

Mackinnon Esker Ecological Reserve

Draft - Management Plan

May 2011



Photo Credit:

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 (2003).

Mackinnon Esker Ecological Reserve Management Plan

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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. A key aspect of this management plan is a set of performance measures, which will guide BC Parks in the management plan's implementation.

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.

A regional context map is provided in Figure 1.

1.3 Legislative Framework

The Mackinnon Esker Ecological Reserve was originally established in 1972 by Order in Council under the *Ecological Reserve Act*. 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 the following:

- 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 Relationship with First Nations

The provincial government and First Nations governments in British Columbia are working together to develop a “new relationship” founded on respect, recognition and reconciliation of Aboriginal rights. Mackinnon Esker Ecological Reserve is within the traditional territories of the McLeod Lake Indian Band and the Nak’azdli Indian Band. As such, this management plan recognizes the importance of the natural and cultural resources within the ecological reserve to these First Nations. Ongoing collaboration will occur with respect to the management of the ecological reserve through First Nation involvement in annual management planning and project specific management and planning.

1.5 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 oversee 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.

1.6 The Planning Process

The management plan 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 Nation community and public input. Key management issues were identified and discussions occurred with First Nation representatives to set preliminary management direction addressing these management 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 is expected to occur in May 2011. The phase involves obtaining public input and support for the management plan.

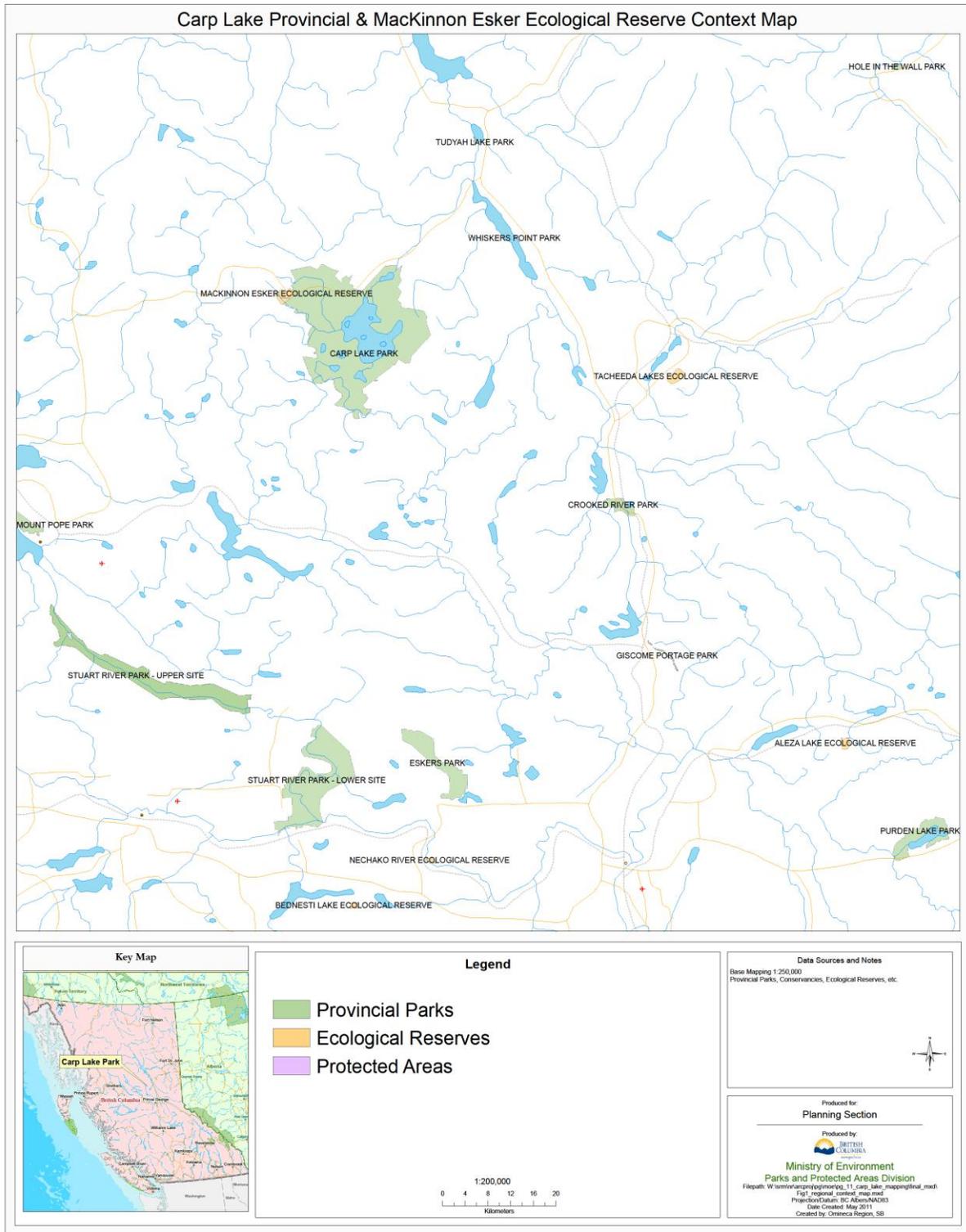


Figure 1: Regional Context Map

2.0 Values and Roles of the Ecological Reserve

2.1 Significance in the Protected Areas System

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

2.2 Natural Heritage Values

Geology

The central feature of this ecological reserve is an outstanding segment of the Mackinnon compound esker, a sinuous ridge over 50 kilometers 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 m 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 rather uniform lichen woodland dominated by few species. Lodgepole pine is almost the only tree 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 ha) and Carr Lake (about 7 ha). Due to the fact that these lakes are closed to fishing, 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 and Pine Grosbeaks, Golden Eagles, and Greater Yellowlegs.

3.0 Management Direction

3.1 Vision

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

3.2 Biological Diversity and Ecosystem Management

Goal: The Mackinnon esker and associated vegetation is conserved for scientific research and educational purposes.

Management Considerations

There are three main management considerations affecting the management of the Mackinnon Esker Ecological Reserve. First, is climate change. The climate trend in the sub-boreal interior is typified by warmer temperatures and more precipitation. The increase in precipitation is relatively constant throughout the year, whereas the increase in temperature is 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 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 an old logging road cuts across the Mackinnon esker and the ecological reserve. The ecological reserve boundary originally did not include the old logging road; however, when the boundary was re-established in 2004, the road was included in the ecological reserve boundary. This road is no longer a forestry road but the road is still used by recreational users throughout the year. First Nations have also identified a desire to maintain access to a trapline and traditional use areas in Carp Lake Park via this route. In order to maintain First Nations interests and allow for the continued use and maintenance of the route, it is recommended that the original ecological reserve boundary is restored and the old logging road be incorporated within Carp Lake Park. The access will be maintained as a trail and snowmobile use will be permitted. Every effort will be made to avoid any impacts to the esker. See map in figure 2.

Objective	Strategies
<p>Gain a better understanding of climate change impact on vegetation composition in the pine lichen-woodland.</p>	<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.
<p>Avoid impacts associated with the old logging road on the Mackinnon Esker.</p>	<ul style="list-style-type: none"> ▪ Ensure the ecological reserve boundary is well signed. ▪ In order to manage the activities and use on the old logging road/trail, incorporate a 10 meter corridor on either side of the old logging road into the boundary of Carp Lake Park. ▪ Monitor use of the old logging road (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.

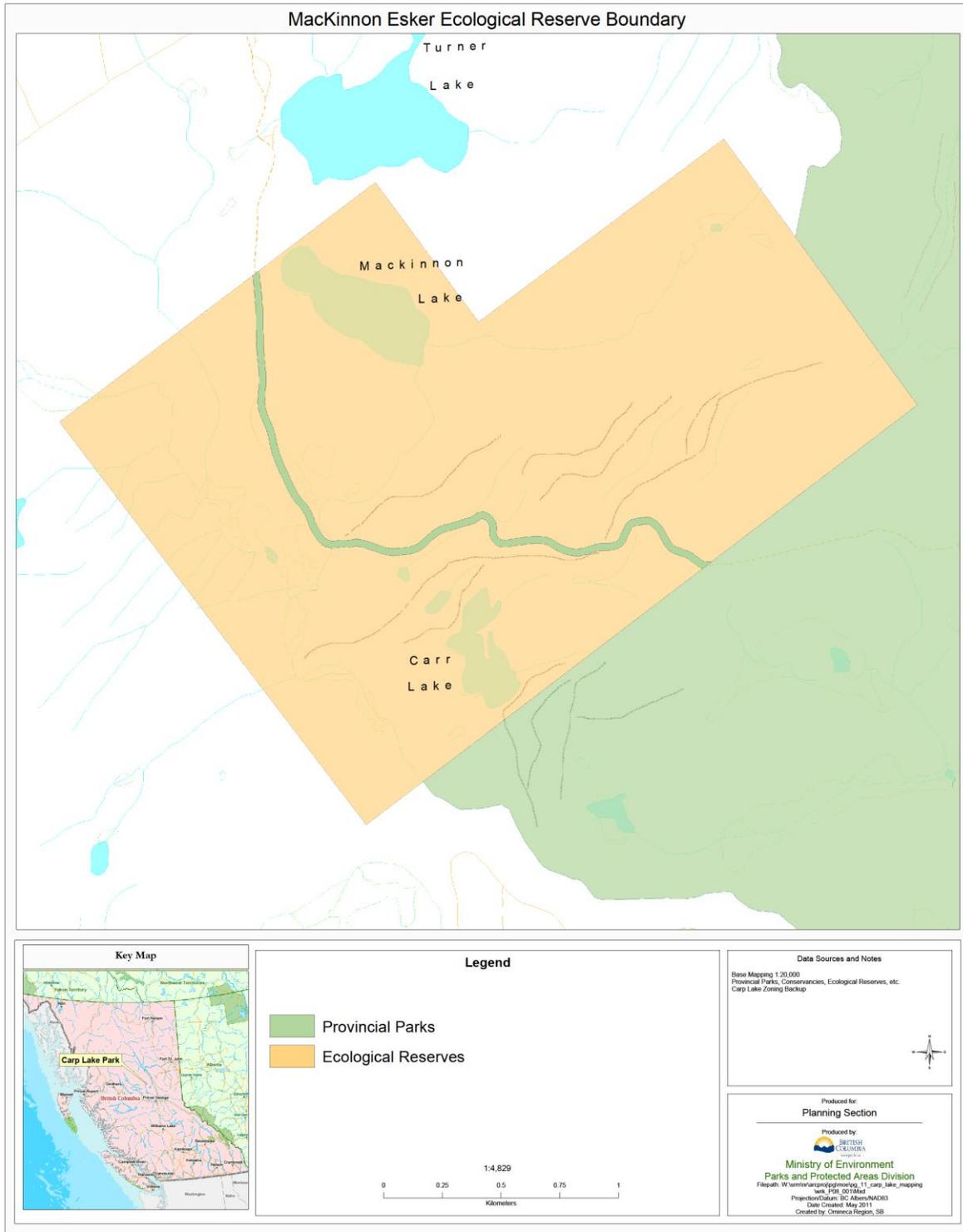


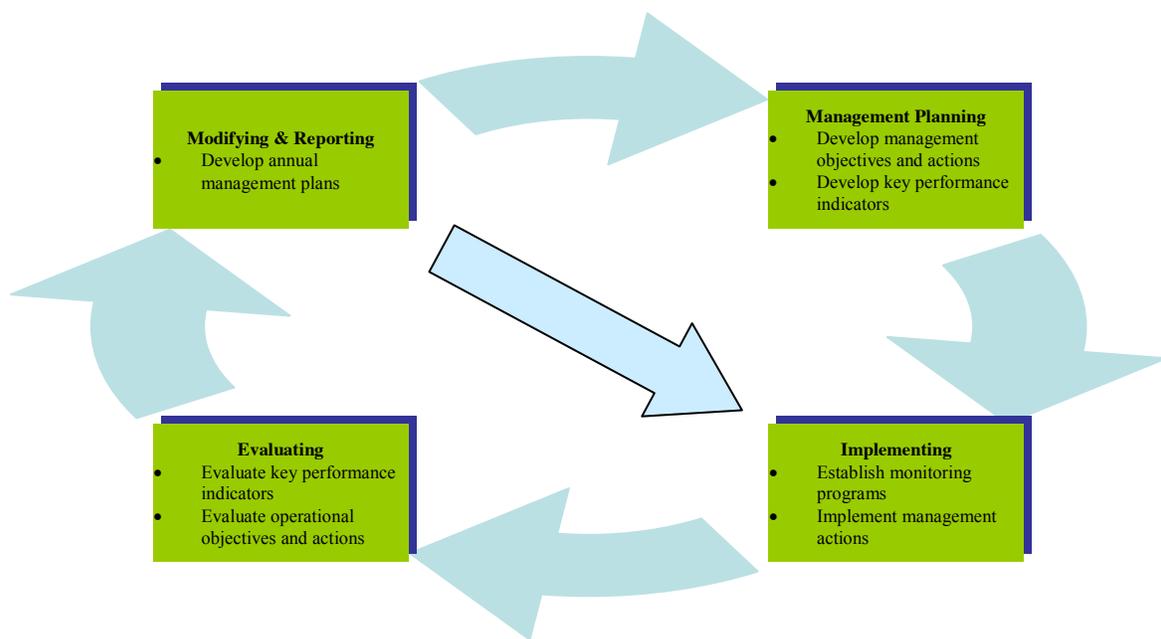
Figure 2: Ecological Reserve Proposed Boundary

4.0 Performance Measures

Key Performance Measures

Key performance measures based on the concept of adaptive management will guide the Ministry of Environment in the implementation of the Mackinnon Esker Ecological Reserve Management Plan. Priority management objectives will be monitored and evaluated in an adaptive management process. The use of performance measures also provides a mechanism to report out on performance. As a living document, managers may decide to improve upon the targets or add indicators as more baseline information becomes available and provincial priorities change. The performance measures are provided in Appendix 1.

Adaptive Management Process



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.

Appendix 1 – Performance Measures

Objective	Indicator	Target	STATUS November 2010
Gain a better understanding of the impact of climate change on vegetation composition in the pine lichen-woodland.	Research and monitoring activities.	Ongoing monitoring and research activities conducted by ecological reserve warden and/or post-secondary education institution.	No vegetation monitoring and research activities occurred in 2009.
Avoid impacts associated with the old logging road on the Mackinnon esker.	Human-caused impacts.	No human-caused impacts off of the old logging road.	No impacts observed in 2009 site visit.