



Mackinnon Esker Ecological Reserve

Management Plan

March 2017



BC Parks

Cover Page Photo Credit: Rob Bell

This document replaces the direction provided in the Carp Lake Provincial Park and Protected Area and Mackinnon Esker Ecological Reserve Purpose Statement and Zoning Plan (2002).

Mackinnon Esker Ecological Reserve Management Plan

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April 28, 2017

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Vision Statement

The vision of the Mackinnon Esker Ecological Reserve is to protect a segment of the longest known intact esker in British Columbia and associated lichen-woodland communities.

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1.0 Introduction

1.1 Management Plan Purpose

A management plan is a document prepared to guide the future management of a protected area. This management plan defines the role of Mackinnon Esker Ecological Reserve within British Columbia's protected areas system, and establishes goals, objectives and strategies related to the values for which Mackinnon Esker Ecological Reserve was established. This plan was prepared in conjunction with the Carp Lake Park Management Plan.

1.2 Planning Area

Mackinnon Esker Ecological Reserve is located approximately 110 kilometres northwest of Prince George. The ecological reserve is adjacent to Carp Lake Provincial Park and encompasses 545 hectares of land and water. The central and special feature of this ecological reserve is a large segment of the Mackinnon compound esker, the longest such landform in the province.

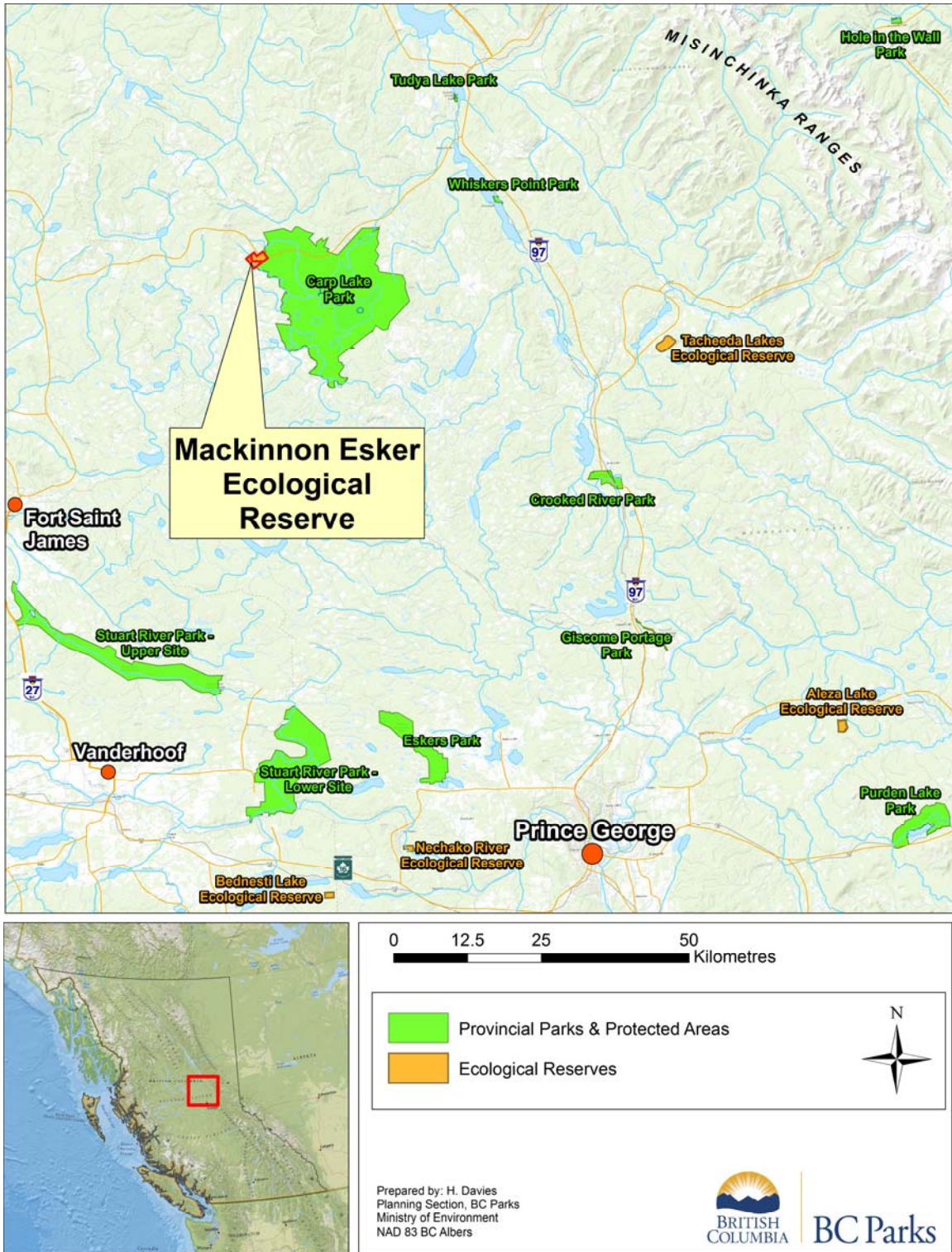


Figure 1: Context Map for Mackinnon Esker Ecological Reserve

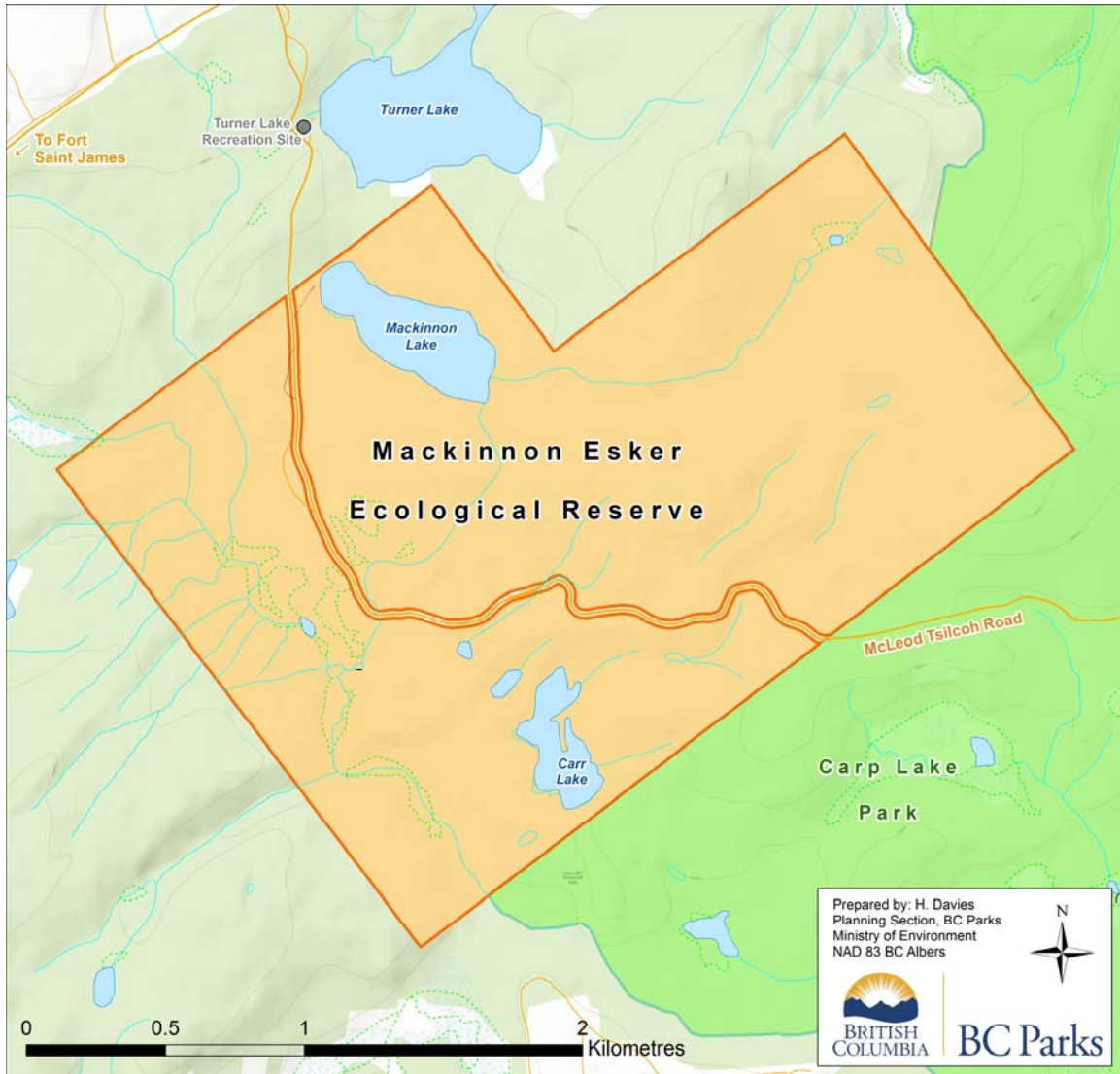


Figure 2: Map of Mackinnon Esker Ecological Reserve

1.3 Legislative Framework

Mackinnon Esker Ecological Reserve was originally established in 1972 by Order in Council 2096/72 under the *Ecological Reserves Act*. The Order in Council directed that there was to be “no interference with the road that exists on the ground” (referred to as the old logging road or multi-use trail in this management plan). The ecological reserve is presently named and described in Schedule A of the *Protected Areas of British Columbia Act*. The management and use of Mackinnon Esker Ecological Reserve is directed by the *Ecological Reserve Act*. The purpose of the *Ecological Reserve Act* is to reserve Crown land for ecological purposes, including:

- areas suitable for scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment;
- areas that are representative examples of natural ecosystems in British Columbia;

- areas that serve as examples of ecosystems that have been modified by human beings and offer an opportunity to study the recovery of the natural ecosystem from modification;
- areas where rare or endangered native plants and animals in their natural habitat may be preserved; and,
- areas that contain unique and rare examples of botanical, zoological or geological phenomena.

All consumptive resource uses, such as tree cutting, hunting, fishing, mining, domestic grazing, camping, lighting of fires and removing materials, plants or animals, and the use of motorized vehicles are prohibited in ecological reserves. Mackinnon Esker Ecological Reserve is open to the public for observational uses such as nature appreciation, wildlife viewing, bird watching and photography.

1.4 Management Planning Process

The management planning process was conducted in collaboration with the Nak'azdli and McLeod Lake Indian Bands and in conjunction with the Carp Lake Park management planning process. Phase one of the management planning process occurred between the summer of 2008 and spring 2009. This phase involved First Nation Traditional Knowledge Research and obtaining First Nations community and public input. Key management issues were identified and discussions occurred with First Nations representatives to set preliminary management direction to address issues.

Phase two of the planning process occurred between the summer 2009 and spring 2010. During this phase, a draft management plan was compiled and a workshop with First Nations and key stakeholders occurred to identify any outstanding issues and input into the proposed management direction.

Phase three of the management planning process occurred in May 2011. Phase three involved obtaining public input and support for the management plan.

Phase four of the management planning process involved obtaining the necessary approvals for the management plan.

1.5 Relationship with First Nations

The area First Nations have indicated that Mackinnon Esker Ecological Reserve is either fully or partially within the traditional territories of McLeod Lake Indian Band, Nak'azdli Indian Band, Lheidli T'enneh First Nation, the Halfway River First Nation, the West Moberly First Nation and the Sauteau First Nation. This management plan acknowledges the importance of the natural and cultural values within Mackinnon Esker Ecological Reserve to these First Nations. Depending on the scope of project, ongoing collaboration will occur with respect to the management of the Ecological Reserve's natural, cultural heritage and recreational features through First Nation involvement in annual work planning, and project-specific management and planning.

This management plan and its supporting documentation and appendices do not in any way define or limit the title and rights of the First Nations or British Columbia, and will be without prejudice to the positions of the First Nations and British Columbia with respect to the title and rights of the First Nations and British Columbia in regard to administrative and regulatory proceedings, and any litigation or negotiations

1.6 Relationship with Ecological Reserve Warden

Volunteer ecological reserve wardens assist BC Parks in the protection and management of ecological reserves. They contribute their knowledge, enthusiasm for conservation and their natural history expertise to the protection of specific ecological reserves. The Friends of Ecological Reserves is the umbrella organization that assists BC Parks in overseeing the volunteer ecological reserve warden program and raises awareness of ecological reserves. More information about the Friends of Ecological Reserves can be found on their website (ecoreserves.bc.ca).

2.0 Values and Roles of the Ecological Reserve

2.1 Significance in the Protected Areas System

Mackinnon Esker Ecological Reserve protects a superb and intact segment of the longest known esker (a ridge of gravelly and sandy drift formed by streams under glacial ice) in British Columbia. The ecological reserve also conserves a representative example of a pine-lichen woodland ecosystem associated with the nutrient poor, well drained esker offering opportunities for scientific research and education.

2.2 Biodiversity and Natural Heritage Values

Geology

The central feature of this ecological reserve is an outstanding and intact segment of the Mackinnon compound esker, a sinuous ridge over 50 kilometres long. The esker was formed during the waning stages of glaciation on the Nechako Plateau, a time when meltwater streams flowed through the crevasses or tunnels in the stagnant ice and deposited their load of sand and gravel in the process. The main body of the esker within the ecological reserve is about 150 metres wide. Though termed a compound esker, its associated arms or branches are much less distinctive than its central trunk. Other glacial features in this area are drumlins sculpted by moving ice, and meltwater channels and kettle holes formed as the ice melted.

Vegetation

The Mackinnon Esker Ecological Reserve is located entirely within the Sub-Boreal Spruce Biogeoclimatic zone. Vegetation on the gravelly, well-drained esker is a rather uniform lichen woodland dominated by few species. Lodgepole pine is almost the only tree species on the esker and the open understory is characterized by the low shrub velvet-

leaved blueberry, some kinnikinnick, and fruticose lichens. Herbaceous plants are poorly represented. A similar kind of lodgepole pine woodland in the ecological reserve has dwarf blueberry rather than velvet-leaved blueberry in the understory.

White spruce stands are common in the vicinity, including: spruce - black huckleberry - moss and spruce- subalpine fir - devil's club - and oak fern associations. The latter type occurs on rich, moist sites. At higher elevations, an Engelmann spruce-subalpine fir / white rhododendron community, transitional to the Engelmann Spruce-Subalpine Fir Biogeoclimatic zone, is present.

Fish and Wildlife

Two lakes are found within the ecological reserve - Mackinnon Lake (about 15 hectares) and Carr Lake (about 7 hectares). These lakes are closed to fishing and no surveys have been undertaken.

Wildlife common in a sub-boreal spruce forest include: Moose, White-tailed Deer, Black Bear, Grizzly Bear, Coyote and Gray Wolves. Moose are common around the wetlands and Porcupines and Chipmunks have also been observed. Birds seen here include Evening Grosbeaks, Pine Grosbeaks, Golden Eagles and Greater Yellowlegs.

3.0 Management Direction

3.1 Management Objectives and Strategies

There are three main management considerations affecting the management of the Mackinnon Esker Ecological Reserve. The first is climate change. The climate trend in the sub-boreal interior is typified by warmer temperatures and more precipitation. The increase in precipitation has been relatively constant throughout the year, whereas the increase in temperature has been most noticeable in the winter months. The hydrology and temperature changes that are projected may alter the characteristic vegetation associated with this esker. This makes MacKinnon Esker Ecological Reserve an ideal location to monitor the effects of climate change on pine lichen-woodland ecosystems.

The second management consideration is that the ecological reserve has been without a volunteer warden for many years. This has limited the amount of monitoring and research activities that have occurred.

The third management consideration is that an old logging road cuts across the Mackinnon esker and the ecological reserve. This road is no longer a forestry road but the overgrown road is still used by recreational users throughout the year. First Nations have identified a desire to maintain access to a trapline and traditional use areas in Carp Lake Park via this route. Other users also wish to use the route. As some of these uses may not be fully compatible with an ecological reserve designation, it is recommended that the old logging road be removed from the ecological reserve and added to Carp Lake Park. In the interim,

the access route will remain, and trail use will be permitted. Every effort will be made to avoid impacts to the esker. See map in Figure 2.

Management Objective	Management Strategies
Gain a better understanding of climate change impacts on vegetation composition in the pine lichen-woodland.	<ul style="list-style-type: none"> • Encourage the Friends of Ecological Reserves and post-secondary institutions to monitor and research vegetation composition in the pine lichen-woodland and the effects of climate change on this ecosystem type. • Work with the Friends of Ecological Reserves to appoint and maintain a volunteer warden presence in the ecological reserve.
Avoid impacts associated with the old logging road on the Mackinnon Esker.	<ul style="list-style-type: none"> • Ensure the ecological reserve boundary is well signed. • Recommend that the road/trail be removed from the ecological reserve and added to Carp Lake Park. • Monitor use of the old logging road (currently a multi-use trail) to ensure use is confined to the travel portion of the trail. If use is observed off of the travel portion of the trail, implement measures to avoid impacts.

4.0 Plan Implementation

4.1 Implementation Plan

BC Parks will seek project-specific funding and partners to implement 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 track issues in provincial parks and protected areas on a priority and annual basis. The issues and strategies presented in this management plan will form the basis of the Annual Management Planning process for Mackinnon Esker Ecological Reserve. BC Parks strives to ensure First Nations' values and inputs are reflected in the development of the Annual Management Plan for the ecological reserve.

4.2 High Priority Strategies

The following strategies have been identified as high priorities for implementation:

1. Recommend that the road/trail be removed from the ecological reserve and added to Carp Lake Park.

2. Monitor motorized use of the old logging road (currently a multi-use trail) to ensure use is confined to the travel portion of the trail. If use is observed off of the travel portion of the trail, implement measures to avoid impacts.

4.3 Plan Assessment

In order to ensure that the management direction for the ecological reserve 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 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.

5.0 References

Pacific Climate Impacts Consortium (2009). *Climate Overview 2007: Hydro-climatology and Future Climate Impacts in British Columbia*. University of Victoria.

Sulyma, Sandra (2008). *Determining How Much Terrestrial Lichen Cover Exists to Help Caribou Survive the Winter*. FORREX Link Newsletter: Forest Research Extension Partnership. Forrex website.