

Monitoring

There is a monitoring programme in place (see section on Projects). The ecological integrity of the national park is monitored according to a set of five indicators which correspond to the main ecosystems of the park: forest, alpine tundra, freshwater, wetlands and glaciers. Only 3 of these indicators were presented in the 2016 State of Parks Reporting. Monitoring of cultural resources and visitor experience is also being carried out (Parks Canada, 2010).

Research

A listing of research conducted specifically in Nahanni National Park which is relevant to the World Heritage site is not available. It was noted that much new research was conducted prior to the expansion of the Park and that in the International Polar Year, research in Northern Parks was highlighted. On Parks Canada's website only a general description of research is noted. While the defining principles of this responsibility have not changed over the years, Parks Canada has been applying new tools. Using their traditional skills and knowledge, the indigenous peoples of these regions now play an important role in cooperatively managing these activities. Innovative survey methods on the ground, combined with the latest imaging technology in space, are providing long-term insights into the diverse array of ecological systems within the parks system.

Overall assessment of protection and management

Overall protection and management of the site is mostly effective, however, improving relationships with Indigenous rights-holders not involved in cooperative management must be a priority. Impacts Benefits Agreements should be completed in a timely manner to ensure economic benefits flow to Indigenous communities. Developments that occur outside of the World Heritage site and the wider Nahanni National Park Reserve, pose the most serious threat to the values of the site.

Assessment of the effectiveness of protection and management in addressing threats outside the site

The most serious threat from outside the site originates from potential full-scale mining operations within the areas not included in the national park. Whilst the Park itself is afforded good legal protection therefore, the site is at risk from threats, especially through water contamination, that can have an impact over long distances.

State and trend of values

Assessing the current state and trend of values

World Heritage values

Exceptional natural beauty

Nahanni National Park World Heritage site, surrounded by the larger Nahanni National Park Reserve, is a large wilderness with very few permanent human inhabitants or dwellings. The superlative landscapes are generally very robust. There are only a few hundred visitors each year, arriving by floatplane and
canoeing out of the Park

▶ Exceptional representation of on-going geological processes

From a physical geographic perspective, the concerns are limited to impacts to permafrost, slope stability as a result of climate change, and potential threats posed by future development of mines at Tungsten and Prairie Creek. The 2009 State of the Park Report noted that the glacier mass balance had decreased by 30% in the last 26 years (State of the Park Report, 2009).

Summary of the Values

▶ Assessment of the current state and trend of World Heritage values

Nahanni National Park is a very large wilderness with very few permanent human inhabitants or infrastructure. The superlative landscapes are generally very robust. There are only a few hundred visitors each year, arriving by floatplane and canoeing out of the Park. Concerns/threats are limited to impacts to ecological or geological processes from climate change, and the potential hazards posed by future development of mines adjacent to the park reserve.

▶ Assessment of the current state and trend of other important biodiversity values

The impact of Prairie Creek mine and its long access road pose possible threats to the habitats of grizzly bear, woodland caribou and Dall's sheep. However there is insufficient data available to accurately assess the current status and trend of all other important biodiversity that is present at the site.

Additional information

Benefits

Understanding Benefits

▶ Wilderness and iconic features, Cultural identity and sense of belonging

The 2010 Park management Plan states "A UNESCO World heritage Site, Naha Dehe touches and inspires people who may never dip paddles into the river.... resonates in the hearts and minds of all Canadians and people of the world." In his 2017 book 'The Magnificent Nahanni: the struggle to protect a wild place', author and long-time campaigner for the park, Professor Gordon Nelson, writes that "...the River is the stuff of legend and awe-inspiring reality. River rafters see and feel the ghosts of the past: rare cabins left by long-gone prospectors and trappers, with Indigenous still traveling the lower river. Yet the wild predominates: the river's rush; colourful flowers, birds, butterflies; caribou and wolf; vast...forests, upland prairie and tundra; waterfalls, cliffs, clefts, canyons, caves..."

▶ Outdoor recreation and tourism

Rock climbing, mountaineering, canoeing, hill walking, caving, camping.

▶ Wilderness and iconic features

Several sites as well as the overall area have spiritual value for Dehcho. The 2010 Management plan and successor 2020 draft plan state that Dene Culture is intimately linked to the ecology of Naha Dehe, is respected in this place of mystery, spirituality and healing.

A cooperative and comprehensive study of these values with Indigenous communities using Traditional
Knowledge would be important to properly assess this.

**Carbon sequestration**

Due to its large size and diverse ecological gradients, Nahanni offers significant ecological resilience in the face of climate change.

**Summary of benefits**

The key benefit is the recognition and protection of superb river, glacial and karst landscapes that host a range of boreal forest ecozones, plus taiga, tundra and alpine desert faunal and floral assemblages. These provide outstanding opportunities for wilderness experiences that will have very little or no adverse environmental impact.

**Projects**

**Compilation of active conservation projects**

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<th>Organization</th>
<th>Brief description of Active Projects</th>
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<td>1</td>
<td>Parks Canada</td>
<td>Ongoing conservations projects include: - Invasive &amp; rare plant monitoring* - Forest bird community monitoring - Forest disturbance (fire/insects) monitoring (led by NRCAN) - Bat monitoring* - Wildlife Scat Index* - Fish occupancy monitoring - Ice phenology monitoring - Benthic Invertebrates Community Index - Water Quality Index (conducted in partnership with ECCC) - Hydrology monitoring* - Glacier extent and mass balance monitoring (led by NRCAN/GSC) - Collared pika monitoring* - Alpine vegetation monitoring* - Growing season index - Caribou DNA - Remote camera sampling to monitor potential impacts of increased road activity on caribou and other wildlife - Weather/climate monitoring (led by ECCC) *new or revised program still in development</td>
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# REFERENCES

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<td>1</td>
<td>Alvarez and Marsal Canada Incorporated (2020). Twenty First Report of the Monitor. Available at: <a href="https://www.alvarezandmarsal.com/sites/default/files/canada...">https://www.alvarezandmarsal.com/sites/default/files/canada...</a></td>
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<td>2</td>
<td>Cameron, E.A. &amp; Lantz, T.C. (2017) Persistent Changes to Ecosystems following Winter Road Construction and Abandonment in an Area of Discontinuous Permafrost, Nahanni National Park Reserve, Northwest Territories, Canada, Arctic, Antarctic, and Alpine Research, 49:2, 259-276, DOI: 10.1657/AAAR0016-012</td>
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<td>14</td>
<td>Sahtu Land Use Planning Board (2013). Sahtu Land use Plan. Available at <a href="https://sahtulanduseplan.org/sites/default/files/final_saht...">https://sahtulanduseplan.org/sites/default/files/final_saht...</a></td>
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