

# **Northern Rocky Mountains Park and Northern Rocky Mountains Protected Area Management Plan**

**June 2021**



**BC Parks**

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# Northern Rocky Mountains Park and Northern Rocky Mountains Protected Area Management Plan

**Approved by:**

A handwritten signature in blue ink, reading "G. Heyman", is written over a horizontal line.

Honourable George Heyman  
Minister of Environment and Climate Change Strategy

June 14, 2021

## Foreword by BC Treaty 8 First Nations

*WELCOME to our homeland. The Beaver (Dunne-za, Dane-zaa), Cree, Sauleau, Slavey (Dene), and TseK' hene indigenous groups have occupied these lands since time immemorial. Treaty 8 was signed in the spirit of Peace and Friendship on June 21, 1899. British Columbia Treaty 8 Territory is hundreds of thousands of square kilometres in size and includes 8 groups: Blueberry River First Nations, Doig River First Nation, Fort Nelson First Nation, Halfway River First Nation, McLeod Lake Indian Band, Prophet River First Nation, Sauleau First Nations and West Moberly First Nations. Our relationship to the land has and continues to be the spiritual basis for our mode of life. The land has always, and will continue to, provide shelter, food, clothing, and the economic resources for our livelihood. As a First Nation, we have an obligation to implement our inherent rights that are affirmed by the Constitution Act, 1982. This includes sustainability of our resources in order for us to hunt, trap, fish, and continue our mode of life. Prior to the arrival of the Europeans we were actively involved in the management of our territories: the lands understood us and we understood the land. Today, we continue to manage our Territory.*

*BC Treaty 8 First Nations were not involved in the initial development plans of this park in regards to its location and why the area was chosen. We would like neighbouring First Nations, outdoor enthusiasts and other visitors to our land who are enjoying the bounties of this Park to acknowledge and respect that you are on Treaty 8 Territory. Please act as a steward of Treaty 8 Territory so that together we will maintain its natural beauty, and cultural resources. This maintenance will be respectful to our current use and for future generations. Please conduct yourself in a manner that respects cultural heritage resources and values. Treaty 8 Territory will always be the home of First Nations for as long as the sun shines, the grass grows and the water flows.*



## Foreword by BC Kaska Dena First Nations

*The Kaska traditional territory is 24 million hectares and includes portions of three provinces and territories (British Columbia, Yukon and Northwest Territories). The majestic northern boreal forest regions of interior British Columbia and the Yukon have some of the continent's most expansive and impressive wilderness areas, with a great diversity of terrestrial and aquatic ecosystems. Extensive mountain ranges and wild rivers frame pristine boreal forest watersheds. Large free ranging populations of Woodland Caribou, Moose, Dall's Sheep, Stone Sheep, a full suite of large carnivores, and hundreds of thousands of migrating neo-tropical songbirds and waterfowl make their home in these diverse boreal landscapes.*

*Since human beings have inhabited this landscape, we have been here. As long as human beings inhabit this landscape, we will remain here. Our occupancy of this land establishes both our right and our responsibility to ensure this land remains intact and able to support our people and culture. We emphasize it is now time to secure its permanent protection in order to protect a broad diversity of resources and values that are critical to our culture and our economic opportunities within our homeland.*

*The health of Kaska culture requires large intact landscapes which support healthy populations of traditional plants and animals. Furthermore, a central facet of our identity requires large unfragmented landscapes for our families to be on. This is where our traditional knowledge is passed on from parent to child, from generation to generation. As well, our physical health requires continued access to healthy wildlife populations as a key component of the diet to which we are accustomed and adapted.*

*Permanently protected areas and parks can play an important role in ensuring the long term health of First Nations cultures, and thus the Kaska are generally supportive of the concept of "parks" as a mechanism to protect our cultural interests. As well, the Kaska are supportive of parks within their traditional territories, with some caveats, as a contribution to the overall richness and core spiritual values of Canadian culture.*





## Vision Statement

Northern Rocky Mountains Park is renowned as a world-class area for wildlife, the preservation of wilderness, and a destination for recreation adventure. The park is seen as maintaining the majestic mountain ecosystems, as well as the habitat upon which the diversity and abundance of wildlife depends.

As the third largest park in the BC Parks protected area system, and the largest protected area in the Muskwa-Kechika Management Area, it plays an important role in providing backcountry recreation opportunities for local, national, and international visitors. Development has been kept to a minimum and the few facilities that exist have been maintained with the goal of providing a wilderness experience. Levels of use, both public and commercial, are low, but are monitored to ensure that key park values and wilderness experiences are not negatively impacted.

Recognizing the traditional use of Northern Rocky Mountains Park is important to the area's First Nation communities; Northern Rocky Mountains Park remains a location where First Nations members practice their traditional social, ceremonial and cultural activities.

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# 1.0 Introduction

## 1.1 Management Plan Purpose

The purpose of this management plan is to guide the management of Northern Rocky Mountains Park and Northern Rocky Mountains Protected Area. Throughout this management plan, the terms “park” or “Northern Rocky Mountains Park” are used to refer to both the park and the protected area, except for when Northern Rocky Mountains Protected Area is specifically named.

This management plan:

- articulates the key features and values of Northern Rocky Mountains Park;
- identifies appropriate types and levels of management activities;
- determines appropriate levels of use and development;
- establishes a long-term vision and management objectives for the park; and
- responds to current and predicted threats and opportunities by defining a set of management strategies to achieve the management vision and objectives.

## 1.2 Planning Area

Northern Rocky Mountains Park (665,709 hectares) and Northern Rocky Mountains Protected Area (763 hectares) are located in the Muskwa-Kechika Management Area (M-KMA) (Figure 1)<sup>1</sup>. The M-KMA, established in 1998 (*Muskwa-Kechika Management Area Act*), is an area of unique wilderness endowed with a globally significant abundance and diversity of wildlife. The long-term maintenance of the wilderness characteristics, wildlife and its habitat within the M-KMA is critical to the social and cultural well-being of First Nations and local communities. The long-term resource management objective for the M-KMA is to return the lands to their natural state as development activities are completed.

The M-KMA is zoned into a number of different resource management zones, including protected areas, which are intended to maintain in perpetuity the wilderness quality and the diversity and abundance of wildlife and the ecosystems on which it depends, while allowing for resource development and use in parts designated for those purposes. Resource management within the M-KMA must be consistent with the Muskwa-Kechika Management Plan Regulation.

Within the M-KMA there are approximately 1.17 million hectares of protected land within twenty-three provincially protected areas of various designations. Northern Rocky Mountains Park is the largest of these protected areas.



The closest large community to Northern Rocky Mountains Park is Fort Nelson (approximate population 4,000), which is 80 kilometres northeast of the park. Fort St. John (approximate population 21,000) is 225 kilometres southeast of the park.

The Northern Rocky Mountains Park (Figure 2) protects diverse and abundant wildlife populations, undeveloped watersheds, wilderness qualities, and striking mountainous features. Spectacularly exposed geological features readily visible to park visitors are an important aspect of the park. Features include hoodoos, huge folds, thrust faults, rugged castellated peaks, glacially sculpted U-shaped valleys, cirques and hanging valleys.

The park provides outstanding opportunities for backcountry recreation in a wilderness setting where human impact is temporary, minor and in the long-run substantially unnoticeable. Most of the ground-based access to the park is from the Alaska Highway corridor (entry points are located in the Wokkash Creek and Tetsa River drainages and through Stone Mountain Park), while water-based access is via the Muskwa River.

Two provincial parks are immediately adjacent to Northern Rocky Mountains Park: Stone Mountain Park to the northwest; and Kwadacha Wilderness Park to the southwest. Stone Mountain Park (25,690 hectares) provides travellers of the Alaska Highway with easy access to camping and recreation opportunities in a wilderness setting while Kwadacha Wilderness Park (130,279 hectares) provides spectacular scenery in a pristine wilderness setting. The combined areas of Northern Rocky Mountains Park, Northern Rocky Mountains Protected Area, Kwadacha Wilderness Park and Stone Mountain Park provide over 800,000 hectares of largely unroaded contiguous wilderness.

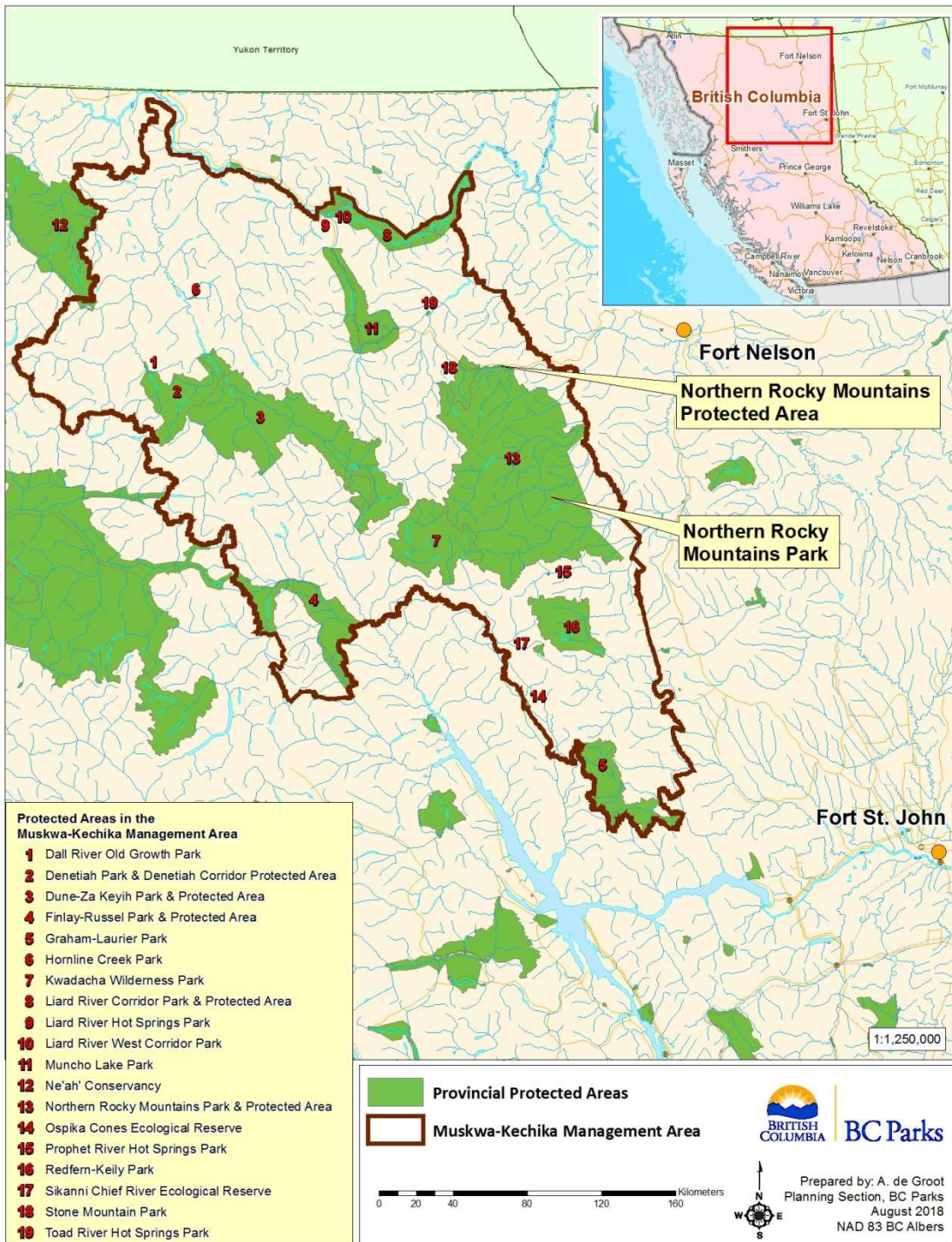
### **1.2.1. Fort Nelson Land and Resource Management Plan**

In the early 1990s, the BC government established a land use planning process that led to the development of land and resource management plans throughout the province, including the Fort Nelson Land and Resource Management Plan, which recommended establishment of this park. However, in most cases, this process did not involve First Nations on a government-to-government basis, but as stakeholders. Although these plans were developed without prejudice to aboriginal rights and title, most First Nations chose not to participate in these stakeholder processes, preferring government-to-government negotiations on land issues<sup>2</sup>.

The 1997 Fort Nelson Land and Resource Management Plan provides specific recommendations for activities, uses and facilities within Northern Rocky Mountains Park. These recommendations are found on pages 129 to 131 and pages 162 to 166 of the 1997 Fort Nelson Land and Resource Management Plan document. In general, the land use plan recommended that current uses at the time the plan was written should be allowed to continue.

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<sup>2</sup> <http://www.bctreaty.ca/land-and-resources>



**Figure 1: Context Map for Northern Rocky Mountains Park**



## Northern Rocky Mountains Park

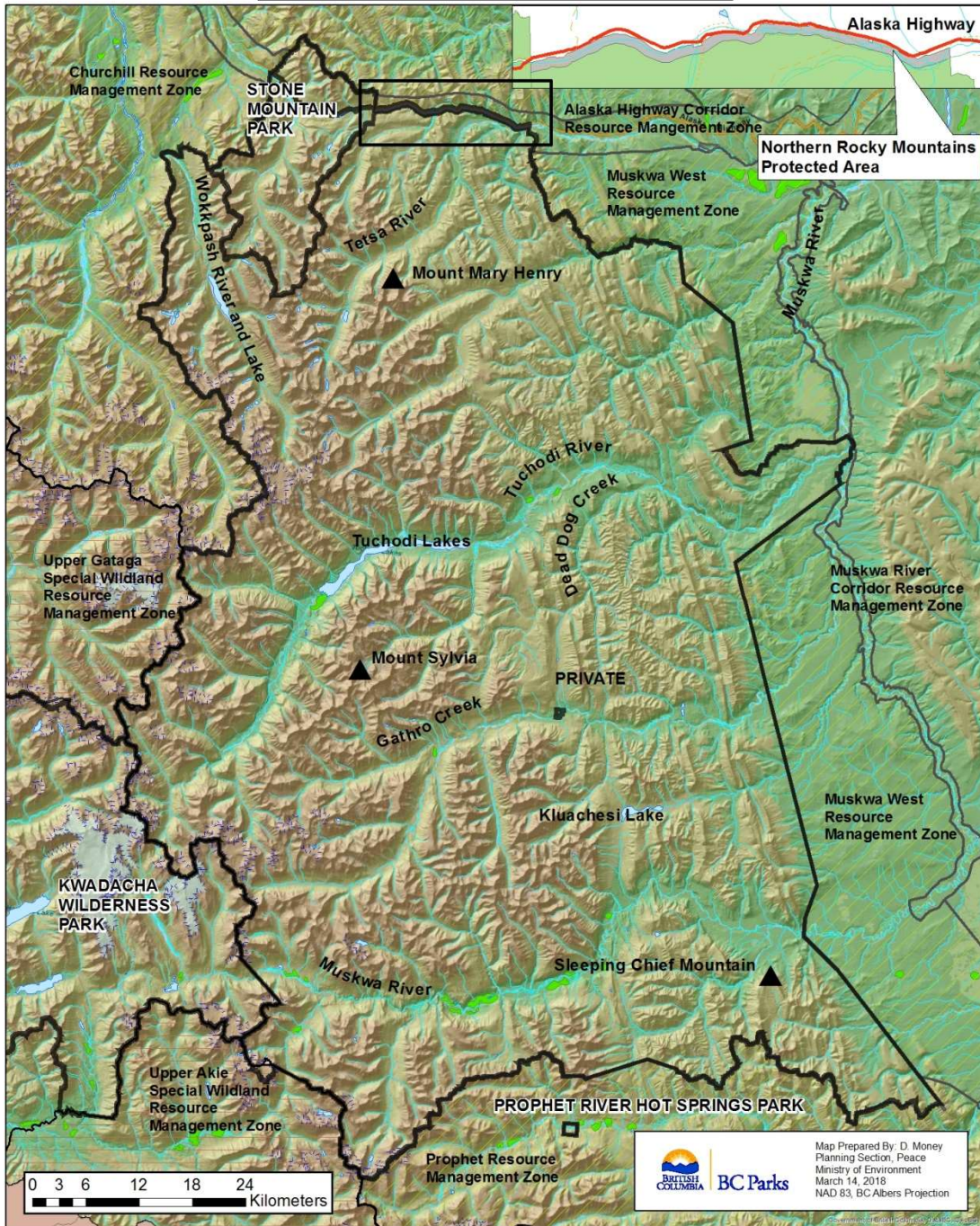


Figure 2: Map of Northern Rocky Mountains Park and Northern Rocky Mountains Protected Area Boundaries and adjacent Fort Nelson Land and Resource Management Plan zones

## 1.3 Legislative Framework

The 1997 Fort Nelson Land and Resource Management Plan<sup>3</sup> identified seven sites that were recommended for protected area designation; two of the sites were the Northern Rocky Mountains and the upper Wokkpush River. These sites were specifically selected to protect viable representative examples of natural diversity and also to protect special natural, recreational and cultural heritage features in accordance with the provincial Protected Areas Strategy.

The upper Wokkpush River was first proposed as an ecological reserve in 1974, with a larger area later being established as a Recreation Area under the *Park Act* (1987) to provide recreation opportunities and to protect significant geological features including the Valley of the Hoodoos, Forlorn Gorge and Wokkpush Lake. The Recreation Area was cancelled in 1999 and the area included in the new Northern Rocky Mountains Park on June 29, 1999.

Northern Rocky Mountains Park is a Class A park that is named and described in Schedule D of the *Protected Areas of British Columbia Act*. Class A parks are Crown lands dedicated to the preservation of their natural environments for the inspiration, use and enjoyment of the public. Development in Class A parks is limited to that which is necessary to maintain the recreational values of the park. Some activities that existed at the time a park was established (e.g., range tenures) may be allowed to continue in certain Class A parks<sup>4</sup>, but, logging, mining or hydroelectric development is not permitted.

To provide the flexibility needed along the Alaska Highway in the event that future realignment was required, an approximately 500-metre wide corridor south of the Alaska Highway was designated under the *Environment and Land Use Act* as the Northern Rocky Mountains Protected Area on January 25, 2001

### 1.3.1. Muskwa-Kechika Management Area

As a result of the dedicated work of land and resource planning table members during the 1990's in Fort Nelson and Fort St. John, and later in Mackenzie, the *Muskwa-Kechika Management Area Act* and the Muskwa-Kechika Management Plan Regulation, were adopted through Order-in-Council, and enacted in 1998. The purpose of this legislation was to provide guidance to managers in government agencies and non-government organisations, communities, and industry groups while conducting their activities in the M-KMA. As well, a public advisory board was appointed by the Premier to provide advice to government on planning and land use management, and a trust fund was established to fund projects.

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<sup>3</sup> To access the Fort Nelson Land and Resource Management Plan visit:  
<https://www.for.gov.bc.ca/tasb/slrp/plan32.html>.

<sup>4</sup> Applies only to Class A parks listed in Schedule D of the *Protected Areas of British Columbia Act*.

The Act identifies the M-KMA as being a unique wilderness area of global significance and outlines the following management intent for the area:

*“... the management intent for the Muskwa-Kechika Management Area I to maintain in perpetuity the wilderness quality, and the diversity and abundance of wildlife and the ecosystems on which it depends while allowing resource development and use in parts of the Muskwa-Kechika Management Area designated for those purposes including recreation, hunting, trapping, timber harvesting, mineral exploration and mining, oil and gas exploration and development ...”*

To support land management, the *Muskwa-Kechika Management Area Act* specified the creation of the Muskwa-Kechika Management Plan and five types of local strategic plans: a recreation management plan (completed), a wildlife management plan (completed), oil and gas pre-tenure plans (completed), park management plans (such as this plan) and local strategic forestry plans, referred to as landscape unit objectives (which are completed when there is forestry activity). As one of the local strategic plans, the Northern Rocky Mountains Park management plan is consistent with the direction provided by the Muskwa-Kechika Management Plan; it also considers direction within the other strategic level plans.

BC Parks worked with the advisory board to ensure that the management objectives and strategies in this management plan are consistent with the objectives of the Muskwa-Kechika Management Plan. Part of the responsibilities of the advisory board are to support the initiation of park management plans and ensure adequate public consultation in the preparation of these plans.

## **1.4 Relationship with First Nations**

Northern Rocky Mountains Park is within the territory of multiple First Nations. The Treaty 8 First Nations that have territory overlapping with the park are Doig River, Fort Nelson, Halfway River, Prophet River, and West Moberly. Additionally, the park is within the traditional territory of the Kaska Dena Council Nations.

This park management plan and subsequent management actions within Northern Rocky Mountains Park will respect the government-to-government agreements that have been signed with different First Nations (see section 1.4.1) as well as First Nations traditional harvesting, cultural activities, and other aboriginal rights and interests. The management of protected areas can be improved by incorporating First Nations' traditional ecological knowledge and cultural knowledge. BC Parks' goal is to gather, collate and integrate local traditional knowledge with other scientific data to manage the park.

British Columbia is working collaboratively with Indigenous peoples to establish a clear, cross government vision for reconciliation to guide the adoption and implementation of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the Truth and Reconciliation Commission's 94 Calls to Action, and the Tsilhqot'in Supreme Court decision. All BC Government ministries have been tasked with finding ways to



implement the UN Declaration through a review of the province’s policies, programs, and legislation.<sup>5</sup> Part of this review is guided by the recognition of indigenous knowledge, cultures and traditional practises and their contributions to sustainable and equitable development and proper management of the environment.

#### **1.4.1. First Nation Government-to-Government Agreements**

The Province of British Columbia has entered into, or is negotiating, government-to-government agreements with a number of First Nations whose proven rights or asserted traditional interest areas overlap with Northern Rocky Mountains Park.

The Strategic Engagement Agreement between the Province of British Columbia and the Kaska Dena Council includes the Conservancies, Parks and Protected Areas Collaborative Management Framework. The purpose of this Framework is for the Parties to engage on a government-to-government basis with respect to the development of this management plan, and to work collaboratively to implement the management objectives and joint operational activities within the park and protected area.

The Government-to-Government Agreement between the Province of British Columbia and Halfway River First Nation is aimed at reducing land and resource sector conflicts, providing greater certainty, fulfilling specific legal obligations, and improving relationships.

### **1.5 Relationship with Other Resource Agencies**

BC Parks works directly with other land and resource management agencies to address specific management issues in and around Northern Rocky Mountains Park. These agencies include those responsible for Crown land, fish and wildlife, range, and wildfire management. They manage the fish and wildlife values, wildfires, prescribed fire, range tenures, and pest and disease problems and authorizing commercial and industrial activities, to ensure that resource development applications on lands around the park consider park values.

### **1.6 Adjacent Land Use**

Patterns of adjacent land use can have an influence on park values particularly related to access, wildlife movement and viewsapes. Northern Rocky Mountains Park is bordered by other parks and protected areas or Crown land that is managed as either special wildland or resource management zones.

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<sup>5</sup> Principles Accord on Transforming Treaty Negotiations in British Columbia. Government of British Columbia, The First Nations Summit, and the Government of Canada. December 1<sup>st</sup>, 2018.  
[https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/principals\\_accord\\_signed\\_dec\\_1\\_2018.pdf](https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/principals_accord_signed_dec_1_2018.pdf)



### 1.6.1. Land and Resource Management Plan Zones

Land and resource management plans delineate resource management zones within their respective planning areas. Activities permitted within the different resource management zones that surround Northern Rocky Mountains Park have the ability to affect park values, particularly when those activities occur in close proximity to the park or are consumptive in nature.

The Northern Rocky Mountains Park is bordered by five zones under the Fort Nelson Land and Resource Management Plan, and two zones under the Mackenzie Land and Resource Management Plan (Figure 2, Table 1).

**Table 1: Fort Nelson Land and Resource Management Plan (LRMP) Zoning in areas adjacent to the park**

LRMP	Zoning Designation	Zone Name
Fort Nelson	Special Management	Churchill
		Muskwa River Corridor
		Muskwa West
		Prophet
		Enhanced Resource Development
MacKenzie	Special “Wildland Category” Management	Upper U Kai (Upper Akie)
		Upper Gataga

The Special Management zones provide special management direction for the Muskwa-Kechika Management Area and are intended to ensure wilderness characteristics and wildlife habitat are maintained over time with resource development being permitted to proceed while minimizing impacts to other resource values.

The Enhanced Resource Development zone is intended to manage the highway corridor and enhance recreation and tourism opportunities.

In the Special Wildland Zones, emphasis is placed upon ecological conservation and remote backcountry characteristics. Oil and gas development is permitted, but timber harvesting is not and road development is intended to be temporary.

### 1.6.2. Other Adjacent Uses

- The park is within the Northern Rockies Regional Municipality and is zoned Parks and Protected Areas (P-1) in their Rural Zoning Bylaw No.137 (2017). The park is surrounded by the Rural Resource (R) zone which supports uses associated with the management and extraction of natural resources.
- Wildlife Habitat Areas for Caribou have been established south of the park under the *Forest and Range Practices Act* and the *Oil and Gas Activities Act*.

- Ungulate Winter Ranges for Northern Mountain Caribou, Stone’s Sheep and Mountain Goat have been established south and west of the park under the *Forest and Range Practices Act* and the *Oil and Gas Activities Act*.
- Four authorizations under the *Land Act* for transportation purposes exist adjacent to the park along the Alaska Highway transportation corridor. These authorizations provide a 500-metre buffer for the Alaska Highway allowing for future expansion and in some locations correspond with the Northern Rocky Mountains Protected Area.
- Seven active mineral tenures exist within five kilometres of the park, all to the south. Multiple oil and gas well sites exist within areas adjacent to the park; these sites have been identified as abandoned.
- There is one private holding of 55 hectares within the park that is used as a base for a guide outfitter (Figure 2).

## 1.7 Authorizations within the Park

- Northern Rocky Mountains Park overlaps with five guide outfitting territories with four holding park use permits for commercial recreation in the park<sup>6</sup>. Guide-outfitter wildlife harvest levels are set by the ministry responsible for wildlife management, in collaboration with BC Parks. Guide-outfitter commercial recreation activities and facilities in the park are managed by BC Parks.
- There are nine other commercial recreation operations authorized by park use permits in the park offering a variety of services, including guided angling, hiking, horseback riding, transporting, camping, wildlife viewing, boat tours and canoeing. Four of these park use permits are held by guide outfitters that also offer non-hunting recreational services. Six of the park use permits authorize privately owned structures, such as lodges or cabins.
- Nine range tenures for horse grazing held by guide outfitters and licensed transporters exist within Northern Rocky Mountains Park. These range tenures predate the establishment of the park and are authorized under the *Range Act*. These range tenures are managed under a Memorandum of Understanding (MOU) between BC Parks and the Range Program of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. The MOU between BC Parks and the Range Program allows for prescribed fires by permit holders if they are part of a Range Use Plan and are consistent with park values and/or a park management plan. The number of Animal Unit Months (AUMs) allocated to each range tenure in the

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<sup>6</sup> One guide-outfitter territory has a minor overlap with the park; the territory holder does not have a Park Use Permit for commercial recreation as they do not use that portion of their territory.

park is capped at that which was authorized for the range tenure at the time of park establishment.

- Eight trapline areas overlap with Northern Rocky Mountains Park. Trapping is managed by the ministry responsible for wildlife management. That ministry also manages hunting regulations and harvest allocations at the management unit level, and in collaboration with BC Parks. Currently, five of the trapline holders trap within the park (authorized by a valid park use permit), and the other three traplines are inactive in the park.
- There are four park use permits allowing air transport into the park.
- Three range reference area research installations are located in the park: Gathto Creek, Halfway Meadow and Tuchodi River. These permanent installations have animal enclosure fences to monitor grazing impacts over time and are managed by the Range Program. The sample plots are both inside and outside the enclosures.

## 1.8 Park Access

Several access routes have traditionally been used for travelling in the backcountry and are crucial to the wilderness experience in the park. Generally, routes in the park are not formally developed, and maintenance has been *ad hoc* by various user groups such as the guide outfitters, licenced transporters and resident hunters. Most access occurs in the summer and fall by horse and river boat, but also on foot, and in the winter by snowmobile.

Tuchodi River is commonly used by riverboats to access the park, with trips starting at the Kledo Creek boat launch along the Alaska Highway, first travelling up the Muskwa River before entering the park along the Muskwa River, Tuchodi River, Gathto Creek or Kluachesi Creek.

Several ground-based access routes into the park start along the Alaska Highway between Tetsa River and Summit Lake, and also along the Wokkpash Corridor. The Wokkpash Corridor is a popular access route into Northern Rocky Mountains Park that leads to the Wokkpash Valley trail. Wokkpash Corridor (Churchill Mine Road) is a designated Muskwa-Kechika Access Management Area (AMA) route that allows off road vehicle use and provides important access to the park. This access route is outside the park, and is a designated recreation trail under the *Forest and Range Practices Act* under the jurisdiction of the ministry that manages Crown land recreation. This trail is also part of the Fort Nelson Snowmobile Club trail system. The Wokkpash Valley trail can also be accessed from the MacDonald Creek Valley trail as part of a loop trail through Stone Mountain Park.

Fixed-wing aircraft, both wheeled and floatplanes, and helicopters access a variety of locations within the park. Fixed-wing aircraft have a long history of being used to access the park, with use concentrated at guide outfitter camps and lakes. There are also a few landing locations in the park along suitable river bars and at minimally-maintained air

strips that either predate the park or are associated with permitted guide outfitter camps. Helicopters offer opportunities to access a broad range of sites within the park. In comparison to fixed-wing aircraft, helicopter use makes up a small proportion of total air traffic.

## 1.9 Management Planning Process

Direction for this plan has been provided by the *Muskwa-Kechika Management Area Act*, the Fort Nelson Land and Resource Management Plan, the Muskwa-Kechika Wildlife Management Plan and the Muskwa-Kechika Recreation Management Plan.

A management planning process for the park was originally initiated in 2000, with the formation of a Public Advisory Group that enabled direct engagement of interested and affected groups and individuals in the preparation of a management plan. BC Parks and the Public Advisory Group members followed the intent of the Fort Nelson Land Resource Management Plan and incorporated into the plan recommended objectives including:

- General statements on protected areas;
- Specific recommendations pertaining to the park; and,
- General management objectives of the Fort Nelson Land and Resource Management Plan.

Due to staff re-organization in BC Parks and the need to enable greater participation in the process by Indigenous nations, the management planning process was suspended for a number of years. The process resumed in 2019, when a Local Stakeholder and Public Advisory Group (LSPAG) was convened to review and provide input on the most recent draft management plan. In addition, the Muskwa-Kechika Advisory Board, First Nations and natural resource agency staff informed the drafting of the management plan.

During development of the draft management plan, public, stakeholder and First Nations engagement has occurred at various stages. This included opportunities for public input through a public mail-out process, website comment form, consultative meetings and open houses. The draft management plan was made available for public review and comment on the BC Parks webpage. Information and feedback received during the development of the management plan was used to inform the content of the final management plan.

## 2.0 Values and Roles of the Park and Protected Area

### 2.1 Significance in the Protected Areas System

The Northern Rocky Mountains Park is the third largest park in British Columbia and is the largest component of the Muskwa-Kechika Management Area protected area complex. This protected area complex, combined with the Muskwa-Kechika Management Area, is thought to be extensive enough to maintain functioning ecosystem processes including the large mammal predator-prey systems of the northern Canadian Rocky Mountains (Gurd *et al.* 2001). The park has a nationally and internationally significant abundance of wildlife species such as Caribou (*Rangifer tarandus*)<sup>7</sup>, Stone's Sheep (*Ovis dalli stonei*), Elk (*Cervus elaphus*), Moose (*Alces americanus*), Mountain Goat (*Oreamnos americanus*), and Grizzly Bear (*Ursus arctos*).

Within this vast wilderness area are special landform features, outstanding scenery and rich cultural heritage values that all contribute to the high backcountry recreation value of the park. Northern Rocky Mountains Park protects important features such as Sleeping Chief Mountain (a ridge-like formation with a profile resembling a sleeping man as seen from the Alaska Highway), the Wokkpash hoodoos and several impressive glaciers at the headwaters of Tuchodi River system. The park provides representation of high elevation plateau landscapes, large south aspect slopes with high wildlife usage, and remote northern lakes and wetlands.

Northern Rocky Mountains Park plays a key role in conserving the wilderness recreation values of the Muskwa–Kechika Management Area. The park provides relatively accessible backcountry day and overnight use in, or adjacent to, the Alaska Highway Corridor with semi-established routes and few facilities. It also provides remote and challenging wilderness recreation opportunities in the middle to southern portion of the park, with emphasis on low, dispersed levels of use.

### 2.2 Biodiversity and Natural Heritage Values

Northern Rocky Mountains Park has spectacular geological structures, valuable freshwater values, and a diversity of vegetation, fish, and wildlife. Its vast size and proximity to other protected areas make it an important component of the provincial protected areas system.

#### 2.2.1. Geology, Landforms and Soils

The mountains in the area were formed by rocks being bent, folded, faulted and uplifted by northeast compression from western British Columbia. Escarpments and chevron folds exist in the layers of Sleeping Chief Mountain (1,942 metres), Mount Sylvia (2,942 metres) and Mount Mary Henry (2,614 metres). The bedrock contains much

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<sup>7</sup> Caribou (*Rangifer tarandus*) in the park area are part of the Northern Mountain Caribou population or Designatable Unit, and the Muskwa and Pink Mountain subpopulations. The term Caribou will be used throughout the document to refer to the Muskwa and Pink Mountain subpopulations.

limestone, as well as siltstones and sandstones. Much of the terrain in the park is mountainous and characterized by rocky steep-sided slopes separated by high and wide valleys. In comparison to the southern Rocky Mountains, the Muskwa Ranges show evidence of more dramatic and complex geological features.



The park was glaciated approximately 25,000-10,000 years ago, though the mountains show little evidence of late-stage glacial erosion. As ice sheets receded, glacial lakes covered the lowland between the Muskwa and Prophet rivers. The valleys in the park received large deposits of gravel and boulders from these glaciers that were subsequently eroded by fluvial action that formed outwash

**Figure 3: Blizzard Lakes**

plains with the eroded materials. Glaciers and perennial snow patches exist within the park boundaries and usually occur at elevations exceeding 2,400 metres.

Fluvial and lacustrine terraces and colluvial/alluvial fans are located along the Tuchodi River and Gathto Creek, as well as along the shorelines of Tuchodi and Kluachesi lakes. Lateral moraine tills, as well as glaciolacustrine deposits, tend to be at higher elevations and likely related to more recent, small glacier movements dating to the latter portion of the Holocene.

The geology and landforms in the Wokkpash drainage area are unusual. The hoodoos at Wokkpash Gorge are approximately 30 to 90 metres high and line both sides of the gorge for a distance of 5 kilometres. They are impressive in terms of number, size and gravity-defying suspended boulders. This may be the best example of hoodoos in the province. In Stepped Creek, downstream of Blizzard Lakes, there is a polje<sup>8</sup> that fills with meltwater each year and drains later in the year. Forlorn Gorge is a deep, narrow gorge 150 metres deep and 25 metres wide, along Forlorn Creek. There are also several rock glaciers in the area.

Soil development in Northern Rocky Mountains Park is poor to non-existent in the more elevated alpine areas, while valley bottoms frequently have well-developed and well-drained soils. Exceptional abandoned fluvial features (e.g., meanders and terraces) are found along the Tuchodi River, Dead Dog Creek, and Gathto Creek.

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<sup>8</sup> A polje is defined as “an extensive depression having a flat floor and steep walls but no outflowing surface stream and found in a region having karst topography”.





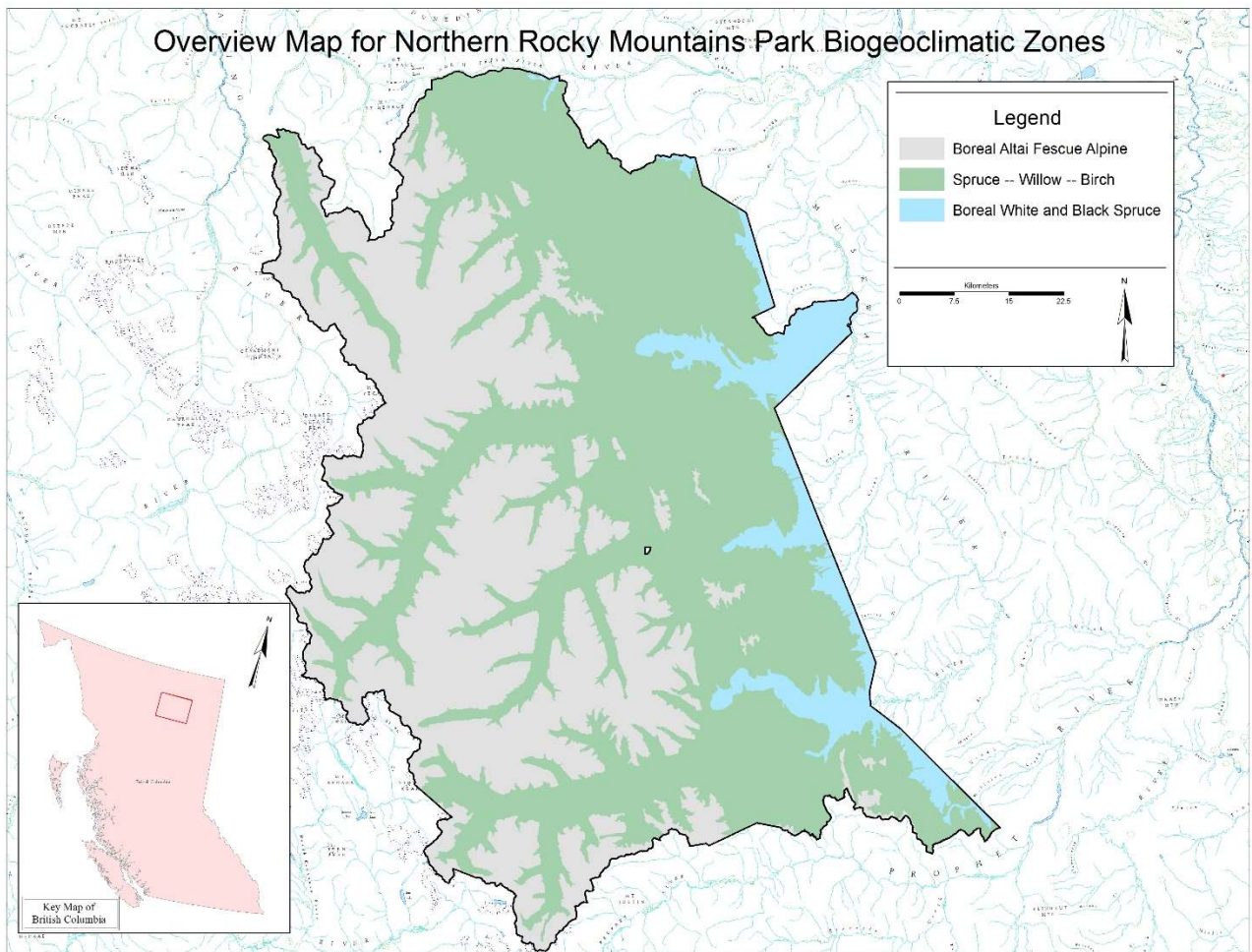
**Figure 4: Hoodoos in Wokkash Canyon**

### **2.2.2 Ecosections and Biogeoclimatic Zones**

By virtue of its significant size, adjacency to other protected areas and location in the province, the Northern Rocky Mountains Park is a major contributor to the protection of ecosystems and biological diversity of the northern Canadian Rocky Mountains. It is located in four ecosections of the northern Canadian Rocky Mountains: Eastern Muskwa Ranges (368,811 ha), Muskwa Foothills (275,847 ha), Muskwa Upland (15,196 ha) and Sikanni Chief Upland (6,531 ha). There are four biogeoclimatic (BEC) subzones<sup>9</sup> represented in the park (Table 2).

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<sup>9</sup> A biogeoclimatic zone is a geographic area in British Columbia classified as having similar patterns of vegetation and soils that reflect a broadly homogenous macroclimate.



**Figure 5: Overview Map for Northern Rocky Mountains Park Biogeoclimatic Zones**

The Boreal Altai Fescue Alpine (BAFA) subzone is found at elevations greater than 1,800 metres. Vegetation consists mainly of shrubs, heathers, grasses, herbs, mosses, and lichens. White spruce (*Picea glauca*), Engelmann spruce (*Picea engelmannii*) and sub-alpine fir (*Abies lasiocarpa*), where they occur, usually exhibit a stunted growth form due to the harsh environmental conditions.

The moist, cool Spruce-Willow-Birch (SWBmk) and moist, cool scrub Spruce-Willow-Birch (SWBmks) subzones are found along the valley bottoms (below 1,600 metres elevation for SWBmk and between 1,600 metres and 1,800 metres elevation for SWBmks). These subzones are predominantly forested with white spruce (*Picea glauca*) and sub-alpine fir (*Abies lasiocarpa*), with lesser amounts of lodgepole pine (*Pinus contorta* var. *latifolia*), black spruce (*Picea mariana*) and trembling aspen (*Populus tremuloides*). Scrub birch (*Betula nana*) and willow (*Salix* species) are also common. Areas with poor drainage contain white spruce and tall willow swamps, sedge (*Carex* spp.) fens, or marshes. Areas of old growth spruce forest can be found in areas with a

less frequent disturbance regime, such as along river valley bottoms, and the Tuchodi River's north and west facing slopes.

The Boreal White and Black Spruce moist, cool (BWBSmk) subzone is found at the lowest elevations in the park below elevations of 1,000 - 1,200 metres. Upland forests are dominated by white spruce and trembling aspen forests, with black spruce found in forested wetlands and nutrient poor sites, occasionally with tamarack (*Larix laricina*). Lodgepole pine is common on drier sites. Non-forested wetlands are dominated by scrub birch and sedges.

The Northern Rocky Mountains Protected Area is located in one ecosection, Muskwa Foothills, and is in two biogeoclimatic zones (Boreal White and Black Spruce and Spruce-Willow-Birch).

Northern Rocky Mountains Park contributes a significant portion of the area protected in the province for the four biogeoclimatic subzones that occur in the park. This is especially the case for the BWBSwk, which is underrepresented in the province's protected areas system.

<b>BEC Zone</b>	<b>BEC Subzone</b>	<b>Area of BEC Subzone in the Park (hectares)</b>	<b>Area of BEC Subzone Protected in B.C (hectares)</b>	<b>Percent of BEC Subzone protected in B.C. Contributed by the Park</b>	<b>Percent of BEC Subzone Protected in B.C.</b>
Boreal Altai Fescue Alpine	BAFAun (undifferentiated)	254,270	1,702,313	14.9	27.8
Boreal White and Black Spruce	BWBSmk (moist cool)	42,900	396,273	10.8	4.2
Spruce-Willow Birch	SWBmk (moist cool)	292,059	1,085,706	26.9	26.1
	SWBmks (moist cool scrub)	75,448	382,167	19.7	23.5



**Figure 6: Transition of Spruce-Willow-Birch to Boreal Altai Fescue Alpine BEC Subzones**



### 2.2.2. Vegetation

Information on plant species at-risk in the park is very limited, with information mostly available for the Wokkpash area, Summit Lake and Wahthinli Mountain. Three red-listed<sup>10</sup> species are known to occur in the park: northern swamp willow herb (*Epilobium davuricum*), Pallas' wallflower (*Erysimum pallasii*) and smooth draba (*Draba glabella*). Eleven blue-listed<sup>11</sup> species are known to occur in the park: Arctic bladderpod (*Physaria arctica*), abbreviated bluegrass (*Poa abbreviata* ssp. *Pattersonii*), curved sedge (*Carex maritima*), entire-leaved daisy (*Hulteniella integrifolia*), high arctic cinquefoil (*Potentilla subvahliana*), low sandwort (*Arenaria longipedunculata*), rock-dwelling sedge (*Carex petricosa* var. *petricosa*), Siberian kobresia (*Kobresia sibirica*), slender gentian (*Comastoma tenellum*), two-flowered cinquefoil (*Potentilla biflora*) and whitish rush (*Juncus triglumios* subsp. *albescens*).

There are significant wetlands and areas of old growth forests along the Tuchodi River. Ecosystem mapping has not been completed for the park, so there is no information available on at-risk ecological communities, though they are likely present in the park.

### 2.2.3. Ecological Integrity

Ecological integrity occurs when an area or network of areas supports natural ecosystem composition, structure and function, and a capacity for self-renewal. The Northern Rocky Mountains Park is part of a network of protected areas that is large enough to include all components and processes of the representative ecosystems (Gurd et al. 2001). The size of the park allows stochastic (i.e. randomly occurring) natural processes to predominate. In a large protected area, species and ecosystems have more space to be able to respond to climate change, thus maintaining the ecological integrity of the area.

### 2.2.4. Water

Northern Rocky Mountains Park plays a significant role in maintaining freshwater values for the northeast portion of the province. At the headwaters of the Tuchodi River in the Battle of Britain Range is the Lloyd George Icefield, the largest icefield in the northern Rocky Mountains. Many smaller unnamed glaciers feed the lakes, rivers, and creeks. Meltwater from these glaciers can sometimes be very turbid. Northern Rocky Mountains Park protects parts of six undeveloped watersheds:

- Wokkpash Creek, from 5 kilometres upstream from its the confluence with the Racing River;
- Tetsa River, upstream from its confluence with the North Tetsa River;
- Muskwa River, upstream of Crehan Creek to the Kwadacha Wilderness Park boundary.

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<sup>10</sup> The Red List is a list of ecological communities, and indigenous species and subspecies that are extirpated, endangered or threatened in British Columbia.

<sup>11</sup> The Blue List is a list of ecological communities, and indigenous species and subspecies of special concern (formerly vulnerable) in British Columbia.

- Three-quarters of the Chischa River, from 13 kilometres upstream of the Muskwa River;
- Tuchodi River; and
- Gathto Creek, from approximately 19 kilometres upstream of the Muskwa River.

Though large lakes are not abundant in the park (Table 3), there are several significant lakes, especially the Tuchodi Lakes and Wokkpash Lake, which are important recreational destinations. An interesting feature of Tuchodi and Wokkpash lakes is how they have been split by large fluvial fans (Figure 7).



**Figure 7: View of Wokkpash Lake**

<b>Table 3: Lake surface area and maximum depth</b>		
<b>Lake</b>	<b>Surface Area (ha)</b>	<b>Maximum Depth (m)</b>
Blizzard Lakes	78	-
Grizzly Lake	20	-
Kluachesi	221	7
Lower Tuchodi	438	19
St. Sepulchre	16	-
Tetsa Lake	57	-
Upper Tuchodi	728	43
Wokkpash Lake	319	36



### 2.2.5. Wildlife

Northern Rocky Mountains Park is a part of a complex wide-ranging predator-prey system with a high density and diversity of large mammal species. Based on broad-scale habitat mapping for the park, the majority of the park lies within moderate to high quality habitat for Mountain Goat, Moose, Grizzly Bear (blue-listed; COSEWIC Special Concern)<sup>12</sup>, Grey Wolf, Caribou (Muskwa and Pink Mountain subpopulations of the blue-listed northern mountain population; COSEWIC Special Concern), Elk and Stone's Sheep (blue-listed). Approximately one half of the Muskwa-Kechika Management Area's Stone's Sheep population is located within the park. Protecting habitat for ungulates is one of the key roles of the park. The ongoing health of those wildlife populations is important from conservation, cultural and recreation perspectives.

There is a long history of predator management (specifically for Grey Wolf) having been used as a management tool in the park. This has involved trapping, resident and non-resident hunters and government initiatives. BC Parks works with the ministry responsible for wildlife management to maintain consistency, where appropriate, with wildlife management initiatives and policy. Currently, provincial policy<sup>13</sup> supports the use of predator management to protect livestock and species at risk (i.e. Caribou).

Mineral licks are important features in the park. Ungulates congregate in these areas to ingest a variety of chemical components that are concentrated on the surface. Wet mineral licks are formed due to water movement (gravitational or upwelling) that concentrates materials leached from the surrounding rocks and soils. Dry licks are often formed through colluvial or aeolian exposure. Although they differ in their respective concentrations, wet and dry licks are natural sources of sodium, carbonates, magnesium, and sulfate.

Information on wildlife species in the park other than the prominent large mammal species is very limited. Other known wildlife within the park includes American Black Bear (*Ursus americanus*), Mule Deer (*Odocoileus hemionus*) and White-tailed Deer (*Odocoileus virginianus*), and smaller mammals including American Marten (*Martes americana*), Fisher (*Pekania pennanti*) (blue-listed), Canada Lynx (*Lynx canadensis*) and Wolverine (*Gulo luscus*) (blue-listed; COSEWIC special concern). Rare sightings of Cougar (*Puma concolor*) have occurred. Northern Myotis (*Myotis septentrionalis*), a blue-listed bat species (COSEWIC endangered), has been also documented in the park.

Numerous bird species use the park for both breeding and migration; however inventories are not available. The Rocky Mountains are known to be an important migration corridor for raptors such as Golden Eagle (*Aquila chrysaetos*). Other bird species known to or likely to use the park include Black-throated Green Warbler

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<sup>12</sup> The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the conservation status of species under the federal Species at Risk Act. Categories are extinct, extirpated, endangered, threatened, or special concern.

<sup>13</sup> Management Plan for the Grey Wolf (*Canis lupus*) in British Columbia, 2014:  
[http://www.env.gov.bc.ca/fw/wildlife/management-issues/docs/grey\\_wolf\\_management\\_plan.pdf](http://www.env.gov.bc.ca/fw/wildlife/management-issues/docs/grey_wolf_management_plan.pdf)

(*Setophaga virens*) (Blue-listed), Boreal Owl (*Aegolius funereus*), Bufflehead (*Bucephala albeola*), Canada Goose (*Branta canadensis*), Snow Goose (*Chen caerulescens*), Gyrfalcon (*Falco rusticolus*) (blue-listed) and Trumpeter Swan (*Cygnus buccinator*).

### 2.2.6. Fish

The lakes and rivers of Northern Rocky Mountains Park are populated by a diverse fish community (Table ). No two lakes in the park have the same suite of fish species present in them. The list of known fish species in the park includes Arctic Grayling (*Thymallus arcticus*), Bull Trout (*Salvelinus confluentus*) (blue-listed; COSEWIC special concern), Burbot (*Lota lota*), Lake Trout (*Salvelinus namaycush*), Lake Whitefish (*Coregonus clupeaformis*), Longnose Sucker (*Catostomus catostomus*), Mountain Whitefish (*Prosopium williamsoni*), Rainbow Trout (*Oncorhynchus mykiss*), Slimy Sculpin (*Cottus cognatus*), Spoonhead Sculpin (*Cottus ricei*), Lake Chub (*Cousius plumbeus*) and White Sucker (*Catostomus commersonii*).

**Table 4: Fish species of the lakes in Northern Rocky Mountains Park**

Lake Name	Fish Species										
	Arctic Grayling	Bull Trout <sup>14</sup>	Burbot	Lake Trout	Lake Whitefish	Lake Chub	Longnose Sucker	Mountain Whitefish	Rainbow Trout	Sculpin	White Sucker
Grizzly	X								?		
Kluachesi	X	X	X				X				X
Tetsa				X							
Tuchodi		X	X	X	X	X	X	X		X	
Wokkpash		X						X		X	

The streams of Northern Rocky Mountains Park are home to a number of fish species with Bull Trout and Slimy Sculpin being the most widespread. Arctic Grayling and Mountain Whitefish are also widely distributed (Table 5). Bull Trout are known to spawn in Dead Dog Creek, Crehan Creek, Gathto Creek and Joplin Creek. Rainbow Trout are not native to the river systems of the park, with stocking having occurred several

<sup>14</sup> Records show Dolly Varden in Kluachesi, Tuchodi and Wokkpash lakes, and North Tetsa River; these fish would most likely now be identified as Bull Trout

times; the last known stocking being Rainbow Trout into Grizzly Lake in 1972, but the Rainbow Trout may not have survived (Woods 2001a, Woods 2001b). Fish distribution is often limited by barriers such as waterfalls on smaller tributary streams.

**Table 5: Fish species of the main waterways of Northern Rocky Mountains Park**

Watershed Name	Fish Species						
	Arctic Grayling	Bull Trout <sup>10</sup>	Longnose Sucker	Mountain Whitefish	Rainbow Trout	Slimy Sculpin	Spoonhead Sculpin
Gathto	X	X		X		X	
Kluachesi	X	X		X		X	
Muskwa	X	X		X	X	X	
North Tetsa	X	X	X	X	X	X	X
Tuchodi	X	X	X	X		X	
Wokkpash		X				X	

### 2.3 Prescribed Fire

Ecosystem dynamics in Northern Rocky Mountains Park are greatly influenced by disturbances from fire that drive ecosystem renewal and change. Fire can have a variety of effects on ecosystems. In forested areas fires are often considered to be either stand replacing or stand maintaining. In grassland ecosystems, fire generally helps to maintain the grasslands through the removal of woody vegetation that cannot withstand repeated burning. The fire return interval for the area that includes Northern Rocky Mountains Park is between 50 and 400 years, with wildfire burning an average of 0.2% of the area per year between 1922 and 2012 (Ecora 2014, Leverkus 2015).

Prescribed fire is a management tool that can be applied to ecosystems for specific purposes that includes ecosystem maintenance or restoration, wildlife habitat enhancement, forage production for domestic animals, and wildfire prevention. Throughout the northeast, prescribed burning has been historically used by First Nations, guide outfitters, and government to enhance wildlife habitat and enhance forage for range purposes (Louiser *et al.* 2009). Range tenures held by guide outfitters allow for prescribed burning to maintain forage for horses<sup>15</sup> that are used in their operations.

The Fort Nelson Land and Resource Management Plan directs that prescribed fire be “allowed subject to the (protected area) management plan” with the comment “only for

<sup>15</sup> The number of Animal Unit Months (AUMs) for each range tenure in the park is capped at that authorized for the range tenure at time of park establishment.

*expressed management purposes as defined by a protected area management plan*". It also states for ecosystem and habitat enhancement that the use of fire be "*allowed subject to the (protected area) management plan*".

The Muskwa-Kechika wildlife management plan directs that habitat "*should be managed within the natural range of variability*",<sup>16</sup> while also providing that prescribed fire be used in key habitats to maintain early seral grass or shrub areas for Stone's Sheep, Moose and Elk. It is difficult to determine the natural range of variability of wildfire and the ecological conditions produced by wildfire, and then manage within this natural range. The use of prescribed fire may push ecosystems outside the natural range of variability for fire.

In the Park, prescribed burns have been proposed at frequencies greater than the natural fire return interval (Woods 2017). This results in the maintenance of early seral<sup>17</sup> grassland habitat favoured by ungulates and horses. Prescribed burning in the park was identified through the management planning public and stakeholder engagement process as a desired management tool for the purposes of maintaining and enhancing wildlife habitat in the park.



**Figure 8: View of Henry Creek Valley**

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<sup>16</sup> The Muskwa-Kechika Wildlife Management Plan defines Natural Range of Variability as "the range of variability in ecological conditions that occurred before European settlement".

<sup>17</sup> Vegetation succession can result in less palatable woody vegetation dominating some areas.

## 2.4 Climate Change

The effects of climate change on specific ecosystems and wildlife populations within British Columbia are not clearly understood at this time. However, research indicates that ecological communities will change along elevation and geographic gradients, causing shifts in plant and wildlife composition for given areas. Large, contiguous protected areas are known to be important to allow for species and population movement and refugia during these times of change. Due to its size and wilderness character, Northern Rocky Mountains Park, and the adjacent and proximal provincial protected areas, has the potential to allow for wildlife species and plant communities to respond and adapt to climate change.

Based on the projection tools that are publicly available, the projected climate within the area of the park will likely be warmer and wetter in the future<sup>18</sup>. The ecological change in the park may include:

- Alpine or boreal forest permafrost melting if mean annual temperatures are consistently above 0°C;
- Tree-line moving to higher elevations and reducing the Boreal Altai Fescue Alpine BEC subzone, thus increasing the shrub zone;
- A larger degree of ecosystem type shift in the boreal white and black spruce / eastern portions of the park, where most of the recreation and prescribed fire occurs;
- Where the Boreal Altai Fescue Alpine BEC subzone remains, this area may become a refuge for some species, especially at-risk ecological communities, plant and animal species.

## 2.5 Cultural Heritage Values

The cultural heritage role for this park is to enable visitors, local and international, to understand the importance of First Nation history and traditional knowledge within the park and surrounding area. Historically and presently, the summer and fall activities of First Nations include the hunting of large and small game, fishing, plant collecting, and the preparation of food for long-term storage for the upcoming winter months.

It is also important that the history and knowledge of early Europeans be appreciated and acknowledged as their history closely relates to current land practices.

### 2.5.1. First Nations

The Northern Rocky Mountains Park area has a very strong First Nations presence. It is well known that the First Nations people historically traveled throughout the park area, usually from plateaus to mountains and back, due to a lifestyle based on availability of game and other resources and seasonal movements. They were nomadic hunting

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<sup>18</sup> Climatedata.bc

people who lived in small family groups. A diversity of plants and animals were used for various purposes, ranging from foods to tools to medicine. The ability of the First Nations to cope in the northern Rocky Mountains before European contact required not only an intricate knowledge of resources and geography, but also efficient technology. People were dependent on the resources that the mountains and foothills provided them, and their way of life was entirely based on the land.

The timing and availability of plant and animal resources were critical to the success of the First Nations lifestyle and ultimately their survival. Certain plants, for instance, could only be collected in specific locations, either because of their medicinal strengths or their rarity in the landscape. Some fungi, for example, were collected in the winter to burn for their smell, and as a mosquito repellent later in the year.

Good short-term camp locations were chosen based on the animals and plants in the area, and tended to be placed near creeks and on dry ground. As a consequence of the hunter-gatherer lifestyle that the First Nations enjoyed, their shelters consisted of quickly assembled yet versatile structures. Long-distance travel made up a significant component of First Nations life. Overland trails were important transportation routes with game trails being extensively used, especially to intercept animals. Where land trails occasionally proved impractical, water travel was also carried out by canoe in the late spring to early fall months.

Contact with European explorers and fur traders precipitated a dramatic change in lifestyle of these original inhabitants of the Northern Rocky Mountains Park area. People tended to take on a less nomadic lifestyle as they congregated and settled around forts and trading posts.

Today the First Nations people of the area continue to pursue many of the land use activities that their ancestors pursued. As in the past, their present-day way of life is intimately tied to the land and its resources, particularly its wildlife resources. The same transportation routes that were travelled by First Nations people years ago are navigated today by horse, snowmobile and river boat. Recognition of the area's rich history coupled with on-going First Nations' continued use is vital to the effective management and maintenance of this park.

One of the examples of an influential First Nations person who contributed to the dynamic history of the region is a Kaska Dena individual named Charlie McDonald. Charlie McDonald was born in 1894 and originated from the Moose Lake and Toad River area. He was well-known throughout his life for his knowledge of the landscape and region that his family called home. In the 1900's Charlie guided a variety of individuals including many government surveyors, the famed botanist Mary Henry, various priests and missionaries, RCMP, army corps and government officials who needed assistance finding their way through the region. Charlie passed away in 1975 and is still well-documented as being an instrumental person in the building of the Alaska Highway as he helped lay the route for the highway from Mile 351 to Mile 620.



The Northern Rocky Mountain Park is an area traditionally and currently used by Kaska Dena. Many sites associated with hunting, fishing, gathering and occupancy are documented, as are important trails and trading locations. From this information, it appears that the Kaska accessed the northern part of the Northern Rocky Mountains Park area from a trail along the present-day route of the Alaska Highway, travelling into the heart of the park, primarily along the Tetsa River and its tributaries. The northwestern border of the park was accessed by trails along the Racing River, MacDonald Creek, and Wokkash Creek. The southern part of the park was accessed by Kaska from the Kwadacha (Fort Ware) area, along the Kwadacha River and across Bedaux Pass to the headwaters of the Muskwa River.

### 2.5.2. Early Explorers

Early European use in the park primarily consisted of trapping, fur-trading, guiding, packing and hunting; all of these activities continue today. Horse-supported geologic survey expeditions were common in the pre-helicopter era and were important in establishing early routes and increasing the general knowledge of the area. Appendix 2 expands on the history of early explorers including botanist Mary Henry, surveyor Knox McCusker and Charles Bedeaux, who were prominent early explorers of the area of the park.

Since the 1930s, packers<sup>19</sup> and guide outfitters have conducted commercial big game hunting in the park. These operators played an important role in shaping human use patterns of the northern Rocky Mountains. Mount Peck and Mount Gary Powell reflect this history and pay tribute to two of the pioneer guides in this park, Don Peck and Gary Powell.

Trapping has a very important history in the Northern Rocky Mountains Park area, as reflected in the naming of Mount Sheffield for the prominent early trapper, Bert Sheffield described in Appendix 2.

On March 9, 1942, construction of the famed Alaska Highway commenced. Long considered one of the construction achievements of the world, the Alaska Highway had a large impact on access to the area in and around the park by providing road access to the northern boundary of the park and the ability to support other forms of access such as riverboat, aircraft and horseback.

## 2.6 Recreation Values

Northern Rocky Mountains Park provides many opportunities for wilderness recreation and is popular for local recreationalists, as well as people from other parts of British Columbia and Canada. The park also attracts international visitors. The most popular activities include hunting, fishing, horseback trips, hiking, camping, boating, climbing, canoeing, photography, snowmobiling, and wildlife and scenic viewing. Historically, the main purpose for visiting the park has been hunting for recreation and sustenance.

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<sup>19</sup> Packers are now referred to as transporters and are required to be licenced.

Though hunting is expected to remain very important to the local economy, other recreational activities other than hunting such as horse trips and hiking are increasing.



**Figure 9: Horse Pack Trip Crossing Tetsa River**

### **Lodges and Cabins**

Lodges, cabins and sheds of commercial operators are the main type of facilities that exist in the park. Smaller structures such as pit toilets and food caches also exist; however, such facilities are infrequent. Commercial operators have established camps they use regularly as part of their operations. In areas that have facilities, these generally function as the main base camp (base of operations) or satellite camps (annual or seasonal use secondary camps). In areas that have minimal facilities, but no buildings, spike camps are often established (short-term, low impact camps). Hunters and other visitors may also establish camps to use as a base for their recreational activity but these are temporary structures such as wall tents.

### **Camping**

Wilderness style (no facilities) camping occurs in a number of undesignated sites throughout the park. Public use is generally confined to consistent areas; while not considered designated sites, these areas show disturbance from overnight use and exhibit noticeable impacts such as vegetation loss, loss of the organic litter layer and exposure of mineral soil. Camping also occurs sporadically in a number of other locations, however in these areas, impacts and signs of use are minimal. There are approximately 110 undesignated camping spots throughout the park that are used by the public; however, a full inventory has not been completed.

### **Hiking/Horse Use**

The numerous routes or trails in the park that were developed before the park was established are not maintained by BC Parks. Multiple-day and week-long hiking and

horse excursions are possible using the network of primitive routes, cross-country travel and dispersed undesignated campsites. The Wokkpash to MacDonald Creek 70-kilometre circle route is a spectacular five to seven-day wilderness trip for backcountry adventurers that traverse the Wokkpash area of this park and the neighbouring Stone Mountain Park.

### **Snowmobiling**

The park has traditionally not been widely used by snowmobiles except around the lower Gathto/Kluachesi area and along the Wokkpash Valley Trail. The majority of snowmobile access is gained from the Alaska Highway corridor, but there is also limited use along the eastern boundary and in the southeast corner via Bat Creek. Low snow depth generally limits snowmobile use in the park, depending on the year. The park is currently not considered or promoted as a snowmobile destination. However, with advancing technology in snow machines and a changing climate, this recreational use may change into the future.

### **Boat Access**

Much of the private recreational boating activity in the park is done with jet-boat. Jet-boats are a popular way to access the park for both hunters and non-hunters alike. It is a long and challenging trip into the park by jet-boat, travelling up the Muskwa River, beginning at the Kledo Creek boat launch.

### **Canoeing**

Two canoe or rafting trips are possible, down the Tuchodi and Muskwa rivers from Tuchodi Lakes, and Muskwa River from below the upper canyon. Both trips require air access and end at the Kledo Creek boat launch along the Alaska Highway.

## **3.0 Management Direction**

### **3.1 Management Objectives and Strategies**

This management plan addresses a number of issues identified through previous provincial land use planning processes and through consultation with other government agencies, First Nations, user groups, and the public. There are significant gaps in the understanding of ecosystems and values in the park. Over the last decade, much of the management effort has been directed to managing human use. An increased focus on ecosystem-based management and associated strategies is needed and existing knowledge gaps need to be filled.

Due to the need for an increased focus on ecosystem-based management, in the spirit of recognition and reconciliation, BC Parks seeks to work collaboratively to implement the Northern Rocky Mountains Park management objectives with First Nations who have aboriginal and treaty rights in the park.

### 3.1.1. Ecosystem Management and Climate Change

Ecosystem management needs within the Northern Rocky Mountains Park include: identifying species and ecosystem management priorities and conservation actions; cooperative management initiatives with surrounding land management agencies, First Nations and local government; and biological assessment and long-term monitoring that track the effects of human activity and climate change. Without this information, park managers will be unaware of such effects and may well forgo options to avoid irreversible impacts such as the loss of species.

Ecosystem management approaches typically aim at sustaining representative ecosystems and species, but such measures may be thwarted by the effects of climate change (e.g., changes in precipitation levels, air temperature, etc.) which can alter the ecology of an area. Such effects may be subtle, but more dramatic natural disturbances such as wildfire, insects and disease are likely to increase in frequency or severity. With the ongoing effects of human activities outside the park already applying pressure on both rare and representative species and ecosystems, park managers may have to decide to what extent climate change effects can or should be addressed within the park in order to help natural systems adjust or to support species that might otherwise be extirpated.

The most consistently recommended approach for adapting to climate change is to maintain natural connectivity across the landscape. Northern Rocky Mountains Park is large but still relies on the movement of species across its borders. Working with adjacent land managers to maintain connectivity across the landscape is one of the most important actions that can be taken, particularly in light of the potentially rapid changes that may be brought about by climate change.

Management Objective	Management Strategies
To protect and conserve the landscapes, representative ecosystems and values that makes this park unique.	<ul style="list-style-type: none"> <li>Develop and apply an ecosystem management strategy that includes the major ecosystem components of vegetation, fish and wildlife and natural processes such as fire, insects, diseases, pollination and evolution.</li> </ul>
To increase public awareness of the ecosystem and features of special concern in the park.	<ul style="list-style-type: none"> <li>Prepare educational information that can be viewed on the internet or distributed through brochures or information shelters.</li> </ul>
To increase knowledge of ecological components and processes and an understanding of their response to climate change.	<ul style="list-style-type: none"> <li>Encourage research/monitoring of climate change to determine the effects on park and protected area values and ecosystem functioning and appropriate actions for response.</li> </ul>
Mitigate or lessen the effects of climate change on the park and its values.	<ul style="list-style-type: none"> <li>Work with land managers of adjacent areas to maintain connectivity across the landscape to allow for species movement.</li> </ul>



### 3.1.2. Water

Recreational activity on water bodies is the main use that could affect water quality inside the park. Fuel storage is allowed approximately 2 metres above the high water mark of watercourses, but is a common concern due to the potential for pollution. Management strategies are needed to avoid any wide spread impacts such as water pollution, and human-caused erosion and sedimentation.

Management Objective	Management Strategies
To protect and maintain water quality.	<ul style="list-style-type: none"><li>• Fuel storage over 500 litres is only permitted at guide-outfitter camps and other designated locations, as identified in a park use permit;</li><li>• Fuel containers must be marked with personal contact information and removed at the end of each fall season.</li><li>• All boaters and operators of aircraft are responsible for following fuel storage best management practices and implementing new technologies over time.</li><li>• Provide the public with information on minimizing impacts to water quality in the backcountry through the Leave No Trace section on the BC Parks website and through signage at access points.</li><li>• Encourage research and monitoring focused on water quality to aid in determining impacts from either point source or non-point source contaminants, particularly in higher use recreation areas.</li><li>• Allow, under a park use permit, temporary small scale water diversion (such as a small pump) to enable commercial operators to provide a water supply to base camps within their operating season.</li></ul>

### 3.1.3. Vegetation

Detailed ecosystem mapping has not been completed for Northern Rocky Mountains Park. This detailed ecosystem mapping would increase knowledge of at-risk ecosystems, plant species and wildlife habitat.

Areas of Northern Rocky Mountains Park that are more readily accessible to the public are considered to be at greater risk when it comes to potential damage to vegetation.

- During peak visitation seasons (e.g., hunting season), impacts to vegetation from camping occur in new areas because existing sites are being used to full capacity.

- In the vicinity of camping areas, damage to surrounding vegetation occurs as timber is illegally harvested for firewood<sup>20</sup>.
- The establishment of invasive plant populations is an increasing risk in northeastern British Columbia, including along travel corridors in the park.

Additionally, impacts to vegetation from recreation activities in areas that are not easily accessed are unknown. Possible impacts to sensitive areas (i.e., alpine or sub-alpine areas and blue or red-listed species) are of particular concern.

Management Objective	Management Strategies
Maintain vegetation and ecosystem for ecological integrity and visual aesthetics.	<ul style="list-style-type: none"> <li>• Conduct inspections of camping areas to ensure firewood is being obtained in accordance with park regulations (e.g., only dead wood laying on the ground can be used for fires). Consider information and educational signage if needed. The prohibition on ringing/girdling or cutting of living trees will be strictly enforced.</li> <li>• Consider the authorization of cutting dead standing wood for firewood through a Park Use Permit and following the BC Parks Impact Assessment process, including site assessments where appropriate.</li> <li>• Avoid locations containing at-risk species and ecological communities when doing any future developments.</li> <li>• Prevent damage to riparian vegetation by encouraging horse users to adhere to the horse riders’ backcountry ethics that have been developed for the park, which advocates resting horses away from the water’s edge<sup>21</sup>.</li> </ul>
Increase knowledge of ecosystems and protect at-risk plant communities and species.	<ul style="list-style-type: none"> <li>• Work with First Nations communities, other ministries, community groups and/or educational institutions to support inventories and studies aimed at better understanding the distribution of plant species and ecosystems and their ecology; including how they will respond to environmental changes such as climate change (e.g. BC Parks Long-term Ecological Monitoring Program, First Nations Land Guardian programs).</li> <li>• Conduct Backcountry Recreation Impact Monitoring (BRIM) within high use areas in the Nature Recreation Zone and</li> </ul>

<sup>20</sup> The Park, Conservancy and Recreation Area Regulation states that backcountry park visitors may only use vegetation that is lying dead on the ground to start fires.

<sup>21</sup> For guidance on Horse Riders Backcountry Ethics, visit <http://www.env.gov.bc.ca/bcparks/explore/parkpgs/redfern/trails.html#ethics>

Management Objective	Management Strategies
	<p>adjust management actions to ensure natural and cultural values are not being compromised by recreation use levels, particularly during peak season. The BRIM process will be used to determine the need and location of new backcountry camping areas.</p> <ul style="list-style-type: none"> <li>• Develop partnerships to monitor activities occurring in areas containing known at-risk plant species to assess their potential negative impacts, including alpine areas. When impacts occur, communicate concerns to relevant parties through outreach and consider special permit provisions as necessary.</li> <li>• Where required, implement Species at Risk recovery plan strategies within park boundaries for red- and blue-listed species and ecosystems.</li> </ul>
To prevent the establishment or spread of invasive species.	<ul style="list-style-type: none"> <li>• Require commercial operators, through park use permits, and encourage park visitors, to adhere to BC Parks Invasive Plant Best Management Practices<sup>22</sup> and guidance in the regional hunting regulations, including using local weed free hay, pelletized and processed feed for pack animals.</li> <li>• Encourage commercial operators and park visitors to report occurrences of invasive species.</li> <li>• Monitor invasive species establishment, review management actions and explore treatment options<sup>23</sup>.</li> </ul>

### 3.1.4. Wildlife

The park plays a critical role in maintaining wildlife habitat and movement corridors, and sustaining wildlife populations in the northern Rocky Mountains. The remoteness of Northern Rocky Mountains Park presents challenges in determining wildlife abundance, key wildlife habitat locations, engaging in regular regulation enforcement and monitoring effectiveness of wildlife management techniques.

There are a number of red- and blue-listed mammal and bird species found in the park, but developing effective management may be limited by the lack of information on these species in the park.

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<sup>22</sup>Best management practices for invasive plants in Parks and Protected Areas in BC  
<http://www.env.gov.bc.ca/bcparks/conservation/docs/iscbc-bc-parks-bmp-20180412.pdf>

<sup>23</sup> The use of herbicides in parks is only considered if there is no alternative treatment that has proven to be successful and if there is a significant threat to the ecological integrity of the park, as well as the surrounding area.

The Northern Mountain population of Caribou is provincially blue-listed and federally COSEWIC Special Concern, and the Muskwa and Pink Mountain subpopulations are declining. Caribou are susceptible to threats such as habitat loss and alteration, altered predator/prey dynamics and disturbance throughout their range. Habitat management activities that reduce old and mature forests, and change predator/prey dynamics<sup>24</sup>, can enhance habitat for other ungulate species and may negatively impact Caribou.

Trapping has been an important traditional use in the park especially amongst First Nations communities, where traplines are often held by families. The Fort Nelson Land and Resource Management Plan recommended that trapping continue in its present form.

Many activities that park visitors pursue are integrally tied to the area’s abundance and variety of wildlife, such as hunting, trapping and nature appreciation.

Management Objective	Management Strategies
<p>Increase knowledge of wildlife populations, distributions and habitats, and ensure that all activities are managed to maintain healthy wildlife populations and minimize disturbance to the ecosystem.</p>	<ul style="list-style-type: none"> <li>• Work with First Nations communities, other ministries, stakeholder groups and/or educational institutions to conduct wildlife inventories and studies aimed at better understanding species’ needs; including how wildlife composition will evolve in response to environmental changes such as climate change.</li> <li>• Work with the Ministry responsible for wildlife management to assess Caribou, Elk, Moose, Mountain Goat and Stone’s Sheep population sizes and distribution.</li> <li>• Where possible and feasible, work with partners and other government agencies to inventory Species at Risk and implement recovery plan strategies within park boundaries for red- and blue-listed species.</li> <li>• Work with the ministry responsible for wildlife management to maintain consistency with provincial and regional wildlife management initiatives and policy (e.g. predator management).</li> <li>• Work with partners and other government agencies to identify and map locations of listed or significant species. Focus initially on areas that could be potentially negatively impacted by recreational activities. Should negative impacts occur, develop and implement a plan, in coordination with the relevant partners.</li> </ul>

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<sup>24</sup> The report “Role of Protected Areas in Caribou Management in British Columbia” gives details of the issues surrounding Caribou management, with recommendations for Caribou management in the protected area system.

Management Objective	Management Strategies
	<ul style="list-style-type: none"> <li>• Recommend the use of the BC Conservation Data Centre’s Data Submission process to collect informal wildlife information from First Nations, commercial operators and other park visitors<sup>25</sup>.</li> <li>• Coordinate with the Muskwa-Kechika Management Area wildlife management plan (two documents)<sup>26</sup> to guide wildlife management decisions within the park, as appropriate.</li> <li>• Work with First Nations, resource managers and other groups to ensure adjacent land use decisions include consideration of park values.</li> </ul>
Prevent impacts of non-native species to native wildlife populations and their habitats.	<ul style="list-style-type: none"> <li>• To protect native species from competition or disease introductions, llamas and other exotic animals are not permitted within the park; only horses, mules and dogs (including off leash dogs) are permitted.</li> </ul>
Maintain current trapping opportunities subject to conservation objectives.	<ul style="list-style-type: none"> <li>• Monitor trapping harvest to ensure conservation objectives are met.</li> </ul>

### 3.1.5. Fish

The lakes and streams in the park are generally sensitive to over-harvesting and changes in habitat and it will be very important to manage fish populations and habitat carefully, especially the blue-listed Bull Trout. Stocking of lakes has taken place historically in several areas in the park with a varying degree of angling enhancement success.

Management Objective	Management Strategies
To increase knowledge and understanding of fish populations, especially those that are potentially vulnerable to over-fishing.	<ul style="list-style-type: none"> <li>• Work with First Nations communities, other ministries, community groups and/or educational institutions to support fish inventories and studies aimed at better understanding species’ needs; including how fish will respond to environmental changes such as climate change.</li> <li>• Conduct assessments of Bull Trout to gather more information on spawning locations and population status.</li> </ul>

<sup>25</sup> <http://www.env.gov.bc.ca/cdc/contribute.html>

<sup>26</sup> <http://www.muskwa-kechika.com/management-area/legislation-planning>



Management Objective	Management Strategies
Protect and maintain the natural diversity and productivity of aquatic ecosystems while maintaining a low intensity, high quality fishery	<ul style="list-style-type: none"> <li>• Monitor and assess angling use levels for water bodies and consider angling restrictions if use levels are determined to be impacting the fish populations.</li> <li>• Fish stocking is prohibited.</li> <li>• If jetboat use is impacting Bull Trout spawning habitat, apply best management practices or guidelines to minimize impacts.</li> <li>• Provide information to the public and other parties interested in managing fish and their habitat in the park to build understanding of fisheries issues.</li> </ul>

### 3.1.6. Cultural Values

There are significant First Nation’s interests and cultural values in Northern Rocky Mountains Park.

Some information relating to traditional land use sites within the Northern Rocky Mountains Park area has been provided by First Nations, such as the Kaska Dena First Nation. However, this is an obvious information gap that has been identified. Information from First Nations land use studies conducted in the park will be considered when making management decisions. BC Parks will work with First Nations to ensure appropriate use and confidentiality of shared information.

Management Objective	Management Strategies
To protect and gain a better understanding of cultural features, archaeological sites and traditional use locations.	<ul style="list-style-type: none"> <li>• Support efforts to conduct historical and ethnographic research and cultural heritage field inventories as appropriate (e.g. funding opportunities or permits).</li> <li>• Work with First Nations to implement protective measures where threats to known cultural values are identified.</li> </ul>
To promote stewardship of social, ceremonial and cultural values/uses and interests of the Kaska and Treaty 8 First Nations in the park.	<ul style="list-style-type: none"> <li>• Integrate First Nations language in park information, as appropriate. This may include: <ul style="list-style-type: none"> <li>○ Identification by First Nations where First Nations place names can be applied;</li> <li>○ First Nations language on maps, other publications and interpretive material as appropriate.</li> </ul> </li> <li>• Support, when possible, opportunities to develop cultural interpretive material for the park.</li> <li>• Support, when possible, opportunities for First Nations traditional, sustenance and harvesting activities.</li> </ul>

Management Objective	Management Strategies
	<ul style="list-style-type: none"> <li>• Incorporate traditional knowledge into park management.</li> </ul>
To encourage cultural and First Nations tourism activities in the park.	<ul style="list-style-type: none"> <li>• Encourage commercial recreation operators to establish working relationships with the First Nations and seek opportunities for mutual benefits.</li> <li>• Encourage discussions with First Nations regarding the development of appropriate cultural tourism activities.</li> </ul>

### 3.1.7. Access Management

Managing access is the single most effective means of retaining the isolation and wilderness quality of the park. Access management outside of the park should consider the park zoning, experiences and levels of use envisioned for the park. The Fort Nelson Land and Resource Management Plan recommended that recreational use should be managed in a way that recognizes unique historical use patterns, traditional access and that the *status quo* remains.

#### *River and Lake Transportation*

The Fort Nelson Land and Resource Management Plan recommended no motorized boat access above Tuchodi Lakes, but discussions with the LSPAG in 2019 determined that this proposed restriction requires further investigation by BC Parks to determine its appropriateness. BC Parks will monitor riverboat use (e.g. jet boating, rafting) to address impacts to conservation values.

Boating is allowed in the Wilderness Recreation Zone and Nature Recreation Zone.

#### *Trail Promotion*

There is concern over the appropriate level of route development in the park. To reflect the vision for the park, there will not be any targeted promotion by BC Parks of the routes in the park. The exception is the Wokkpash-MacDonald Creek 70-kilometre circle route which will continue to be promoted.

#### *Trail Maintenance*

BC Parks will not upgrade any existing route or formalized trails, except where safety and environmental issues (i.e. avoidance of sensitive areas for wildlife, vegetation, and soils) prompt development to protect these values. For the Wokkpash Valley Trail, maintenance will be prioritized based on use levels, safety, and trail condition. For any secondary trails, BC Parks will not conduct trail maintenance. BC Parks will endeavour to partner with groups to complete trail maintenance on primary formalized trails (e.g. Wokkpash Loop) and will be selective when approving volunteer groups to maintain secondary trails (e.g. horse trails).

## Aircraft Use

The Fort Nelson Land and Resource Management Plan recommends that use of aircraft within the boundaries of the park needs to consider and maintain historical patterns of recreational access.

Management Objective	Management Strategies
<p>To ensure means of access is consistent with traditional uses and conserves wilderness characteristics.</p>	<ul style="list-style-type: none"> <li>• Continue low-impact traditional access methods (e.g. hiking trails).</li> <li>• Continue to only promote the Wokkpash-MacDonald Creek 70-kilometre circle route.</li> <li>• Prohibit road development, and additional route development in the park.</li> <li>• Road development for a potential expansion of the Alaska highway may be considered in Northern Rocky Mountains Protected Area directly adjacent to the existing Alaska highway.</li> <li>• Prohibit ORV use (other than snowmobiles) in the park unless specifically authorized through a Park Use Permit.</li> </ul>
<p>To minimize the impacts of riverboats and other motorized water transportation activities on wilderness recreation and ecological integrity.</p>	<ul style="list-style-type: none"> <li>• Work with First Nations and local boating groups to monitor annual boating pressure on the park during the high use period (hunting season).</li> <li>• Investigate potential impacts to conservation values from boating above Tuchodi Lakes and determine whether the Fort Nelson Land and Resource Management Plan recommendation to restrict boating above Tuchodi Lakes is appropriate.</li> </ul>
<p>To provide opportunities for aircraft access to the park while preserving a quality backcountry experience and minimizing wildlife conflicts.</p>	<ul style="list-style-type: none"> <li>• Prohibit new or expanded airstrips except where required for environmental or safety reasons.</li> <li>• Prohibit cutting of live trees for helipad construction.</li> <li>• The landing of aircraft is strongly discouraged on high altitude plateaus due to potential conflicts with wildlife values. If conflicts are identified, a high elevation aircraft landing prohibition may be considered under Schedule A of the <i>Park Act</i> regulation.</li> <li>• If aircraft/wildlife conflicts are identified, develop flight guidelines (fixed wing/helicopter) to address specific wildlife concerns (i.e., Mountain Goat or Caribou issues). These conditions can be incorporated into park use permit considerations and shared for voluntary implementation by private operators.</li> </ul>

Management Objective	Management Strategies
	<ul style="list-style-type: none"> <li>New methods of air access (i.e. Unmanned Air Vehicles / drones) will not be allowed unless authorized under permit for commercial filming or research.</li> </ul>

### 3.1.8. Recreation Management

The management intent is to continue to provide similar recreational opportunities and experiences to those that existed at the time the park was established and that have low impact on the pristine mountain environment. Camping, horse use, and snowmobiling are key activities in the park requiring management consideration.

#### Camping

Most camping in the park is widely dispersed during most of the year, however at certain times it can be concentrated. For example, during the peak of hunting season, the numerous backcountry campsites along the Tuchodi River are used to full capacity.

Currently, camping does not have significant impacts on the park’s environment. If use increases, BC Parks will need to consider establishing specific camping sites.. While structures like toilets and fire pits may not seem appropriate to some in a wilderness area, they may be needed in certain areas to confine impacts and minimize excessive site degradation. In areas of higher use, visitors will be encouraged to use frequently used campsites. Campsites that conflict with known sensitive sites for wildlife may require relocation or need to be eliminated or closed during certain times of the year.

Wall tents are widely used by park visitors but are not considered permanent structures by BC Parks. However, the methods used by some visitors using wall tents are a concern for BC Parks. In these cases, wall tents have been erected in mid- to late summer in order to secure a camping spot for the upcoming hunting season. Similarly, food caches, intended for the storing and protection of meat and other foods or goods are not being removed within the 14 day stay limit<sup>27</sup>. Recreational camps and food caches need to be temporary (maximum stay of 14 days); an exception may apply where they are associated with a cabin or facility authorized by park use permit.

#### Horse Use

Horses and mules have been a traditional method of transportation in the park. Horse and mule use will be managed to maximize recreation enjoyment and avoid wildlife conflicts, while not degrading park values.

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<sup>27</sup> Section 39 of the *Park Act* states: A person may not camp in a park, conservancy or recreation area for more than 14 days except (a) as authorized by a park officer, or (b) in a designated long-stay campsite.

Trails and camps for horse users need to remain rustic in nature. There may need to be site specific restrictions and conditions developed for high-use areas in order to minimize social and environmental impacts.

**Snowmobiling**

Snowmobiling is a traditional recreational use in the park and is becoming an increasingly popular winter activity, moving into areas previously not used by snowmobilers. Packed trails on snow can facilitate access by wolves by easing travel conditions. This can lead to increased predation if the trails are close to Caribou and Mountain Goat winter ranges. Snowmobiling can also displace wildlife from their preferred habitat areas, causing them to use more energy and have less optimal food and cover available.

To achieve the pristine wilderness objectives of the Wilderness Recreation Zone and Special Feature Zone, snowmobiling is not allowed within the Wilderness Recreation Zone or Special Feature Zone. Snowmobiling is allowed within the Nature Recreation Zone which makes up 56% of the park.

Management Objective	Management Strategies
<p>To provide a high quality experience for visitors to the park while maintaining the sense of remoteness and naturalness, freedom to choose where to travel, and self-reliance dependent on personal abilities.</p>	<ul style="list-style-type: none"> <li>• Conduct Backcountry Recreation Impact Monitoring (BRIM) and adjust management actions to ensure natural and cultural values are not being compromised by recreation use levels, particularly during peak season. The BRIM process will be used to determine the need for, and location of, new backcountry camping areas.</li> <li>• Management decisions will reflect the low, dispersed levels of visitor use, and facilities will only be installed where use levels require them.</li> <li>• Promote the “leave no trace” wilderness ethic for public lands to reduce site impacts including the proper use of wall tents and design of food caches. An adapted version specifically geared towards horse users is available<sup>28</sup>.</li> <li>• Allow horses on existing trails throughout the park unless specific restrictions are established in the future to protect certain important values (e.g., sensitive habitats).</li> <li>• Educate visitors about minimum impact camping and backcountry wilderness ethics at all sites in the park to</li> </ul>

<sup>28</sup> To view Horse Riders’ Backcountry Ethics visit <http://www.env.gov.bc.ca/bcparks/explore/parkpgs/redfern/trails.html#ethics>.



Management Objective	Management Strategies
	avoid site degradation and minimize human-wildlife conflicts.
To increase public awareness of park features and areas of special concern in order to avoid unintended impacts to park values.	<ul style="list-style-type: none"> <li>• Share information on special features and values through trail information shelters and through the BC Parks website.</li> </ul>
To provide snowmobiling opportunities while preserving a quality backcountry experience and minimizing wildlife conflicts.	<ul style="list-style-type: none"> <li>• If areas of ongoing wildlife conflict are identified, BC Parks will consider site specific or elevation closures (e.g., disturbance to key winter habitats).</li> <li>• Allow snowmobiling only in the Nature Recreation Zone (see Figure 10).</li> <li>• Snowmobiling that is used to access permitted traplines will be allowed in all zones.</li> <li>• Provide educational signage on snowmobiling practices at key locations (e.g., trailheads).</li> </ul>

### 3.1.9. Prescribed Fire

The continuation of prescribed fire to enhance wildlife habitat presents a challenge for BC Parks as generally BC Parks’ conservation policies preclude the use of prescribed fire to enhance wildlife habitat<sup>29</sup>. However, the Fort Nelson LRMP directs that prescribed fire be “*allowed subject to the (protected area) management plan*”. The management strategies below provide this management direction. BC Parks will continue to consider prescribed fire as management tool to maintain forage and wildlife habitat in the park and apply specific management strategies when a prescribed fire project is proposed.

The agreement between BC Parks and the Range Program, administered by the ministry responsible for range, allows prescribed burning by permittees if it is identified in a Range Use Plan and is consistent with park values and/or a park management plan. It is recognized by BC Parks that both wildlife and horses may use burned areas but plans to manage prescribed fire need to be clear on the purpose of the burn because it will inform the BC Parks Impact Assessment and decision-making process.

In addition, with climate change predictions into 2050 forecasting warmer drier summers for the park area and potentially novel ecosystems, wildfire frequency may increase (in scale, frequency, and intensity) and post-fire vegetation dynamics may also change. This highlights the need to be adaptive when considering prescribed fire in the park in the future.

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<sup>29</sup> BC Parks conservation policies support the use of prescribed fire to mimic historic natural return intervals within specific ecosystems.

Management Objective	Management Strategies
<p>Use fire as appropriate to manage wildlife habitat and forage production, considering the impacts and benefits to all wildlife species and ecosystems.</p>	<ul style="list-style-type: none"> <li>• Work with other agencies, First Nations, academia, relevant stakeholders and local community groups to continue to research the history and future objectives of prescribed burning in the park.</li> <li>• Work with stakeholders, First Nations, and the relevant Ministries responsible for managing wildlife, range, and wildfire to identify clear objectives and strategies for prescribed fire in the park, by: <ul style="list-style-type: none"> <li>○ considering prescribed fire for maintenance of early seral habitat and forage production where previously used, subject to the BC Parks Impact Assessment process and associated policy;</li> <li>○ conducting research about fire history and natural range of variability in the park;</li> <li>○ Adapting as necessary in the future, based on research findings, climate change, and government policy. This may include an amendment to the management plan.</li> </ul> </li> <li>• Do not use prescribed fire to create early seral habitat for ungulates where there has not been previous prescribed burning for this reason.</li> <li>• BC Parks will work collaboratively with the ministries responsible for range, wildlife, and wildfire management to evaluate prescribed burn proposals and coordinate prescribed burning objectives across the larger landscape.</li> <li>• Ensure proposed prescribed burns for wildlife habitat enhancement are assessed using the BC Parks Impact Assessment process.</li> </ul>
<p>Work collaboratively with the Range Program to manage <i>Range Act</i> tenures.</p>	<ul style="list-style-type: none"> <li>• Ensure the Policy and Guidance set out in the Memorandum of Understanding (MOU) for Administering and Managing <i>Range Act</i> Agreements in Parks and Protected Areas are followed.</li> <li>• Work with range tenure holders and ministry staff responsible for range management to ensure range use is in alignment with maintaining healthy ecosystems that have a disturbance regime that closely mimics natural disturbance regimes in terms of frequency and severity of disturbance.</li> <li>• Ensure range management activities are consistent with the forage requirements of the livestock in the tenure.</li> </ul>

Management Objective	Management Strategies
Information on the results of fire management activities is collected.	<ul style="list-style-type: none"> <li>• Ensure monitoring is done to determine if burn plan objectives are met and to record any impacts (intended or unintended) on ecosystems and wildlife.</li> </ul>

### 3.1.10. Commercial Recreation Management

Continuation of commercial recreation opportunities is very important as it allows for a different park experience and type of park visitors. Primarily, these park visitors value a remote wilderness hunting and/or fishing experience. Maintaining the existing commercial recreation opportunities was supported by the Fort Nelson Land and Resource Management Plan.

The Fort Nelson Land and Resource Management Plan provided direction that BC Parks should allow commercial operators to expand their holdings and operations within the existing provincial parks, including expansion of lodges within provincial parks if such an expansion is feasible.

Management Objective	Management Strategies
To maintain commercial recreation opportunities within the park.	<ul style="list-style-type: none"> <li>• Work with provincial tourism agencies and recreation operators to ensure marketing and promotion is consistent with the vision for the park and this management plan.</li> <li>• Work with commercial operators to ensure sensitive animal and plant species, sites and features are not placed at undue risk due from use (i.e., sensitive wildlife areas, ecologically sensitive areas, and/or cultural sites).</li> </ul>
To ensure commercial backcountry recreation is consistent with the objectives and strategies of the Fort Nelson Land and Resource Management Plan <sup>30</sup> , while maintaining a balance with public recreation and conservation.	<ul style="list-style-type: none"> <li>• Consider additional permits or changes to existing permits for commercial recreation in the park provided that: <ul style="list-style-type: none"> <li>○ equitable opportunity for public recreation is maintained (particularly regarding horse forage and campsite availability) ;</li> <li>○ activities demonstrate benefits to the local community and region;</li> <li>○ changes to facilities will occur on the existing site and be generally of similar size and style to other facilities in the park; and</li> </ul> </li> </ul>

<sup>30</sup> See the [Fort Nelson Land and Resource Management Plan](#).

Management Objective	Management Strategies
	<ul style="list-style-type: none"> <li>○ wilderness and wildlife values of the park and the greater Muskwa-Kechika Management Area are maintained.</li> </ul>

### 3.2 Zoning Plan

In general terms, a zoning plan divides a park into logical management units within which certain activities/uses are permitted and a particular set of management objectives apply. Zoning is often used to physically separate incompatible activities or uses within the park and provides visitors and managers with a quick visual representation and appreciation of how a particular park is managed. Zones are designed to reflect the physical environment, existing patterns of use and the desired level of management and development in a given management unit. Appendix A contains an allowable use matrix that covers activities, use and facilities in each zone.

The Northern Rocky Mountains Park is divided into three zones: Wilderness Recreation Zone, Nature Recreation Zone and Special Feature Zone (Figure 10). Northern Rocky Mountains Protected Area is zoned as Nature Recreation Zone.



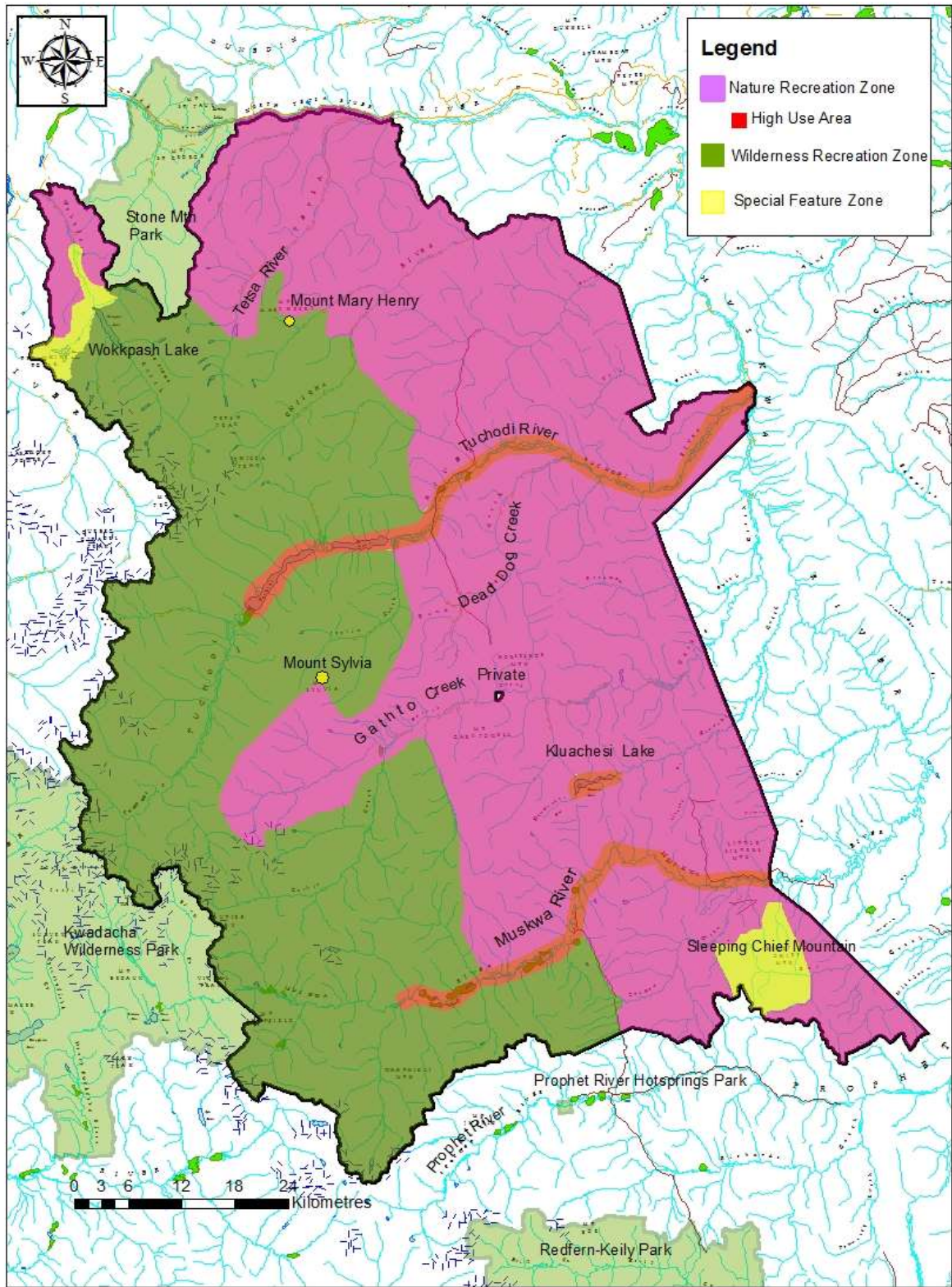


Figure 10: Northern Rocky Mountains Park Zoning Map



### **3.2.1. Wilderness Recreation Zone**

#### ***Zone Description***

The Wilderness Recreation Zone covers most of the western side of the park, from its southern boundary to the lower reaches of Wokkpash River. This zone includes the headwaters of the Muskwa, Tuchodi, Chischa and Tetsa rivers, as well as Kluachesi Creek and Wokkpash Lake. This zone is very pristine and remote, and mainly consists of high alpine and precipitous cliff habitats, as well as several small glaciers. It provides park visitors with a superb wilderness experience, generally free from artificial noise and light pollution. Traversing the land and waters within this zone will take the visitor to an experience similar to what existed centuries ago.

The Wilderness Recreation Zone covers 277,653 hectares which represents 41.6% of the park area.

#### ***Objectives and Management Intent***

The objective of this zone is to protect a remote, largely undisturbed natural landscape and to provide backcountry recreation opportunities dependent on a wilderness environment where low frequency air access will be restricted to existing airstrips and traditional float-plane landing locations. The management intent is to allow a range of recreational opportunities in this zone including: backpacking, canoeing, kayaking, river rafting, nature and historic appreciation, hunting, fishing, cross-country skiing, camping, snowshoeing, horseback riding and specialised activities (e.g., caving, climbing). The only motorized uses permitted in this zone are: fixed wing aircraft, rotary aircraft, and snowmobiling for trapping (under permit) purposes.

### **3.2.2. Nature Recreation Zone**

#### ***Zone Description***

The Nature Recreation Zone covers over half of the park stretching from the southern boundary north to the Alaska Highway. It covers the eastern parts of the park and abuts the Wilderness Recreation Zone and Stone Mountain Park to the west. The Nature Recreation Zone is the most accessible zone in the park, with the Muskwa and Tuchodi rivers running through it, Kluachesi Lake in its southern portion, and the Tetsa River on the northern boundary. Most of the primary guide outfitter facilities lie within this zone. It is associated with high alpine plateaus, larger, broader valleys than the Wilderness Recreation Zone, wetland complexes, and large, grassy slopes.

Within the Nature Recreation Zone are some areas that experience higher levels of use than the rest of the zone and where higher compliance and enforcement presence may be warranted. These higher use areas are highlighted to depict where either riverboat, fixed wing and/or snowmobile traffic is the highest. In general, the highest use along these corridors coincides with the summer/fall recreation and/or hunting seasons. The high use areas are linear and coincide with several waterways: Muskwa River, Tuchodi River, Tuchodi Lakes and Kluachesi Lake.

The Nature Recreation Zone covers 376,431 hectares which represents 56.4% of the park area.

### *Objectives and Management Intent*

The objective of the Nature Recreation Zone is to protect scenic values and to provide for backcountry recreation opportunities in a largely undisturbed natural environment. The management intent of this portion of the park is to recognize the existence of existing traditional routes and more recent access routes such as along watercourses; and to provide accessible backcountry recreation.

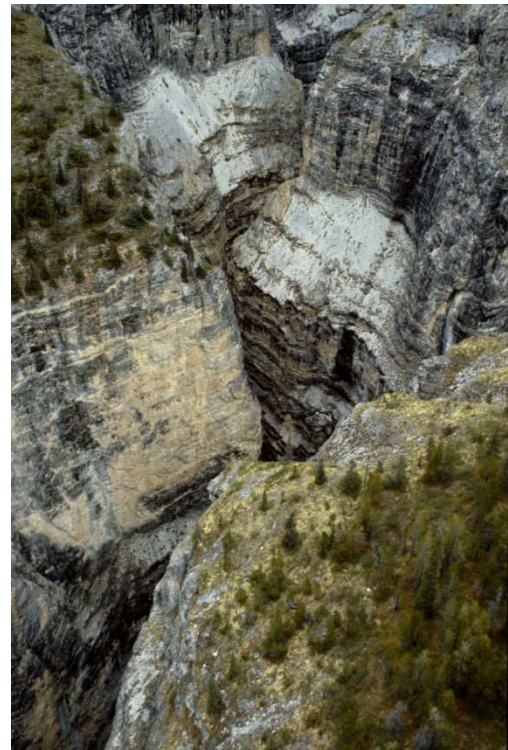
There will also be provision for higher levels of visitor use where people will be able to see interesting features in a natural environment; however, visitors must expect to see other people in the park participating in similar activities. The only motorized uses permitted in this zone are: fixed wing aircraft, rotary aircraft, snowmobiling, and boating.

### **3.2.3. Special Feature Zone**

#### *Zone Description*

There are two Special Feature Zones in the park: Sleeping Chief Mountain and Wokkpash. The Sleeping Chief Mountain area is characterized by rocky steep-sided slopes and separated by a contiguous high and wide valley. The main feature is Sleeping Chief Mountain; an impressive geological formation. Supporting various wildlife species due to its varied habitats, Sleeping Chief Mountain forms a large bowl-like region that sits apart from the mountains surrounding it. This special feature was chosen for its cultural, wildlife and scenic values; with its impressive, well-defined chevron folds, it is an outstanding physiographic feature. This area covers 8,196 hectares which represents 1.2% of the park area.

The Wokkpash area covers an area with several impressive and unusual geological features including hoodoos, the deep and narrow Forlorn Gorge, rock glaciers and a polje (Figure 11). The Wokkpash Creek hoodoos are the largest and most



**Figure 11: Forlorn Gorge**

impressive example of hoodoos in the province. Rock glaciers are unusual and distinctive landforms formed of rock and ice. Poljes are formed in karst landscapes and often have a fluctuating water table related to restricted drainage and seasonal water inputs. The rock glaciers are above Wokkpash Creek and in Stepped Creek and the polje is in Stepped Creek. This area covers 4,109 hectares which represents 0.6% of the park area.

### Objectives and Management Intent

The objective of the Special Feature Zone is to protect significant natural or cultural values, features and processes because of their special character, fragility and/or heritage values. The management intent of this zone is to recognize and protect the special landforms in the park.

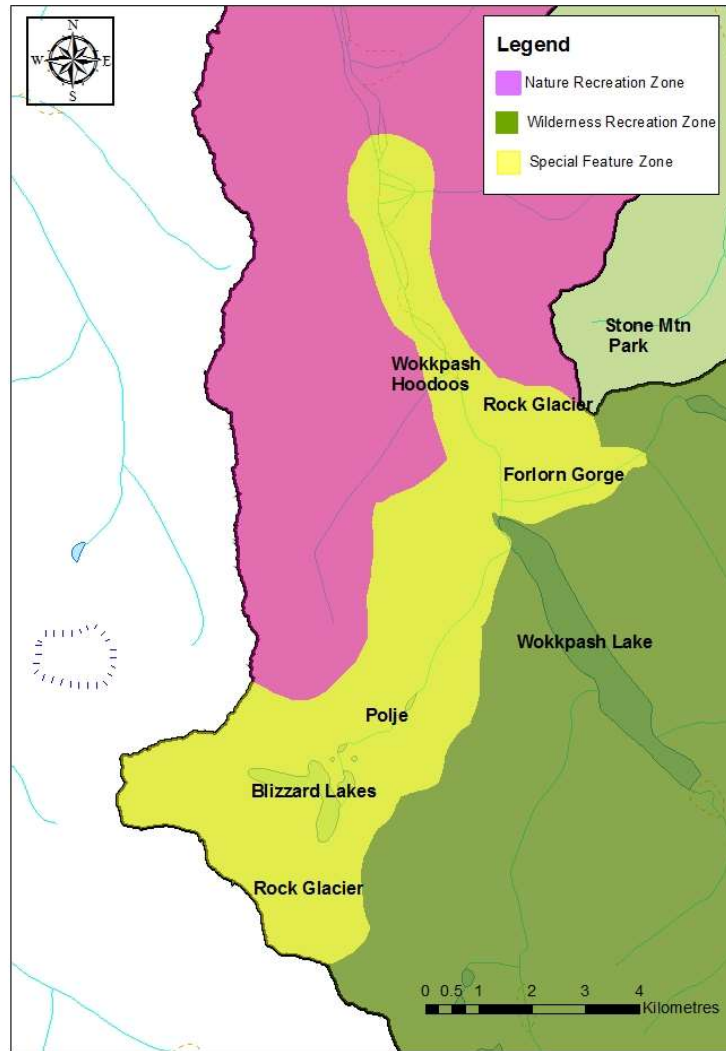


Figure 12: Map of Wokkash Special Feature Zone

## 4.0 Plan Implementation

### 4.1 Implementation Plan

BC Parks will seek project-specific funding and partners to implement high priority strategies. Specific projects will be evaluated for their priority in relation to the overall protected areas system. Many of the initiatives contemplated are not funded as part of core BC Parks activities so jointly seeking funds with outside partners will be a key aspect of the management plan implementation.

BC Parks uses annual management plans to address operational and management issues in provincial parks on a priority basis. Issues and strategies presented in this management plan will form the basis of the annual management planning process for Northern Rocky Mountains Park. Items to be included in the annual management plan include a description of the resources available during a given time period, including staff and any additional operating or project funds that may support identified strategies. Alternate implementation strategies for priorities not funded as part of core ministry activities may be pursued by BC Parks or its partners.

BC Parks strives to ensure First Nations values and input are reflected in the development of annual management planning priorities. As such, an open invitation exists for the area's First Nations to discuss annual management plan items and to provide input into the development of annual management plan priorities.

The public advisory groups formed in the early 2000s and again in 2019 for the final drafting of this plan indicated the desire to continue dialogue with BC Parks on an annual basis regarding the implementation of the management plan. BC Parks is supportive of ongoing dialogue with stakeholders, First Nations and the public regarding operational and management issues for this park and others in the M-K Management Area. While there are no plans for an ongoing formal advisory group organized by BC Parks, BC Parks is willing to meet with stakeholders, First Nations and the public, as resources are available, to inform the annual management planning process.

In addition to any legislation or policies highlighted in the management plan, there are numerous other provincial policies and guidelines which will be considered during management plan implementation. This includes items such as: BC Parks' policies on permitting, conservation, commercial recreation guidelines and policies, BC Parks bear-people conflict prevention plan and the impact assessment processes.

### 4.2 High Priority Strategies

- Work with First Nations communities, other ministries, community groups and/or educational institutions to support inventories and studies aimed at better understanding the distribution of plant species and ecosystems and their ecology; including how they will respond to environmental changes such as climate change (e.g. BC Parks Long-term Ecological Monitoring Program, First Nations Land Guardian programs).

- Monitor invasive species establishment, review management actions and explore treatment options.
- Work with the Ministry responsible for wildlife management to assess Caribou, Elk, Moose, Mountain Goat and Stone's Sheep population sizes and distribution.
- Work with First Nations and local boating groups to monitor annual boating pressure on the park during the high use period (hunting season)
- Work with other agencies, First Nations, academia, relevant stakeholders and local community groups to continue to research the history and future objectives of prescribed burning in the park.
- Work with stakeholders, First Nations, and the relevant ministries responsible for managing wildlife, range, and wildfire to identify clear objectives and strategies for prescribed fire in the park, by:
  - considering prescribed fire for maintenance of early seral habitat and forage production where previously used, subject to the BC Parks Impact Assessment process and associated policy;
  - conducting research into fire history and natural range of variability in the park;
  - adapting as necessary in the future, based on research findings, climate change, and government policy. This may require an amendment to the management plan.

### 4.3 Plan Assessment

In order to ensure that the management direction for the Northern Rocky Mountains Park remains relevant and effective, BC Parks staff will ensure that the management plan is assessed by BC Parks staff on a regular basis (i.e., at least every 5 years). Minor administrative updates may be identified and completed at any time (e.g., correct spelling errors, update protected area details where needed), and will be documented according to BC Parks guidelines.

If an internal assessment reveals that the management plan requires more significant updating or substantial new management direction is needed, a formal review by BC Parks, First Nations or other partner(s) may be initiated to determine whether the management plan requires an amendment or if a new management plan is required.

The management plan amendment process or development of a new management plan includes an opportunity for public input.



## Appendix 1: Appropriate Use Table

The following table summarizes existing and potential future uses in Northern Rocky Mountains Park that are and are not appropriate in each zone. This is not intended to be an exhaustive list of all uses that may be considered in this protected area in the future.

Please note that appropriate uses may be geographically restricted (i.e., only allowed in certain areas of Northern Rocky Mountains Park). Please ensure that you are well informed of any use restrictions as shown in the table. It is important to review relevant sections of the management plan when interpreting the table.

Appropriate Use Table Legend		
<b>N</b>	<b>Not an appropriate use</b>	The use is not appropriate in the indicated zone. If the use currently exists but the management planning process has determined that the use is no longer appropriate in all or part of the park, the management plan will include strategies for ending the activity (e.g., phasing out, closing).
<b>Y</b>	<b>May be an appropriate use</b>	Some level or extent of this use may be appropriate in the zone indicated. The management plan may provide guidance on the appropriate level of use and may address specific restrictions or planned enhancements (e.g. capacity, designated areas for a particular activity, party size, time of year, etc.).  For new or expanded uses, this symbol indicates that the use <u>may be considered</u> for further evaluation. The appropriateness of some activities may not be confirmed until a further assessment (e.g., BC Parks Impact Assessment Process) or evaluation process (e.g., park use permit adjudication) is completed.
<b>N/A</b>	<b>Not an applicable use in this zone</b>	It is not feasible for the use to take place in this zone (e.g., mooring buoys in a terrestrial zone).

Activity/Facility	Wilderness Recreation Zone	Nature Recreation Zone	Special Feature Zone	Comments
<b>Recreational Activities/Uses</b>				
Aircraft (fixed wing) –access and landing/takeoff	Y	Y	Y	BC Parks may request submission of a flight plan as part of a park use permit. Operators are encouraged to keep to historical flight paths.
Aircraft (rotary) – access and landing/takeoff	Y	Y	Y	BC Parks may request submission of a flight plan as part of a park use permit. Operators are encouraged to keep to historical flight paths.
Unmanned Air Vehicles (UAV) – with or without passengers	N	N	N	May be authorized under permit for commercial filming (if not detrimental to recreational values) or research only
Boating (human powered)	Y	Y	Y	

Activity/Facility	Wilderness Recreation Zone	Nature Recreation Zone	Special Feature Zone	Comments
Boating (combustion engine)	Y	Y	N	
Camping (designated sites)	Y*	Y*	Y**	*Only if required in the future to mitigate damage. ** In Sleeping Chief Special Feature Zone, designated sites will not be established.
Camping (wilderness style-undesignated sites)	Y	Y	Y	
Fish Stocking	N	N	N	
Fishing	Y	Y	Y	
Hiking	Y	Y	Y	
Horses and Mules	Y	Y	Y	
Dogs off-leash	Y	Y	Y	Dogs are allowed off leash in parks larger than 2,000 Ha
Hunting	Y	Y	Y	
Land-based Mechanized Activity (e.g., mountain biking, e-biking)	N	N	N	
Land-based Motorized Activity (e.g., 4x4, motorcycles, ORV-not including snowmobiles, or aircraft landings)	N	Y*	N	*Only if specified in a Park Use Permit
Skiing (downhill and cross-country track based)	N	N	N	
Skiing (backcountry)	Y	Y	Y	
Recreational Snowmobiling	N	Y	N	
Snowmobiling for Trapping Purposes	Y	Y	Y	Requires a park use permit
<b>Recreation Facilities/Infrastructure</b>				
Boat Launches	N	N	N	
Boat Wharves and Docks	N	N	N	
Cabins, Huts and Shelters (as defined in the Fixed Roof Accommodation Policy)	Y*	Y*	Y*	*Existing permitted facilities will be allowed to remain and certain changes are allowed as per Section 3.1.10
Lodges (as defined in the Fixed Roof Accommodation Policy)	Y*	Y*	Y*	*Existing permitted facilities will be allowed to remain and certain changes are allowed as per Section 3.1.10
Campgrounds (vehicle accessed)	N	N	N	
Picnic Areas (vehicle accessed)	N	N	N	
Roads	N	Y*	N	*Only in the Protected Area
Ski Facilities (vehicle accessed and serviced)	N	N	N	
Trails	Y	Y	Y	Existing trails only

Activity/Facility	Wilderness Recreation Zone	Nature Recreation Zone	Special Feature Zone	Comments
Visitor Information Buildings	N	N	N	
<b>Other Activities/Infrastructure</b>				
Commercial Filming	Y*	Y*	Y*	*If authorized by a park use permit
Communication Sites and Towers	N	N	N	
Cutting Dead Standing Trees	Y*	Y*	Y*	*If authorized by a park use permit
Grazing (horse)	Y	Y	Y	Backcountry recreation purposes only. New PUPs can be issued as necessary to support commercial backcountry recreation opportunities subject to management plan.
Hydro Electric Projects (local run of river)	N	N	N	
Prescribed Fire	Y*	Y*	N	*Will be considered in accordance with Section 3.1.9
Trapping	Y	Y	Y	Requires a park use permit
Utility Corridors	N	N	N	

## Appendix 2: History of Early Explorers

American botanist Mary Henry first traveled through and explored the area of the park in 1931. She was the first person to catalogue plants in northeastern British Columbia and her party contributed greatly to the mapping of this uncharted area. A mountain in the park bearing her name (Mount Mary Henry, located south of Mile 390 of the Alaska Highway) recognizes the important contribution she made to the early exploration of northeastern British Columbia.

Knox McCusker, who surveyed the Peace River Block for the Dominion of Canada, was Mary Henry's guide outfitter and topographer. "Mac" McCusker was an important person in the history of this park. Like all early travelers, McCusker followed First Nations' traditional routes and trails that had been in use for hundreds of years throughout the area. The first traders, trappers and guide outfitters also used these trails. Before McCusker surveyed the topography on the 1931 Henry expedition, the region north of the Prophet River was uncharted and Mary Henry referred to it as the "blind spot" of Canada, in the *National Horticultural Magazine* (October 1934).

In 1934, Charles Bedeaux led an expedition through the park along the Muskwa River in an attempt to establish an east-west route through the northern Rocky Mountains; the historical "High Trail."

Bert Sheffield trapped along the Muskwa River and up to the Tuchodi Lakes. He and his partner, Henry Courvosier, were convicted of the Great Fur Robbery at Old Fort Nelson in 1936 (i.e., the robbing of the Hudson's Bay Post). This colourful history, while not necessarily indicative of the area's inhabitants, helps illustrate the prominence of trapping in northern British Columbia's history.<sup>31</sup>

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<sup>31</sup> BC Geographical Names Information System, <http://apps.gov.bc.ca/pub/bcgnws/names/20250.html>.

## Glossary

Cirque – a half-open steep-sided hollow at the head of a valley or on a mountainside, formed by glacial erosion.

Electric bike (e-bike) – An electric bike, or motor-assisted cycle, is a two- or three-wheeled cycle with a seat, pedals and an electric motor (up to 500 watts). A motor assisted cycle (MAC) cannot be gas-powered.

Facility – refers to a building such as a lodge, cabin, campsite or trail but does not include toilets, fire rings or food caches.

Fluvial – of or found in a river.

Glaciolacustrine deposits – sediments deposited into lakes that have come from glaciers.

Hanging valley – a valley that is cut across by a deeper valley or a cliff.

Holocene – the system of deposits laid down during this time.

Hoodoo – a column or pinnacle of weathered rock.

Lacustrine – relating to or associated with lakes.

Morainal – a ridge, mound, or irregular mass of unstratified glacial drift, chiefly boulders, gravel, sand, and clay.

Thrust fault – a break in the Earth's crust, across with older rocks are pushed above younger rocks.



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