

Birkenhead Lake
Provincial Park

MANAGEMENT
PLAN

Prepared by:

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BRITISH
COLUMBIA

**Ministry of Environment,
Lands and Parks**

BC Parks Division

Birkenhead Lake
Provincial Park

MANAGEMENT
PLAN

Approved by:

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PARK VISION

Birkenhead Lake Park will continue to be an important part of the parks system on both a regional and provincial level. The park's unique setting, ease of access, remoteness, important habitat components, varied landscape and variety of recreational opportunities will make this area a favourite for both traveling and destination visitors.

Birkenhead Lake Provincial Park will continue to provide habitats suited for the full variety of wildlife including bear, deer, goats, raptors and aquatic species. In particular, habitats for key species such as spotted owls, grizzly bear and kokanee will be given highest management protection. The Sockeye Valley will continue to protect old-growth forests and related ecosystems.

The park will continue to be important for First Nation traditional use and cultural values. BC Parks, together with these First Nations communities, will ensure that significant cultural sites within the park are protected from development impacts and that recreation activities in the park are respectful of the environment and First Nation traditional use.

Since established as a Provincial Park in 1963, visitors to Birkenhead Lake Provincial Park have enjoyed accessible recreational opportunities in a setting usually found in more remote areas. The park will continue to offer the park visitor a variety of opportunities that maintains this experience while ensuring natural values are protected. BC Parks will not pursue significant increase or shift in recreational activities but will instead focus on maintaining existing recreational experiences similar to current levels.

ACKNOWLEDGEMENTS

A variety of people, agencies, stakeholders, non-government organisations and First Nations have all contributed to the preparation of this management plan:

Original drafts for the Birkenhead Lake Management Plan were prepared by through the former South Coast Regional Planning Services by Greg Chin, Regional Planner under the direction of Mel Turner, Regional Planning Services Manager.

Terra Firma Environmental Consultants conducted further research and updated the original drafts to current BC Parks standards under the direction of Brian Bawtinheimer, Senior Park Planner, Garibaldi/Sunshine Coast District. A draft copy was presented to various agencies, stakeholders and the general public in early 1998. The staff at BC Parks Garibaldi/Sunshine Coast District (under the direction of Drew Carmichael, District Manager) and at BC Parks Headquarters (through the co-ordination of Roger Norrish, Management Planning Co-ordinator) contributed comments and suggestions towards the development of the plan.

The N'Quat'qua First Nation of D'Arcy, B.C. were vital in preparation and review of the plan to ensure cultural values and traditional use in the park are respected and protected.

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PLAN HIGHLIGHTS

The Birkenhead Lake Provincial Park Management Plan addresses a number of issues that affect the long term management of the park. Outlined below are the key initiatives that BC Parks will strive to complete during the life of this plan¹. These items were determined to be of priority through input from the public, land management agencies, First Nations, and non-government organisations. These initiatives will contribute significantly towards protecting the natural, cultural and recreational values of Birkenhead Lake Provincial Park as well as contributing towards maintaining the vision of this park and its role within British Columbia's system of protected areas. As such, BC Parks will ensure the protection of park values associated with wildlife, vegetation, water quality and cultural values by;

- Managing the Sockeye Creek portion of the park as Wilderness Conservation Zone for the protection of species and habitats where conservation will take precedence over human activities. This zoning precludes hunting, motorised access and recreational development.
- Studying and reviewing options for flood protection of the main campground.
- Examining the outlet of the lake to determine possible impediments to drainage.
- Examining the feasibility of a hiking trail/route around the lake in consultation with Birkenhead Estates community.
- Developing Vegetation and Fire Management Plans.
- Develop a wildlife management strategy which includes studies and inventories, especially for regionally important species.
- Assisting other agencies with efforts to further identify critical spotted owl habitat in the park.
- Investigating the feasibility of an access route to the alpine regions from Goat Lookout on the east side of lake.
- Maintaining the established recreational opportunities that provide an easily accessible yet remote feeling experience for park visitors.

¹ While key items are identified, it should be noted that the completion of all items is subject to funding and funding procedures. As such, items are prioritized and completed as funding permits. As well, all development within Provincial Parks are subject to the BC Parks Impact Assessment Policy.

INTRODUCTION

The Management Planning Process

A management plan is an administrative document that guides park management for a five to ten year term². It sets out guidelines and actions for the management of the natural, cultural and recreational features of a park. Birkenhead Lake Provincial Park is well known for significant recreation and conservation values and this management plan strives to protect natural values while allowing for appropriate recreational opportunities or facilities.

The process for preparing a management plan involves a careful analysis of the overall goals of the protected area, use patterns and management objectives. Through the planning process, various options for managing the protected area are developed and assessed. In choosing the most appropriate option, the intent is to protect natural values from damage while allowing appropriate recreational use and managing human uses of the protected area.

Management plans are prepared with a high degree of public involvement. The general public and public interest groups have opportunities to review management planning documents and provide comments to BC Parks through a variety of means including public meetings and mail-outs. Similarly, BC Parks consults with First Nations, other levels of government and other provincial government agencies in the development and review of management plans. In certain instances, public advisory committees help prepare the management plan and often function as a partner with BC Parks in implementing the plan and monitoring progress.

Birkenhead Lake Provincial Park has had a high level of public involvement regarding management direction and strategies. During this process, a number of stakeholders and user groups were solicited for comments regarding management direction in this plan. Opportunities for public review of the draft management plan were made available through mail-outs and submissions of the plan to libraries from Squamish to Lillooet. Advertisements in local newspapers requested the public review the document and provide comments to BC Parks. As well, BC Parks district staff have received numerous comments through comment cards filled out and forwarded to the district. As such, a wide variety of park visitors, stakeholders, First Nations, user groups, government agencies and non-governmental organisations provided comments and considerations on the future of Birkenhead Lake Park.

² While management plans are initially developed to guide the management of a protected area for a 5 to 10 year period, a number of factors will influence how long the plan will be valid. Should this management plan still provide appropriate management direction for Birkenhead Lake Park after 10 years, and still be appropriate with respect to the goals and vision of this protected area, the plan may still be deemed appropriate until such a time that updating or re-writing is required.

Background Summary

Birkenhead Lake Provincial Park covers 9,755 hectares of transitional forest ecosystem in the Coast Mountains influenced by dry interior and coastal climatic factors (Fig. 1). It lies almost entirely (99%) within the Leeward Pacific Ranges. It is a lake-orientated park with a large tertiary watershed, consisting of deeply incised mountains, U-shaped valleys and fast-flowing creeks feeding an oligotrophic lake (low in nutrients and organic materials). The rugged terrain has been moulded and shaped by periods of volcanism and glaciation. Secondary landforms in the park include colluvial cones, fluvial fans, scree slopes, rocky outcrops and floodplains. The climate of this more leeward area of the Coast Mountains can generally be characterized by warm, dry summers and cold, wet winters.

The four biogeoclimatic zones in the park provide year round and temporal habitat for a variety of wildlife species. Most notably, the endangered spotted owl is known to nest within the Sockeye Creek drainage and grizzly bear have been sighted here.

Birkenhead Lake Provincial Park, with about 25,000 visitors per year, serves the Lower Mainland area and local communities. The facilities of the park are mainly designed to accommodate front-country summer recreation opportunities including camping, day-hiking, mountain biking, picnicking, fishing and boating.

Relationship to Other Land Use Planning

The park lies adjacent to the boundary of the Lillooet Land and Resource Management Plan area to the north and east. This process began in the summer of 1996 under the guidance of the Lillooet District Community Resources Board. The Lillooet LRMP process will, among other decisions, recommend areas for protection under B.C.'s Protected Areas Strategy.

The N'Quatqua First Nation or Anderson Lake Indian Band at D'Arcy is involved in treaty negotiations over traditional lands which include the park. In their "Statement of Interests - Land and Resources" submission to the treaty table, the N'Quatqua registered their interest in administering various activities on traditional lands (e.g. issuance of commercial backcountry recreation, co-management of parks, archaeological research in parks, etc.). The provincial, federal and First Nation parties at the table are currently working on the substance of the agreement.

The Squamish Lillooet Regional District is revising the Official Community Plan for the settled areas of Area C, within which the park lies.

Figure 1



Planning Issues

This management plan will examine a number of key issues including; planning requirements for the park addition of Sockeye Creek, protection of the main campground from flooding, spotted owl protection, and boundary issues.

Planning Requirements for Park Addition

Most of Sockeye Creek was added to Birkenhead Lake Provincial Park in 1997 and will broaden the park role. Inventory requirements and planning must address the new resources and the potential for conservation and recreation.

Protection of Campground From Floods and Freshets

Phelix Creek, which flows along the main campground, threatens the campground with destruction from freshets, channel migration and flooding. A comprehensive examination of options (e.g. stream bank armouring, set-back dikes, lower reach channelization, strategic debris removal) for flood management must be conducted.

Spotted Owl Protection

At least four spotted owls with confirmed young are known to inhabit the park. The owls and their habitat will require special management consideration for protection. BC Environment has conducted regular inventory and will be key in providing guidance.

Boundaries

The upper tributaries of the Sockeye Creek watershed to the height of land were not included in the park. These areas have high backcountry recreation and conservation potential. The management plan will evaluate the present park boundaries to ensure natural, cultural and outdoor recreation values are adequately protected. As well, BC Parks will need to work with other agencies to manage conservation and recreation issues that extend beyond park boundaries.

THE ROLE OF THE PROTECTED AREA

Provincial and Regional Context

Birkenhead Lake Provincial Park is situated on the leeward side of the Coast Mountain Ranges in the south-western portion of the province. Its landscape is representative of the transition between the coast and interior regions. The park is 57 kilometres north of Pemberton and a three hour drive from Vancouver (Fig. 2).

Pemberton is the nearest major service centre for recreationalists travelling to the park. The local communities in the immediate vicinity of the park are small residential areas away from the major travel corridors and as a result possess few services or facilities for visitors. In recent years, the recreational traffic volume has increased along the two scenic travel corridors that include Pemberton (Highway 99 and the Duffey Lake Road). A third rough road from Lillooet to D'Arcy receives increasing summer use by tourists, and makes a circle tour possible. As development continues to push northward into the Pemberton Valley, the conservation and recreation values of the park will become even more significant.

Protected Area Roles

Conservation Role

In keeping with the goals of the provincial protected areas system (Appendix A), the main conservation role of Birkenhead Lake Provincial Park is to contribute towards representation of the ecosystems of the Leeward Pacific Ranges ecosection. The park contains flora, fauna, landforms and waters which are characteristic of the transition between the coast and interior regions. Some significant wildlife values represented in the park include pileated woodpeckers, mountain goats, kokanee and Dolly Varden char, small mammals, raptors as well as large mammal habitats (grizzly bear, black bear, deer and wolf). It also protects provincially significant nesting areas for the endangered spotted owl as this area is currently identified as the most northerly area positively identified for nesting spotted owls. Other natural values include Lodgepole pine stands, avalanche tracks, colluvial cones, volcanic assemblages and a large oligotrophic lake.

While the park boundary around Sockeye Creek does not fully protect to height-of-land, the drainage is essentially a fully protected and intact old-growth valley with high conservation values. The watershed is the only undeveloped drainage in the Leeward Pacific Ranges Ecosection within the Lower Mainland Region and, as such, will continue to contribute as an ecologically significant area for this portion of the province.

Figure 2

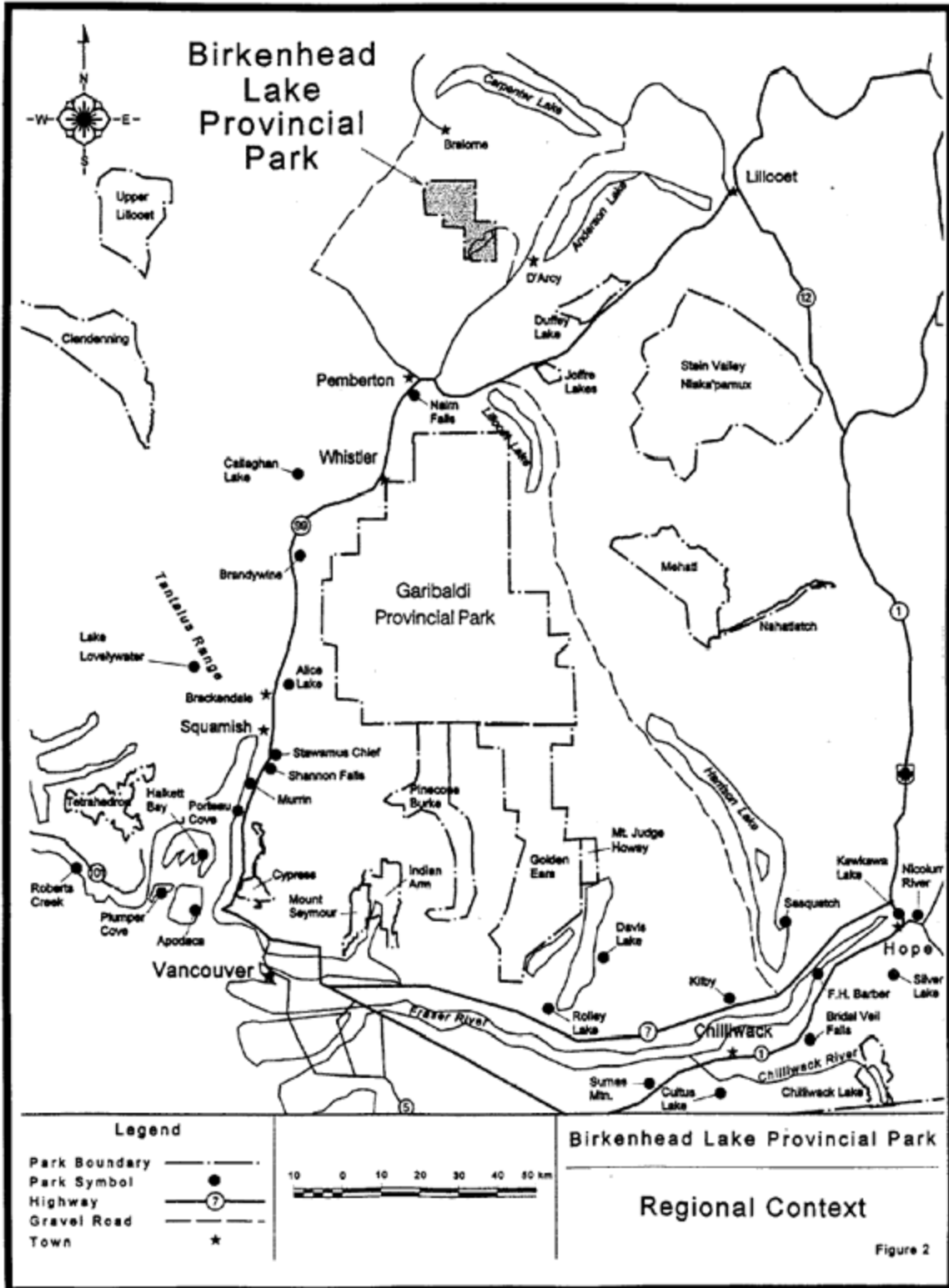


Figure 2

Tourism and Outdoor Recreation Role

The main role of Birkenhead Lake Provincial Park in protecting British Columbia's outstanding recreation resources is to provide regional and destination recreation opportunities. The park serves the regional and local communities with a variety of outdoor recreation services including camping, swimming, hiking, picnicking and nature viewing. Birkenhead Lake and its surrounding mountains provide an attractive, accessible and yet somewhat secluded recreational setting for these activities. The park provides the visitor a sense of remote backcountry wilderness within an acceptable setting. The Sockeye Creek drainage allows regionally significant opportunities for wilderness conservation while providing unassisted backcountry recreation (e.g. skiing, hiking, wildlife viewing and nature appreciation) where no motorised activities will be allowed. Birkenhead Lake Park is also a popular area for tourists driving the circle tour of Highway 99, the Duffey Lake Road, and Highway 1 as an over-night destination. International tourists are including Birkenhead Lake Park as a destination while exploring south-western B.C. partially due to the unique setting and ease of access.

Vision for the Protected Area

The purpose of the vision statement is to identify the role and function of the park at least 50 years well into the future, beyond the life of the management plan. A clear vision for the park is important to ensure the park maintains its' role in the system and to guide long term management decisions when reacting to changing demands or incorporating new approaches to conservation and recreation management.

Birkenhead Lake Park will continue to be an important part of the parks system on both a regional and provincial level. The park's unique setting, ease of access, remoteness, important habitat components, varied landscape and variety of recreational opportunities will make this area a favourite for both traveling and destination visitors.

Birkenhead Lake Provincial Park will continue to provide habitats suited for the full variety of wildlife including bear, deer, goats, raptors and aquatic species. In particular, habitats for key species such as spotted owls, grizzly bear and kokanee will be given highest management protection. The Sockeye Valley will continue to protect old-growth forests and related ecosystems.

The park will continue to be important for First Nation traditional use and cultural values. BC Parks, together with these First Nations communities, will ensure that significant cultural sites within the park are protected from development impacts and that recreation activities in the park are respectful of the environment and First Nation traditional use.

Since established as a Provincial Park in 1963, visitors to Birkenhead Lake Provincial Park have enjoyed accessible recreational opportunities in a setting usually found in more remote areas. The park will continue to offer the park visitor a variety of opportunities that maintains this experience while ensuring natural values are protected. BC Parks will not pursue significant increase or shift in recreational activities but will instead focus on maintaining existing recreational experiences similar to current levels.

Plate 1: Park visitors enjoying the beach and day use area.



RELATIONSHIP WITH FIRST NATIONS

The N'Quatqua First Nation recognises Birkenhead Park as part of their traditional territory. The Mt. Currie Indian Band's traditional territory includes a small portion of the park in the south-west corner. BC Parks has limited information on the values of the park's resources and features as they relate to First Nations' culture and heritage.

Currently, the N'Quatqua First Nation is involved in treaty negotiations with senior levels of government. First Nations' contributions to this management plan are recognised and understood to be without prejudice to future treaty negotiations. At this time, the Mt. Currie Band is not involved in the treaty process.

Once formal Treaty agreements have been reached with the First Nations, this management plan will be reviewed to determine whether it is in compliance with the Treaties. If it is not in compliance, then this management plan will be revised accordingly. Changes will be done through an open public review process so everyone understands what these changes mean to the park and its use.

Plate 2: View of Birkenhead Lake from day use area.



PROTECTED AREA ZONING

Introduction

Zoning is a tool that is used in park planning to allocate general management guidelines to areas of a park on a geographical basis (see Appendix B - BC Parks Zoning Policy and Description). Birkenhead Lake Provincial Park is divided into three zones: the Intensive Recreation Zone, the Natural Environment Zone and the Wilderness Conservation Zone (Fig. 3).

Zones

Intensive Recreation Zone

The management objective of this zone is to provide high use and readily accessible visitor services and facilities. The main campground and day use area comprise the approximate 50 hectares of this zone.

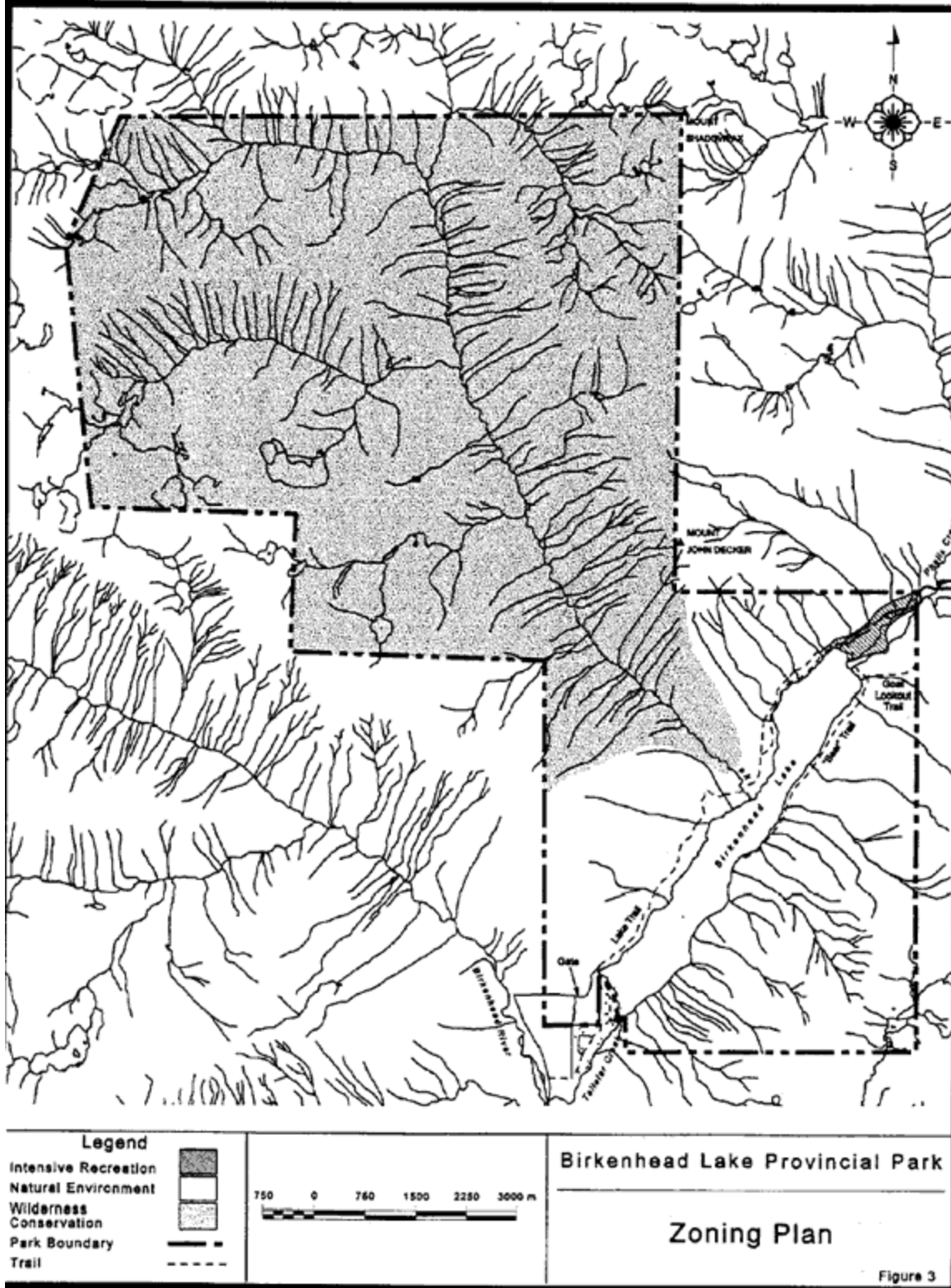
Natural Environment Zone

The objective of this zone is to provide easily-accessible off-road outdoor recreation activities in a largely undisturbed natural environment. It encompasses over 3,000 hectares of the park, primarily surrounding Birkenhead Lake and viewshed.

Wilderness Conservation Zone

The management objective for this zone is to protect a remote, undisturbed, natural landscape and important wildlife habitat, and to provide unassisted backcountry recreation opportunities dependent on a pristine environment where no motorized activities will be allowed. Conservation of natural values takes full precedence over human use. This zone of over 6000 hectares will encompass most of the Sockeye Creek drainage.

Figure 3 zoning



NATURAL AND CULTURAL VALUES MANAGEMENT

Introduction

The management of natural and cultural resources in the park will be based upon the provincial *Park Act*, Park and Recreation Area Regulations, ministry policies and the role of the park in the overall system of protected areas in British Columbia.

The Protected Area Strategy conservation goals and BC Parks' recreation management goals will be met by protecting natural, cultural and outdoor recreation values, monitoring conditions and visitor use, and working co-operatively with others.

Land and Resource Tenures

The park has private lands bordering it on the south-west side, and active forestry activity in upper Phelix Creek on the north-east border. Both private and commercial interests have the potential for impacts on the park. Under the PAS process, additional lands within the region were limited to a 12% cap for each ecosection. As a result, some of the upper alpine and subalpine areas within the Sockeye Creek drainage were excluded from the proposed addition since further alpine areas would exceed the cap in the Lower Mainland system of protected areas.

Objective: To protect the conservation and recreation values of the park and to identify and contribute to the management of significant recreational and natural values that are within the Sockeye Creek watershed but outside the protected area boundary.

Actions:

- Review development plans in adjacent areas to ensure values associated with the park that may cross the park's administrative boundaries (such as wildlife and recreation values) are considered and incorporated.

Water

Few watersheds are enclosed within the park. The lower portion of Phelix Creek lies within the park and active logging occurs further up the valley, outside the park. The unnamed creek flowing from Birken Glacier through the Blackwater Valley to meet with Phelix Creek, flows through agricultural land and may have potential impacts to water quality. Taillefer Creek at the outlet of the lake lies outside the

park and is subject to potential development impacts that could affect the lake levels. The new addition of Sockeye Creek to the park includes all but about 10% of the watershed.

Spring freshets cause flooding of the main campground due to channelling of Phelix Creek near its mouth at the lake. The campground area was originally wetlands which absorbed this overflow. Floods in 1997 caused the closure of two campsites and removed one crossing of the creek from the day use area.

Water for public use at the campground and day use areas is from a well. A Park Use Permit is issued to Birkenhead Estates at the south-west end of the lake to withdraw a maximum of 52,000 gallons/day of water for 104 dwellings from Rogowski Creek, east of Taillefer Creek. Water intake structures include a diversion structure, a flume, tank and pipe.

Objective: To maintain the park watersheds in their natural condition free from contaminants or pollution to benefit park visitors, plants, animals and downstream users.

To examine the hydrological regime of the lake and its tributary including outlet streams, in order to better understand the dynamics of water control in the park and to better prevent and plan for periodic flood events.

Actions:

- Review development plans adjacent to the park to ensure protection of park water quality and quantity.
- Through referrals from BC Environment, ensure sanitary facilities outside the park are properly designed, located and monitored. Monitor sanitary facilities within the park.
- Ongoing monitoring of campground water supply as per Ministry of Health standards.
- Review options to reduce the impacts of floods, freshets and stream migration on Phelix Creek and the main campground. Include a review of the private bridge crossing at Taillefer Creek (just outside the park) as a possible impediment to drainage.
- Provide the public with information on park water use ethics.

Vegetation

Western hemlock forests with sparse undergrowth predominantly occur at the lower to mid elevations around the lake and along the main stem of the Sockeye Creek Valley. On the more well-drained and southerly facing slopes, primarily the western side of the lake, Douglas-fir is the climax species. At higher elevations and in previously burnt areas, lodgepole pine is common, particularly on the west side

of the lake. Western red-cedar is found at wetter sites, usually at higher elevations, in association with the Douglas-fir forests especially at the north-west end of the lake. The Engelmann spruce forests generally begin at about 1,200 metres, above the hemlock and fir forests. The subalpine-fir understory replaces spruce at higher elevations as the climax species. Old-growth forests are found throughout the Sockeye Creek drainage, especially at lower elevations, with large stands found in the extensive alluvial fan at the creek mouth.

Beginning in the 1980s, the forests in the south-west corner of the park (as well as the private and adjacent Crown lands over much of the Birkenhead Valley) was infested with mountain pine beetle. Most of the mature pine in this area of the park was infected or killed. The normal sequence for such infestations is: an epidemic of beetles, mortality of the trees, large fuel build-up, and stand replacement fires. Although BC Parks places high values on maintaining natural ecosystems, the other resource values and the high probability of a high intensity, stand-replacement fire, have led to alternate planning solutions. The initial spot cutting and burning of small infestation pockets was discontinued as ineffective, with adjacent Crown lands outside the park still under attack. In 1997, primarily dead and dying trees were removed from the park in strategically placed fire-break strips, and from adjacent Crown lands in clear cut blocks.

Objective: To protect park vegetation in a natural dynamic ecosystem, to maintain the natural biodiversity and to preserve the critical habitat for species such as spotted owl and endangered plant communities.

To reduce the fuel hazard and the risk of uncontrolled wildfire in areas of insect infestation.

Action:

- Set objectives for identification of rare and sensitive ecosystems and species within the park.
- Encourage study by other agencies and institutions of the transitional ecosystem within the park.
- Develop vegetation and fire management plans in conjunction with the Ministry of Forests and BC Environment for areas within and adjacent to the park. Monitor the success of 1997 program in controlling the fire hazard in the area.
- Protect the integrity of the old-growth forests which are critical wildlife habitats and endangered ecosystems. Consider impacts to old-growth ecosystems within the park when examining development plans or new recreation facilities.

Wildlife

Old-growth and mature forest habitats host numerous raptors, most notably the endangered spotted owl, a red-listed species confirmed within the Sockeye Creek drainage. The park also protects habitat for grizzly bear, a blue-listed species whose presence has been recently confirmed within the park. The subalpine and alpine habitats support eagles, osprey, falcons, grouse, ptarmigan, summer populations of deer and mountain goat and probable winter denning sites for black bear. Significant wintering habitat for Columbian black-tailed deer occurs on the slopes of Sockeye Creek, while mountain goat wintering areas are found on the south-facing slopes between Phelix and Sockeye Creeks. Lower riparian areas are important for pine marten and beaver, among a host of game and non-game species.

Objective: To maintain the existing diversity of the wildlife species and habitats in the park and to identify and protect wildlife corridors occurring both inside and outside the park.

Actions :

- Develop a wildlife management strategy which includes studies and inventories, especially for regionally important species. Develop a specific plan in conjunction with other government agencies for protection of the spotted owl and its' habitat.
- Ensure any trails and facilities planned will be sensitive to the critical habitats and travel corridors identified for wildlife.

Aquatics

At least six fish species are resident in Birkenhead Lake including Kokanee, Dolly Varden char, Mountain whitefish, Northern squawfish and Rainbow trout. Bull trout, a provincial blue-listed species, possibly occur in Birkenhead Lake. The lake was stocked from 1983 to 1988 with Rainbow trout. Spawning habitat appears good at the lake outlet and in the lower reaches of many tributary streams, especially Phelix Creek. Phelix Creek is also the primary spawning area for kokanee while Dolly Varden char and Rainbow trout are believed to use the creek for both spawning and rearing habitat. The lower reaches of Sockeye Creek provide spawning habitat, although survival is low due to fall freshets. Taillefer Creek (at the outlet of the lake and outside the park) provides some of the best spawning habitat for salmonids. Most of the Rainbow trout population of the lake are dependent on this location for spawning and juvenile rearing.

Objective: To manage Birkenhead Lake for a self sustaining recreational fishery based on wild stocks and their management.

Actions:

- Conduct fish survey of the lake in order to determine the condition of existing stocks and to verify the existence of Bull trout.
- Continue to permit recreational fishing within the limits of a sustainable fishery based on wild stocks and their management.
- Continue to work with federal and provincial fishery agencies to develop a sustainable fisheries strategy.
- Conduct habitat capability and stock assessment studies on lake tributaries.
- Review any adjacent development which may affect fish habitat (e.g. instream debris such as logs) in Phelix Creek to conserve spawning substrate.
- Ensure facility development within the protected area will be sensitive to critical fish habitat.
- In conjunction with Department of Fisheries and Oceans and BC Environment, monitor any development which may affect Taillefer Creek spawning habitat for kokanee and Rainbow trout.

Cultural Values

Although there are few known cultural values in Birkenhead Lake Provincial Park, it is recognised that First Nations people used the area for hunting, fishing and plant gathering for food and medicines. Both the N'Quatqua and the Mt. Currie Indian Band have reported traditional uses of the area. There are culturally modified trees, reports of an Indian trail and prospector's pack trail into the upper Sockeye Creek drainage to Chism Pass and eventually Bralorne. As well, a red ochre source used for pictographs is within the park.

Objective: To develop ongoing communications and improve working relationships with First Nations' people whose traditional territories include the park and whose traditional activities take place within the park.

To identify and protect significant cultural features or sites in the park.

Actions:

- Discuss with First Nations areas of special spiritual and cultural interest they identify and how BC Parks will recognize and protect those aboriginal cultural values found in the park.

- Develop a strategy with First Nations that will protect and allow for the continued practice of traditional activities for present and future generations of First Nations people in relationship to the lands within the park.
- Work with First Nations to identify the location and historical significance of cultural features of the park including the Chism Pass trail, and any aboriginal traditional use features such as culturally modified trees and gathering sites.
- Consult with First Nations on an ongoing basis to determine the location of cultural and historic features and provide awareness and information of their importance for park users as agreed to by First Nations.
- Ensure First Nations' cultural and spiritual values associated with Birkenhead Lake Park are protected for the present and future generations of First Nations people.

Visual Values

The main visual landscapes are the enclosed setting of the lake valley with views of mountain ridges, slopes and the lake itself. Panoramic views are available from various peaks, especially from the ridges of the Sockeye drainage.

Objective: To protect the viewing opportunities from within the park and in some cases improve key viewing opportunities.

Actions:

- Encourage forest companies, the Ministry of Forests, and other nearby developers to employ appropriate landscape management techniques in clear recognition of the high scenic values.
- Investigate the possibility of providing new viewing opportunities at high elevation vantage points.

OUTDOOR RECREATION OPPORTUNITIES MANAGEMENT

Introduction

Birkenhead Lake Provincial Park strives to protect natural values while allowing for appropriate recreational opportunities or facilities. When facilitating recreational opportunities, BC Parks tries to accommodate a wide spectrum of park users. Outdoor recreation opportunities range from intensive use facilities such as campground and picnic sites to low-impact activities such as nature study.

Outdoor Recreation Opportunities and Facilities

The following summary outlines each opportunity, its objective and the facilities or services required, as illustrated in the Proposed Development Map (Figure 4).

Frontcountry and Wilderness Camping

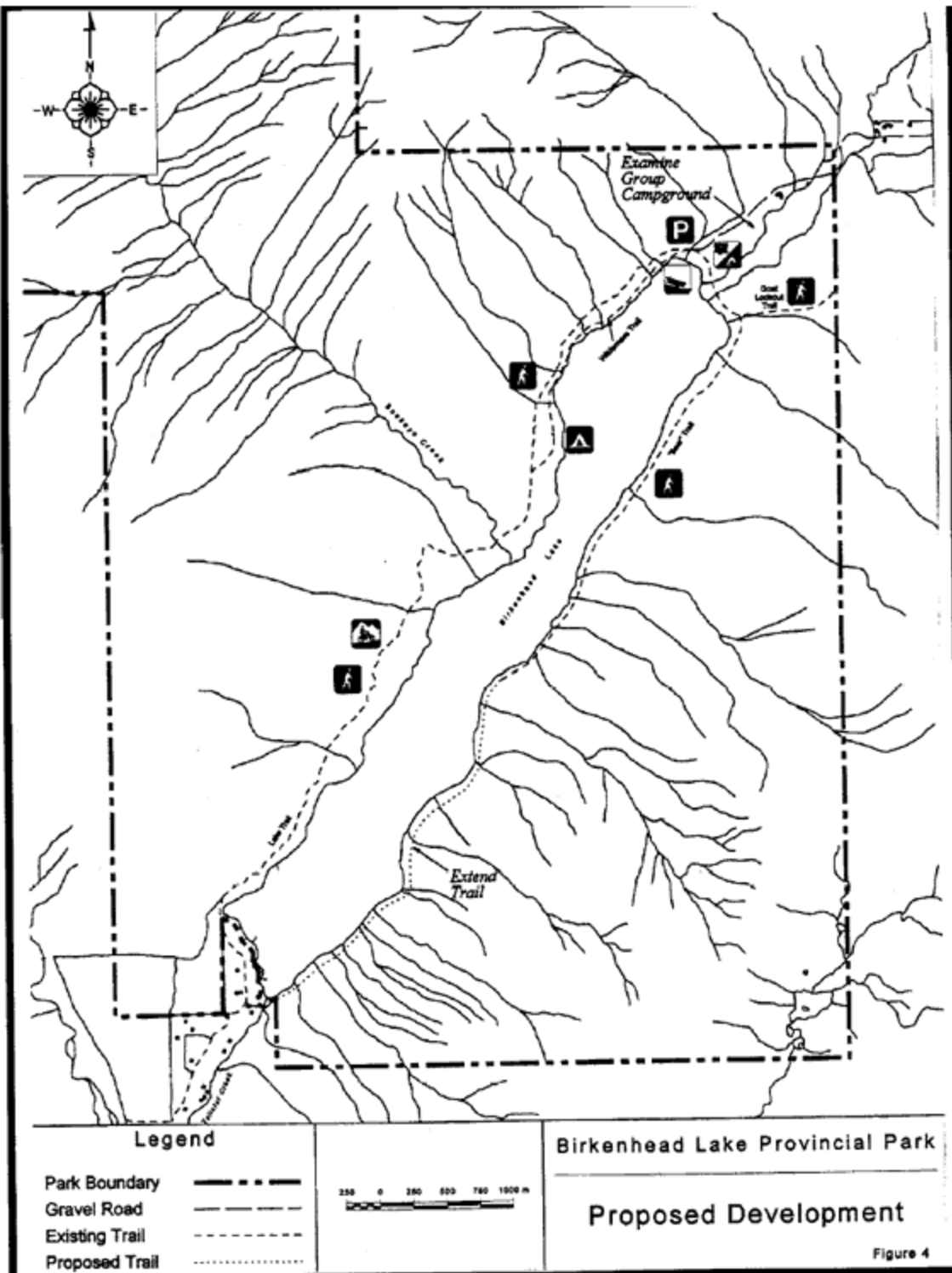
The frontcountry park campground attracts families taking advantage of the lake-oriented recreation opportunities, especially the large beach area. It also attracts visitors looking for more adventurous opportunities offered by the easily-accessed backcountry. The campsite on the Wilderness Trail also attracts small groups and individuals looking for a more remote walk-in or boat-in experience.

Objective: To maintain the quality and safety of existing camping opportunities and to provide additional camping facilities if demand warrants.

Actions:

- Increase monitoring of hazard trees in main campsite and take remedial action as required.
- Assess site potential and economic value of a group campground development and develop the site when demand warrants.
- Maintain the wilderness campsite at the present location. Continue to monitor site conditions and use patterns.
- Continue to monitor campground site degradation and loss due to flooding from Phelix Creek and examine opportunities to minimise flooding impacts while protecting park values. Recognition should be given that some sites may be removed in order to provide for visitor safety and protection of fish habitat.

Figure 4



Hiking and Backpacking

The park offers commonly used easy hikes along the north shore of the lake on the Wilderness Trail and the Lake Trail. Hikes of easy to moderate difficulty are found at the Goat Lookout Trail and along the Bear Trail, both having sections of difficult rocky terrain and a steep inclines. Goat Lookout receives low use and the unmarked Bear Trail is used very infrequently.

Objective: To encourage a range of hiking opportunities from short, level interpretive trails to more arduous hikes that reach higher elevations.

Actions :

- Investigate in conjunction with the Ministry of Forests, the possibility of extending the Goat Lookout trail into the adjacent Provincial Forest alpine environment.
- Investigate and develop a more feasible crossing locations of Phelix Creek.
- Evaluate the need and the feasibility of upgrading and extending the existing rough undeveloped “Bear Trail” to connect with the north shore trail to create a trail that circumnavigates the lake. If not feasible, the “Bear Trail” will be eliminated.
- Upgrade all existing designated trails as required based on review of the trails, standards and the degree of difficulty desired.

Angling

Birkenhead Lake has a reputation among sports fishermen for its Dolly Varden char as well as Rainbow trout. The N'Quatqua First Nation harvest kokanee for sustenance use. The lake is a destination for avid fishermen and local groups who hold annual trout and char derbies. The lake is fished casually by park visitors from canoes, small boats, and from the shore.

Objective: To provide a high quality recreational experience and sustainable fishery based on the management of wild stocks and their habitats.

Actions :

- Maintain the Fisheries Information Board near the boat launch and update with information about regulations, conservation techniques and species identification. Informally monitor catch success to assess fishing catch effort and harvest.

Boating

Birkenhead Lake offers opportunities for use of canoes, small car-top boats, and larger boats. A number of small locations around the lake allow for shore access. Jet skis are infrequently used while fishermen increasingly use belly boats in the shallows of the lake.

Objective: To provide a variety of safe boating opportunities.

Actions:

- Provide information on boating safety and park use ethics on the information board near the boat launch.
- Continue existing canoe rentals in the park and evaluate potential for rentals of small car-top boats.

Biking

The Sea to Sky Bike Trail, advertised through regional biking associations and events, uses the Lake Trail through Birkenhead Park. The park is used by mountain bikers from throughout the Sea to Sky Corridor for cycling as well as enjoying the park's numerous recreation opportunities.

Objective: To provide recreational cycling opportunities within certain areas of the park.

Actions:

- In co-operation with organised cycling associations, continue to provide bicycle access along the Birkenhead Lake Trail.

Snowmobiling

Traditionally, very minimal snowmobiling has occurred in Birkenhead Lake Park. It is an accepted activity in the park's Intensive Recreation Zone and could be considered in the park's Natural Environment Zone. However, snowmobiling is prohibited in the Wilderness Conservation Zone.

Objective: To examine snowmobiling opportunities in the Intensive Recreation Zone and Natural Environment Zone, if demand exceeds opportunities outside the park.

Actions:

- Monitor snowmobiling activities within the accepted zones of the park to assess user levels.
- Develop a snowmobiling strategy if use within the park increases.

Commercial Recreation Opportunities

BC Parks has issued two one-year permits for commercial recreation operations. These include canoe rentals and horseback riding. BC Parks will consider issuing additional Park Use Permits for commercial recreational opportunities in the park providing commercial recreational activities meet BC Park's principles of low impact, benefit to the recreational experience, as well as meeting the criteria outlined in the BC Parks Impact Assessment Process.

Objective: To encourage commercial recreation activities that are in keeping with the role of the park.

Action:

- Continue existing canoe rentals in the park and evaluate potential for rentals of small car-top boats.
- Review the compatibility of commercial horse guiding activities with the park role.
- Investigate the feasibility of using portable touring shelters for summer camping use and to promote winter recreational use within the existing campground.
- Consider commercial non-mechanised guiding opportunities.

Access Strategy

The majority of visitors enter the park by way of the access road at the north end of the park. An alternate access is made by many bicyclists who travel the Forest Service Road up the Birkenhead Valley, then via a spur road which enters the park and accesses the hiking/bike trail at the south-west end of the park. This route is promoted as part of the Sea to Sky Mountain Bike Trail. As cyclists use numerous trails and Forest Service Roads off the Birkenhead Valley, they will likely continue to access both ends of the park. Skiers, and some use of snowmobiles accessing the Lake Trail from Birkenhead Road has been noted. Traditional aboriginal uses of the park area included access from an undetermined route up Phelix Creek to upper Sockeye Creek. There has been very little use of the lake by float planes and no known use by helicopters for access.

Highway signage at the Birkenhead Valley Forest Service Road indicates that the park access is a further 16 km (the Blackwater Lake Road) which most vehicles use. Signage at the Blackwater turnoff is visible only for north-bound traffic.

Objective: To direct park access for the majority of visitors to the road leading to the north-east end of the lake where current facilities such as parking areas exist.

Action:

- Work with outdoor recreation groups, Birkenhead Estates, the Ministry of Forests, and the Ministry of Transportation and Highways in order to co-ordinate and publicise the preferred access routes into and within the park.
- With input to the Ministry of Transportation and Highways, BC Parks will review the existing highway signs and make any improvements needed (style, location, etc.) to facilitate and direct access.
- Continue to allow float plane access to Birkenhead Lake.

Management Services

Parks Headquarters and Service Yard

The Parks headquarters will continue to be located at the Garibaldi/Sunshine Coast District Office at Alice Lake Provincial Park with a small service base located at Birkenhead Lake Provincial Park.

Site and Facility Design Standards

All sites and facilities developed for public use will meet the design standards of BC Parks. Factors to be considered include visual aesthetics, safety, durability and operational efficiency and environmental compatibility.

Safety and Health

Every normal precaution will be taken to ensure the safety and health of visitors, park operators and staff in Birkenhead Lake Provincial Park. The water supply and sanitary facilities in the campgrounds will be monitored and tested as per the Ministry of Health guidelines. All high use areas will have periodic safety inspections to ensure reasonable care is taken.

In the event of emergency or hazardous conditions, appropriate action will be undertaken as defined in the Emergency Procedures Manual for the park. Regional emergency services may be contacted by having information relayed through the Park Facility Operator or BC Parks staff.

COMMUNICATIONS

Introduction

Proper communications regarding the park, its values, and facilities is vital for visitors wishing to experience the values within Birkenhead Lake Provincial Park. Information for the park should be available onsite as well as through BC Parks offices. Accurate information regarding the park is needed to ensure visitors have a positive, safe experience while respecting natural and cultural values.

Marketing and Promotion

Birkenhead Lake Park is a well known destination camping and day-use park within the Garibaldi/Sunshine Coast District. BC Parks will continue to promote the park for its frontcountry recreation opportunities.

Information from BC Parks' offices is available to the public including maps, brochures and a wildlife viewing brochure. However, these publications have not been updated for the recent addition of Sockeye Creek to the park. Information at the park is available through an information shelter located near the main day use parking area near the beach.

As visitation during the summer months reaches campground capacity for many of the Sea-to-Sky Corridor parks most weekends, there is the opportunity to promote the use of Birkenhead Park during low-use weekday periods and the shoulder seasons.

Public Information

Objective: To encourage outdoor education in the park to enhance public understanding and appreciation of park values.

To update existing informational sources to include the recently added portion of Sockeye Creek to the park.

Actions:

- Maintain and encourage the use of the Wildlife Viewing Guide for the park.
- Provide interpretive signage based on an interpretive sign plan.
- Update existing maps and brochures to include the Sockeye Creek addition.

- Promote Birkenhead Lake Park as a camping destination particularly during mid-week periods of the summer months when other camping areas are full.
- Encourage schools to consider the park as an outdoor education classroom.
- Co-ordinate with the Municipality of Pemberton and the Tourist Information Centre for availability of brochures, park displays and information for the public.
- Invite boating groups to use the lake for skills development and safety instruction.
- Emphasise park use ethics and park hazards at information shelters.

Plate 3. View of Sockeye Creek from northern ridge.



IMPLEMENTATION

Prioritising of the main natural and cultural values and outdoor recreation opportunities management proposals is necessary to effectively implement this management plan. All actions listed below are subject to funding, human resources, and the BC Parks Impact Assessment Policy. As such, the actions have been organised into high priority actions, task or project actions, and ongoing or monitoring tasks.

High Priority Actions

- Review options to reduce the impacts of floods, freshets and stream migration on Phelix Creek and the main campground. Include a review of the private bridge crossing at Taillefer Creek (just outside the park) as a possible impediment to drainage.
- Provide the public with information on park water use ethics.
- Discuss with First Nations, areas of special spiritual and cultural interest they identify and how BC Parks will recognize and protect those aboriginal cultural values found in the park.
- Develop a strategy with First Nations that will protect and allow for the continued practice of traditional activities for present and future generations of First Nations people in relationship to the lands within the park.
- Work with First Nations to identify the location and historical significance of cultural features of the park including the Chism Pass trail, and any aboriginal traditional use features such as culturally modified trees and gathering sites.
- Investigate the possibility of providing new viewing opportunities at high elevation vantage points.
- Increase monitoring of hazard trees in main campsite and take remedial action as required.
- Assess site potential and economic value of a group campground development and develop the site when demand warrants.
- Investigate in conjunction with the Ministry of Forests, the possibility of extending the Goat Lookout trail into the adjacent Provincial Forest alpine environment.

- Investigate and develop a more feasible crossing locations of Phelix Creek.
- Evaluate the need and the feasibility of upgrading and extending the existing rough undeveloped “Bear Trail” to connect with the north shore trail to create a trail that circumnavigates the lake. If not feasible, the “Bear Trail” will be eliminated.
- With input to the Ministry of Transportation and Highways, BC Parks will review the existing highway signs and make any improvements needed (style, location, etc.) to facilitate and direct access.
- Co-ordinate with the Municipality of Pemberton and the Tourist Information Centre for availability of brochures, park displays and information for the public.
- Invite boating groups to use the lake for skills development and safety instruction.
- Emphasise park use ethics and park hazards at information shelters.

Task or Project Actions

- Set objectives for identification of rare and sensitive ecosystems and species within the park.
- Encourage study by other agencies and institutions of the transitional ecosystem within the park.
- Develop vegetation and fire management plans in conjunction with the Ministry of Forests and BC Environment for areas within and adjacent to the park. Monitor the success of 1997 program in controlling the fire hazard in the area.
- Develop a wildlife management strategy which includes studies and inventories, especially for regionally important species. Develop a specific plan in conjunction with other government agencies for protection of the spotted owl and its’ habitat.
- Conduct fish survey of the lake in order to determine the condition of existing stocks and to verify the existence of Bull trout.
- Conduct habitat capability and stock assessment studies on lake tributaries.
- Upgrade all existing designated trails as required based on review of the trails, standards and the degree of difficulty desired.

- Provide information on boating safety and park use ethics on the information board near the boat launch.
- Develop a snowmobiling strategy if use within the park increases.
- Review the compatibility of commercial horse guiding activities with the park role.
- Investigate the feasibility of using portable touring shelters for summer camping use and to promote winter recreational use within the existing campground.
- Work with outdoor recreation groups, Birkenhead Estates, the Ministry of Forests, and the Ministry of Transportation and Highways in order to co-ordinate and publicise the preferred access routes into and within the park.
- Provide interpretive signage based on an interpretive sign plan.
- Update existing maps and brochures to include the Sockeye Creek addition.

Ongoing or Monitoring Actions

- Review development plans in adjacent areas to ensure values associated with the park that may cross the park's administrative boundaries (such as wildlife and recreation values) are considered and incorporated.
- Review development plans adjacent to the park to ensure protection of park water quality and quantity.
- Through referrals from BC Environment, ensure sanitary facilities outside the park are properly designed, located and monitored. Monitor sanitary facilities within the park.
- Ongoing monitoring of campground water supply as per Ministry of Health standards.
- Protect the integrity of the old-growth forests which are critical wildlife habitats and endangered ecosystems. Consider impacts to old-growth ecosystems within the park when examining development plans or new recreation facilities.
- Ensure any trails and facilities planned will be sensitive to the critical habitats and travel corridors identified for wildlife.
- Continue to permit recreational fishing within the limits of a sustainable fishery based on wild stocks and their management.

- Continue to work with federal and provincial fishery agencies to develop a sustainable fisheries strategy.
- Review any adjacent development which may affect fish habitat (e.g. instream debris such as logs) in Phelix Creek to conserve spawning substrate.
- Ensure facility development within the protected area will be sensitive to critical fish habitat.
- In conjunction with Department of Fisheries and Oceans and BC Environment, monitor any development which may affect Taillefer Creek spawning habitat for kokanee and Rainbow trout.
- Consult with First Nations on an ongoing basis to determine the location of cultural and historic features and provide awareness and information of their importance for park users as agreed to by First Nations.
- Ensure First Nations' cultural and spiritual values associated with Birkenhead Lake Park are protected for the present and future generations of First Nations people.
- Encourage forest companies, the Ministry of Forests and other nearby developers to employ appropriate Landscape Management techniques in clear recognition of the high scenic values.
- Maintain the wilderness campsite at the present location. Continue to monitor site conditions and use patterns.
- Continue to monitor campground site degradation and loss due to flooding from Phelix Creek and examine opportunities to minimise flooding impacts while protecting park values. Recognition should be given that some sites may be removed in order to provide for visitor safety and protection of fish habitat.
- Maintain the Fisheries Information Board near the boat launch and update with information about regulations, conservation techniques and species identification. Informally monitor catch success to assess fishing catch effort and harvest.
- Continue existing canoe rentals in the park and evaluate potential for rentals of small car-top boats.
- In co-operation with organised cycling associations, continue to provide bicycle access along the Birkenhead Lake Trail.

- Monitor snowmobiling activities within the accepted zones of the park to assess user levels.
- Continue to allow float plane access to Birkenhead Lake.
- Consider commercial non-mechanised guiding opportunities.
- Maintain and encourage the use of the Wildlife Viewing Guide for the park.
- Promote Birkenhead Lake Park as a camping destination particularly during mid-week periods of the summer months when other camping areas are full.
- Encourage schools to consider the park as an outdoor education classroom.

Plate 4: Park visitors enjoying a warm summer day.



Appendix A

BC Provincial Protected Areas Strategy and BC Parks Conservation and Recreation System Goals

The British Columbia Provincial Protected Areas System has two mandates:

- To conserve significant and representative natural and cultural resources
- To provide a wide variety of outdoor recreation opportunities

CONSERVATION GOALS

Goal 1 Representativeness

To protect viable, representative examples of the natural diversity of the province, representative of the major terrestrial, marine and freshwater ecosystems, the characteristic habitats, hydrology and landforms, and the characteristic backcountry recreational and cultural heritage values of each ecosection.

Goal 2 Special Features

To protect the special natural, cultural heritage and recreational features of the province, including rare and endangered species and critical habitats, outstanding or unique botanical, zoological, geological and paleontological features, outstanding or fragile cultural heritage features, and outstanding outdoor recreational features such as trails.

RECREATION GOALS

Goal 1 Outdoor Recreation Holiday Destination Opportunities

The Provincial Parks System will include appropriate outdoor recreation lands and facilities providing for the use and enjoyment of major outdoor recreation destinations in British Columbia.

Goal 2 Tourism Travel Route Opportunities

The Provincial Parks System will include, as a complement to other suppliers, outdoor recreation lands and facilities in association with major provincial travel corridors to ensure that travelling vacationers are supplied with a basic network of scenic stopoffs.

Goal 3 Regional Recreation Opportunities

The Provincial Parks System will include, as a complement to other suppliers, land and facility-based opportunities for outdoor recreation distributed in association with British Columbia's natural geographic regions in order that British Columbians are assured a basic supply of outdoor recreation services close to home.

Goal 4 Backcountry Recreation Opportunities

The Provincial Parks System will build the province's reputation for backcountry recreation by protecting and managing our most outstanding wilderness areas. Some sites may feature adventure tourism, while in other areas, the wilderness would remain untouched.

Appendix B

BC Parks Zoning Policy and Descriptions

	Intensive Recreation	Natural Environment
OBJECTIVE	To provide for a variety of readily accessible, facility-oriented outdoor recreation opportunities.	To protect scenic values and to provide for backcountry recreation opportunities in a largely undisturbed natural environment.
USE LEVEL	Relatively high density and long duration types of use.	Relatively low use but higher levels in association with nodes of activity or access.
MEANS OF ACCESS	All-weather public roads or other types of access where use levels are high (see "Impacts" below).	Mechanized (power-boats, snowmobiles, all terrain vehicles), non-mechanized (foot, horse, canoe, bicycle). Aircraft and motorboat access to drop-off and pickup points will be permitted.
LOCATION	Contiguous with all-weather roads and covering immediate areas, modified landscapes or other high-use areas.	Removed from all-weather roads but easily accessible on a day-use basis. Accessible by mechanized means such as boat or plane.
SIZE OF ZONE	Small; usually less than 2,000 ha.	Can range from small to large.
BOUNDARY DEFINITION	Includes areas of high facility development in concentrated areas.	Boundaries should consider limits of activity/facility areas relative to ecosystem characteristics and features.

RECREATION
OPPORTUNITIES

Vehicle camping, picnicking, beach activities, power-boating, canoeing, kayaking, strolling, historic and nature appreciation, fishing, snowplay, downhill and cross-country skiing, snowshoeing, specialized activities.

Walk-in/boat-in camping, power-boating, hunting, canoeing, kayaking, backpacking, historic and nature appreciation, fishing, cross-country skiing, snowmobiling, river rafting, horseback riding, heli-skiing, heli-hiking, and specialized activities.

Special Feature	Wilderness Recreation	Wilderness Conservation
<p>To protect and present significant natural or cultural resources, features or processes because of their special character, fragility and heritage values.</p>	<p>To protect a remote, undisturbed natural landscape and to provide backcountry recreation opportunities dependent on a pristine environment where air access may be permitted to designated sites.</p>	<p>To protect a remote, undisturbed natural landscape and to provide unassisted backcountry recreation opportunities dependent on a pristine environment where no motorized activities will be allowed.</p>
<p>Generally low.</p>	<p>Very low use, to provide solitary experiences and a wilderness atmosphere. Use may be controlled to protect the environment.</p>	<p>Very low use, to provide solitary experiences and a wilderness atmosphere. Use may be controlled to protect the environment.</p>
<p>Various; may require special access permit.</p>	<p>Non-mechanized; except may permit low frequency air access to designated sites; foot, canoe (horses may be permitted).</p>	<p>Non-mechanized (no air access); foot, canoe (horses may be permitted).</p>
<p>Determined by location of special resources; may be surrounded by or next to any of the other zones.</p>	<p>Remote; not easily visited on a day-use basis.</p>	<p>Remote; not easily visited on a day-use basis.</p>
<p>Small; usually less than 2000 hectares.</p>	<p>Large; greater than 5,000 hectares.</p>	<p>Large; greater than 5,000 hectares.</p>
<p>Area defined by biophysical characteristics or the nature and extent of cultural resources (adequate to afford protection).</p>	<p>Defined by ecosystem limits and geographic features. Boundaries will encompass areas of visitor interest for specific activities supported by air access. Will be designated under the <i>Park Act</i>.</p>	<p>Defined by ecosystem limits and geographic features. Will be designated under the <i>Park Act</i>.</p>

Sight-seeing, historic and nature appreciation. May be subject to temporary closures or permanently restricted access.

Backpacking, canoeing, kayaking, river rafting, nature and historic appreciation, hunting, fishing, cross-country skiing, snowshoeing, horseback riding, specialized activities (e.g. caving, climbing).

Backpacking, canoeing, kayaking, river rafting, nature and historic appreciation, fishing, cross-country skiing, snowshoeing, horseback riding, specialized activities (e.g. caving, climbing).

	Intensive Recreation	Natural Environment
FACILITIES	May be intensely developed for user convenience. Campgrounds, landscaped picnic/play areas, trail accommodation or interpretative buildings; boat launches, administrative buildings, service compounds, gravel pits, disposal sites, wood lots; parking lots, etc.	Moderately developed for user convenience. Trails, walk-in/boat-in campsites, shelters, accommodation buildings may be permitted; facilities for motorized access e.g. docks, landing strips, fuel storage, etc.
IMPACTS ON NATURAL ENVIRONMENT	Includes natural resource features and phenomena in a primarily natural state but where human presence may be readily visible both through the existence of recreation facilities and of people using the zone. Includes areas of high facility development with significant impact on concentrated areas.	Area where human presence on the land is not normally visible, facility development limited to relatively small areas. Facilities are visually compatible with natural setting.
MANAGEMENT GUIDELINES	Oriented toward maintaining a high quality recreation experience. Intensive management of resource and/or	Oriented to maintaining a natural environment and a high quality recreation experience. Visitor access may be restricted to

control of visitor activities.
Operational facilities designed
for efficient operation while
remaining unobtrusive to the
park visitor.

preserve the recreation
experience or to limit impacts.
Separation of less compatible
recreational activities and
transportation modes .
Designation of transportation
may be necessary to avoid
potential conflicts (e.g. horse
trails, cycle paths, hiking trails).

EXAMPLES OF ZONING

Campground in Rath Trevor
Beach Park; Gibson Pass ski area
in E.C. Manning Park.

Core area in Cathedral Park;
North beach in Naikoon Park.

Special Feature	Wilderness Recreation	Wilderness Conservation
Interpretative facilities only, resources are to be protected.	Minimal facility development for user convenience and safety, and protection of the environment e.g. trails, primitive campsites, etc. Some basic facilities at access points, e.g. dock, primitive shelter, etc.	None.
None; resources to be maintained unimpaired.	Natural area generally free of evidence of modern human beings. Evidence of human presence is confined to specific facility sites. Facilities are visually compatible with natural setting.	Natural area generally free of evidence of modern human beings.
High level of management protection with ongoing monitoring. Oriented to maintaining resources and, where appropriate , a high quality recreational and interpretative experience. Active or passive management depending on size , location, and nature of the resource. Visitor access may be restricted to preserve the recreation experience and to limit impacts.	Oriented to protecting a pristine environment. Management actions are minimal and not evident . Managed to ensure low visitor use levels. Visitor access may be restricted to protect the natural environment and visitor experience.	Oriented to protecting a pristine environment. Management actions are minimal and not evident . Managed to ensure low visitor use levels. Visitor access may be restricted to protect the natural environment and visitor experience.
Tidepools in Botanical Beach Park; Sunshine Meadows in Mount Assiniboine Park.	Quanchus Mountains Wilderness in Tweedsmuir Park; Wilderness Zone in Spatsizi Park.	Central Valhalla Wilderness in Valhalla Park; Garibaldi Park Nature Conservancy area.



A Component of British Columbia's
Land Use Strategy

LOWER MAINLAND PROTECTED AREAS STRATEGY

Birkenhead Lake Provincial Park

BACKGROUND DOCUMENT

prepared for:

Ministry of Environment, Lands and Parks
BC Parks
Garibaldi/Sunshine Coast District

January 1998

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INTRODUCTION

Birkenhead Lake Provincial Park is situated on the leeward side of the Pacific Ranges in the Coast Mountains Region of British Columbia, approximately 57 kilometres north of Pemberton, east of the Birkenhead River (Fig. 1).

Established in 1963 under the Parks Act, originally as a 3642 hectare Class A Provincial Park, it was centred around the picturesque Birkenhead Lake. In 1997, through the Protected Areas Strategy, most of the Sockeye Creek drainage was added to the park, almost tripling its size to 9755 hectares. The added area was managed previously by the Ministry of Forests within the provincial forest and was granted as a timber licence to Terminal Forest Products.

Only a three hour drive from Vancouver, Birkenhead Lake Provincial Park has served as a tranquil, lake-orientated destination park for the past 30 years. It is accessed by a paved highway to Devine, about 40 km north of Pemberton, then a gravel road for the last 17 kms. An alternate access is also possible by forestry road up the Birkenhead Valley to the south-west end of the lake, although no parking or vehicle access is provided into the park.

Birkenhead Lake was named by A. C. Anderson, a Hudson Bay Company explorer/surveyor. In 1892, a close relative of Anderson's, Alexander Seton, died at sea while commanding a British Army unit aboard the troopship "Birkenhead". In the early 1900s, a Chism Trail was routed up Sockeye Creek, which provided access through the mountains to the mining town of Bralorne. Presently, the park and surrounding area is included within the traditional territory of the N'Quatqua First Nation, currently involved in treaty negotiations.

Fig.1 Regional Context

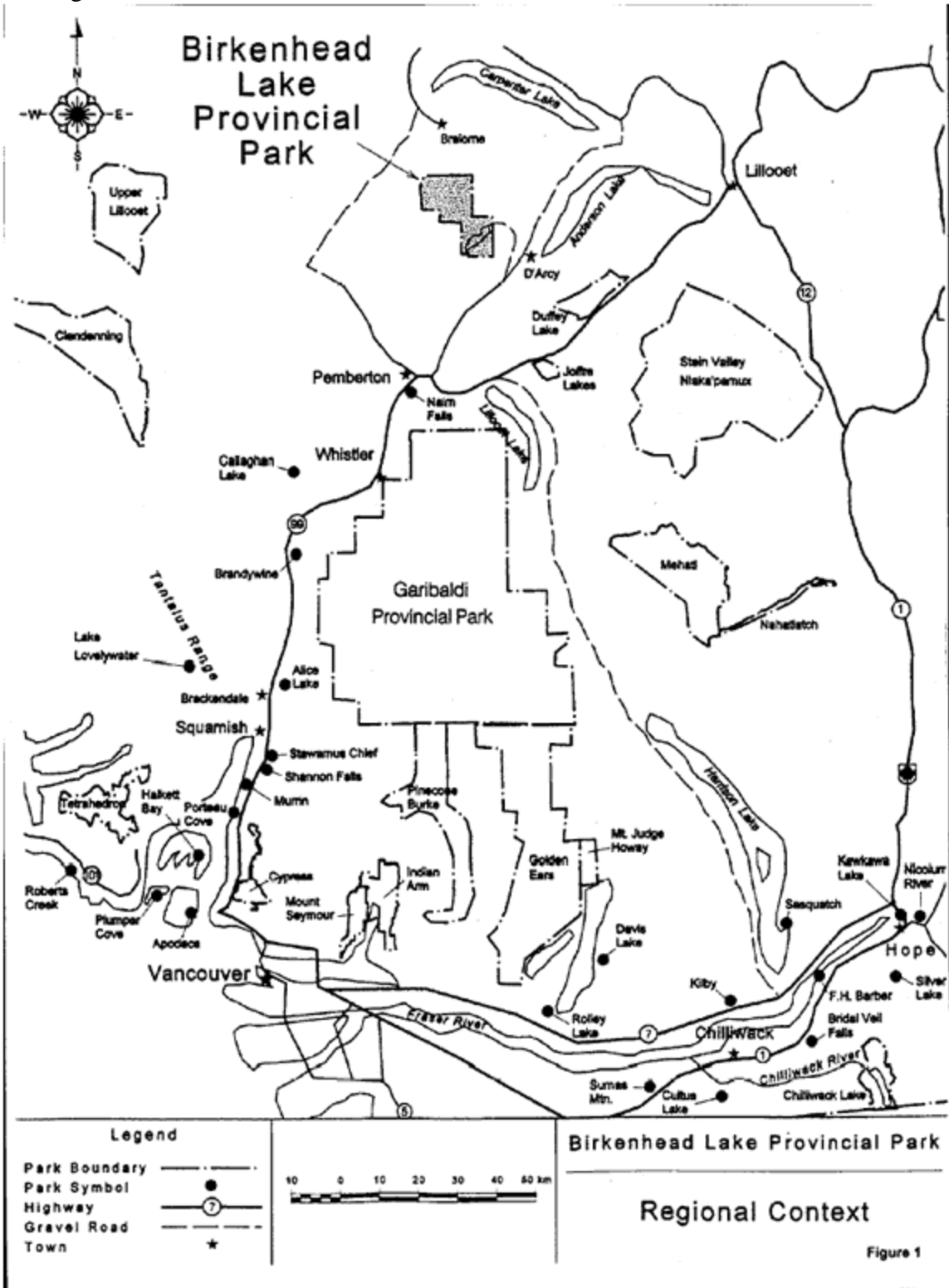


Figure 1

NATURAL AND CULTURAL VALUES

Physiography

Birkenhead Lake Provincial Park is situated in a transition area between the Leeward Pacific Ranges and Eastern Pacific Ranges Ecoregions of the Coast Mountains. Birkenhead Lake lies at an elevation of 640 metres above sea level. Several rugged peaks lie within park boundaries, Mt. Shadowfax at 2,285 meters (7,500 feet), Mt. John Decker at 2,200 m (7,200 ft.), and an unnamed peak at 2,450 m (8,000 ft) at the headwaters of the second tributary to Sockeye Creek. It is a park composed of weathered mountains, U-shaped valleys, glaciers, fast flowing creeks, and the large glacially-fed Birkenhead Lake as the dominant waterbody. Sockeye Creek is the largest tributary valley accounting for most of the park area.

The rugged terrain of this regional landscape has been moulded and shaped by periods of volcanism and glaciation, and numerous landforms reflect the ongoing processes of erosion and deposition (colluvial cones, alluvial fans, scree slopes rocky outcrops, gullies, floodplains, etc.). As a result, Birkenhead Lake Provincial Park sits on a variety of surficial materials including colluvial, fluvial and morainal over bedrock.

Most of the rugged and rocky shoreline around Birkenhead Lake consists of colluvial fans deposited by the mass wasting of the upper slopes. The rivers and numerous creeks of this mountainous area have deposited alluvial fans at their mouths, especially at Phelix and Sockeye Creeks. The fan at the Sockeye Creek outlet is so large it spreads across almost half the breadth of the lake. An even deposit of coarse fluvial material exists at the south-western end of the lake between the Birkenhead River and Birkenhead Lake. Other fans are more often mixed or overlaid with coarse colluvial material.

Besides these erosional deposits, moraines remain from the glacial period, especially along either side of Birkenhead Lake on the lower slopes.

Geology

Birkenhead Lake Provincial Park contains a sample of the geological processes which formed the Pacific Ranges. Over the last 181 million years, these mountains were built and sculpted out of the large mass of intrusive igneous rock called the Coast Batholith. Two significantly different rock types are represented in the park: plutonic rocks and stratified rocks. The boundary between these two types actually divides the park into two distinct geological areas. The plutonic rock types lie all around the north-east half of the park and the stratified rock types exist all around the south-west half of the park.

The plutonic rock type primarily consists of igneous rocks like quartz diorite, which is found in massive outcrops of exposed batholiths characteristic of the Pacific Ranges. The stratified rock type consists of two formations from the Cadwallader Group of the Upper Triassic period. The more recent Hurley formation is situated just south-west of the plutonic rock type and the older Pioneer formation is situated south-west of the Hurley formation. Evolving about 150 million years ago, these sedimentary rocks were interrupted by thick volcanic assemblages. The Hurley formation is comprised of meta-sedimentary rocks such as slate, argillite, limestone, andesite, phyllite, tuff and conglomerate. The Pioneer formation is made up of volcanic assemblages consisting of rocks such as andesite breccia, tuff and flows, greenstone, rhyolite breccia and flows, slate, argillite, limestone and conglomerate.

Both the Bridge River Group rocks, found in the north-east headwaters of the Sockeye Creek drainage above 1,500 meters (primarily outside the park boundary) and the Cadwallader Group rocks, found in the southern half of the park, are assessed to have low to moderate mineral potential. One known mineral site, (MINFILE 92JNE061 SNO), covers a porphyry copper-molybdenum occurrence in the mountains above Sockeye Creek, within the park. Very little exploration work has been undertaken in the Sockeye drainage and no claims exist. There is probably placer gold in the creek bed (Stewart, pers. comm.).

Soils

The site specific soil-forming factors in the park are reflected in an array of soil combinations throughout the park due to its biogeoclimatic diversity and the extensive physical and chemical weathering of the assorted surficial materials. As a result, a mosaic of soil types exists. Although a thorough soil survey has not been conducted within the park, soil data from outside environments give a general indication of the soil types and distribution in the park.

Three soil orders occur within the park: Brunisolic, Gleysolic and Regosolic. Based on the associated landforms, four subgroups of the three soil orders can be predicted: Orthic Eutric Brunisols, Orthic Regasols, Rego Gleysols and Rego Humic Gleysols.

The Orthic Eutric Brunisol soils occur on mountain slopes, alluvial fans and morainal deposits within the park. They are only moderately developed from the original parent material. In this region, limitations to the soil-forming processes are attributed to a cool climate and the coarse texture of the parent material. The low clay content slows down the chemical transformations and weathering processes. This soil is well-drained which limits the vegetation that can be supported to dryland species. The low organic matter additions to the topsoil results in characteristic thin or non-existent Ah horizon, plus a high base status (pH over 5.5).

Orthic Regasol soils can be found on colluvial material found at the base of eroding slopes within the park. Such unstable areas have the constant disruption of surface materials which prevents the chance

of strong soil horizons from developing. Orthic regasols are characterized by having little or no organic matter but have instead only a C horizon.

Rego Gleysol soil development occurs on coarse-textured receiving positions situated on the lower sections of many slopes. These soils are saturated for periods of the year when water is added to the soil profile faster than it drains away. The chemical breakdown of the mineral fraction and the decomposition of the organic soil fraction are strongly inhibited by such periods of saturation. As a result, this soil type is known for poorly decomposed organic matter because the action of soil microorganisms is impeded by the low temperatures and the lack of aeration. Rego gleysols are characterized by wetter B and C horizons, appearing a darker grey, while the more aerated upper horizons appear to be an oxidized red or mottled colour.

Rego Humic Gleysol soil development differs only slightly from the rego gleysol. It is normally found on gravelly floodplains overlaid with sand. The Blackwater Creek outlet which drains into Birkenhead Lake provides this type of floodplain conditions. Rego humic gleysols are characterized by having a thick Ah horizon (organic matter accumulation) and no Bt horizon (clay accumulation).

Water

The primary water resource of the park is Birkenhead Lake. Two large creeks, Sockeye and Phelix Creeks, feed the lake along with a multitude of smaller more precipitous tributaries. The main sources of water for these tributaries come from the significant amounts of direct run-off and snow meltwater that is characteristic of the region. Phelix Creek lies mostly outside the park. The outlet, Taillefer Creek, is located at the south end of the lake and flows into the Birkenhead River.

Birkenhead Lake has a mean depth of 21.6 metres with a maximum depth of 38.4 metres in the south-west portion. It is 6.4 kilometres long, averages 0.4 kilometre in width and encompasses 14,630 metres of shoreline. With an estimated surface area of 4.09 hectares, the water volume of the lake has been estimated at 88,511,730 cubic metres. Birkenhead Lake is an oligotrophic lake characterized by very little plant nutrient, is abundant in oxygen, and has no marked stratification. A late summer survey found water temperature to be 17.5°C at the surface and seven degrees Celsius at a depth of 25 metres. The high water period usually occurs in early July due to the heavy snowmelt when water levels often rise by about 1.3 metres. Around this time of year, mountain breezes often rise up just before noon and whip up a chop on the normally calm waters. During winter, the lake freezes over but the thickness of the ice varies from year to year depending on the weather conditions.

Phelix Creek enters at the north-east end of Birkenhead lake. This medium-sized stream has summer flows of about 3 m³/s (106 cfs). A water temperature in mid August of 1980 was 10.5°C in the upper reaches. Situated outside the park boundary, the upper portions of this stream are steep and bouldery with gradients ranging from 9% all the way up to 22%. However, the lower two kilometres of Phelix Creek consist of a more moderate gradient ranging from 1% to 5% and thus is more susceptible to

stream meandering and braiding. This unstable lower reach occurs on a floodplain situated in the north-eastern corner of the park, beside the main campground. Channel cutting in this lower reach is quite active during the early summer when the high water flows erode the unconsolidated fluvial surficial material of the Phelix Creek floodplain. As a result, many streambank trees wash into the creek and form log jams. Although these may create possible fish rearing pools in certain areas by reducing the water velocity, they also increase the downstream destructive potential from freshets.

Sockeye Creek is the other large tributary to Birkenhead Lake, feeding into the north-west side. It runs approximately 14 kms in a south-east direction. All but three kms of the main tributary, and the upper reaches of the side tributaries, are included in the park. Sockeye Creek is a steep and bouldery creek which consists of many riffles and rapids. The gradient increases from one percent to seven percent in the first 250 metres upstream from the lake, then increases to 12% in the next 750 metres upstream, and is increasingly steep to alpine. Substrates found in these upper reaches consist primarily of boulders and cobble. Subject to severe freshets, these steeper and more channelized upper reaches of Sockeye Creek possess very little in the way of loose debris or fine substrates. However, substrates of finer textural classes, like gravel and sand, can be found on the alluvial fan near the mouth of the creek. It is here, at the lower gradients, where the channel braids.

Measurements taken 200 metres upstream from the lake in midsummer, 1980, found the stream flow to be 16 m³/s (565 cfs) and the average wetted width to range from 8 metres to 14 metres. During the same survey the water depth was estimated at 0.8 metre and the water temperature was recorded to be 9°C.

Taillefer Creek, though not situated within the boundaries of the park, is worth mentioning since it is the outlet of Birkenhead Lake and, therefore, effects the flow of water through the park. It is situated at the extreme south-western end of the lake and flows for 2.2 kilometres in a south-westerly direction to its confluence with the Birkenhead River. At the outlet, this stream is mainly composed of deep pools and glides. It flows over a substrate of predominantly large gravel and cobble at a low stream gradient of around one percent.

Climate

Birkenhead Lake Provincial Park is situated near a transitional area between the Southern Sub-maritime and the Southern Sub-continental climatic regions. The climate of this more leeward area of the Coast Mountains range can be generally characterized as having warm, dry summers and cool, moist winters. Although the Birkenhead Lake area falls within the rainshadow of the Coast Mountains, Pacific frontal systems still bring about a substantial amount of orographic precipitation to the area. The continental effect is more evident during the drier months of the year when the prevailing westerlies are normally weakened by high pressure systems. Under the clear skies associated with these high pressure systems, a great range in night and day temperatures can exist.

A general sample of weather conditions experienced in Birkenhead Lake Provincial Park can be derived from climatic data collected there in the mid 1980s. From July 1983 to July 1985, a weather station was set up within the park at an elevation of 715 metres and collected weather data useful in characterizing the climate of the area. Based on these two full years of data, the mean annual precipitation was determined to be 791.4 mm/year. The time of year with the greatest amount of precipitation occurred in the months of October and November when over 180 millimetres of precipitation could fall in one month. The months of least precipitation appeared to be highly variable even though the summer months generally appeared to be somewhat drier. The monthly total precipitation values during the months of July and August ranged from as little as 10mm/month up to as much as 95mm/month.

The warmest month of the year is July when maximum temperatures can reach over 30°C. Even with these high maximum daytime temperatures, minimum night temperatures experienced during the summer can still drop to near freezing.

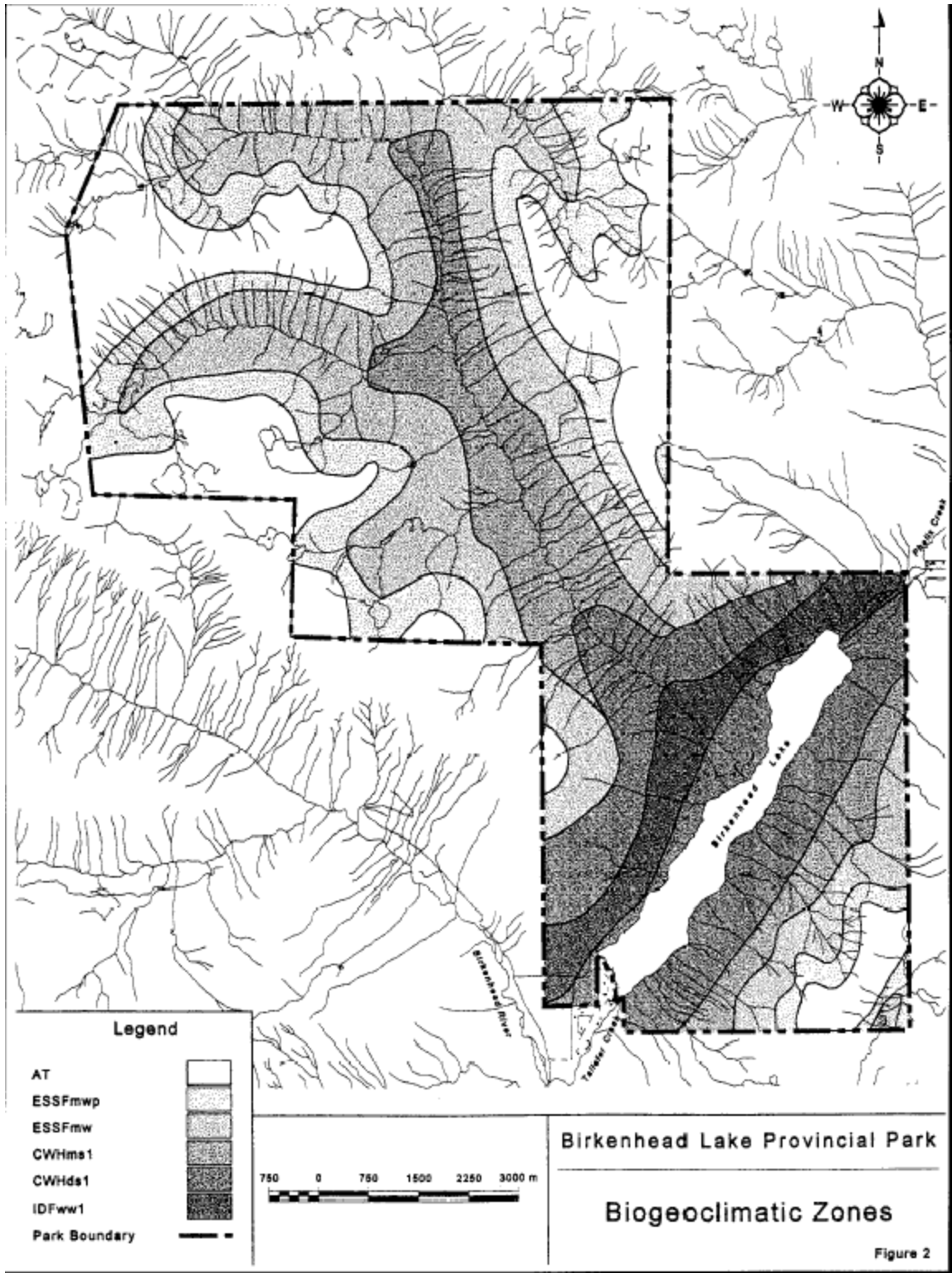
The coldest temperatures of the year occur during the winter months of November through to February when minimum temperatures can near -30°C. Consequently, snow accumulations can be expected on the ground from late October to early April.

Vegetation (Biogeoclimatic Zones)

Birkenhead Lake Provincial Park lies almost entirely within the Leeward Pacific Ranges ecosection and contains four biogeoclimatic zones: The Coastal Western Hemlock Zone (CWH), the Englemann Spruce - Subalpine fir Zone (ESSF), the Interior Douglas-fir Zone (IDF), and the Alpine Tundra Zone (AT) (Fig. 2).

The Coastal Western Hemlock Zone covers about 27% of the park area, mainly at lower to mid elevations around much of the lake and up the Sockeye Creek valley. This zone is comprised of two subzones: CWHds (dry subarctic) and the CWHms (moist subarctic). The CWH zone is generally characterized by the prominence of western hemlock (*Tsuga heterophylla*), the sparse herb layer, and the predominance of several moss species, especially step moss (*Hylocomium splendens*). The subarctic subzonal forests are characterized by scarcity of typically coastal species such as salal (*Gaultheria shallon*) and yellow cedar (*Chamaecyparis nootkatensis*), and the presence of typically interior or continental species like red-stemmed feather moss (*Pleurozium schreberi*) and queen's cup (*Clintonia uniflora*). Douglas-fir (*Pseudotsuga menziesii*) is an abundant species, along with western hemlock, western redcedar

Figure 2. Biogeoclimatic Zones



(*Thuja plicata*) and variable amounts of Amabilis fir (*Abies amabilis*). The shrub layer is characterized by blueberry (*Vaccinium alaskaense* and *V. ovalifolium*) and false azalea (*Menziesia ferruginea*).

Although the herb layer is sparse, those commonly found include: one-sided wintergreen (*Orthilia secunda*), bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*) and rattlesnake plantain (*Goodyera oblongifolia*). There is a well developed moss layer of several species.

The Interior Douglas-fir Zone (IDF) is found in the more well-drained and southerly facing slopes. These areas exist along the lower slopes of the western side of the lake. The biogeoclimatic subzone is the IDFww (wet warm) and only covers 5% of the park. The IDF zone typically reflects a continental climate of hot, dry summer and cold winters, mainly due to the rainshadow of the Coast Mountains. Even though Douglas-fir is the climax species of this biogeoclimatic unit, stands of lodgepole pine (*Pinus contorta*) are common in the earlier successional stages, especially at higher elevations and in areas where crown fires occurred. These are found on the western side of the lake. Western redcedar also occurs in mature forests on wetter sites and in areas transitional to Coastal Western Hemlock. This is seen in the north-western portion of the park. Falsebox (*Paxistima myrsinites*), prince's pine (*Chimaphilla umbellata*), twinflower (*Linnaea borealis*), tall oregon grape (*Mahonia aquifolium*) and step moss (*Hylocomium splendens*) are some of the other plant species likely to be found in this biogeoclimatic unit .

The Engelmann Spruce-Subalpine Fir Zone (ESSF) is frequently situated directly above the CWH and IDF biogeoclimatic zones, and begins at approximately 1,200 metres elevation. Two subzones are represented in the park (ESSFmw -moist warm, ESSFmwp - moist warm parkland). The ESSFmw subzone covers almost 32% of the vegetated landbase. Engelmann Spruce (*Picea engelmannii*) is dominant as the climax tree species, with subalpine fir (*Abies lasiocarpa*) the most abundant understory. At higher elevations, subalpine fir frequently dominates. Generally in the ESSF zone, lodgepole pine is a widespread seral species after fire. Amabilis fir (*Abies amabilis*) occurs in areas adjacent to the Coast Mountains. Other tree species occasionally found in ESSF include western white pine (*Pinus monticola*), Douglas-fir, western hemlock, and western redcedar. Deciduous trees are uncommon. The moist climate subzones such as ESSFmw are characterized by an ericaceous shrub layer, a sparse cover of herbs, a relatively dense moss layer and the frequent occurrence of mountain hemlock (*Tsuga mertensia*) and amabilis fir (*Abies amabilis*). Some common plants include: black huckleberry (*Vaccinium membranaceum*), five-leaved bramble (*Rubus pedatus*), and white flowered rhododendron (*Rhododendron albiflorum*).

The ESSFmwp subzone is a transitional area between the true alpine and the subalpine. Due to the inhospitable growing conditions which exist at these upper elevations, the trees in this subzone are often stunted (Krummholz form) and few in number. This less-forested subzone consists of clumps of trees interspersed with ESSFmw and AT associated plant species. It is found immediately below the Alpine Tundra subzone. The two together cover approximately 32% of the park.

The Alpine Tundra Zone in the park lies upslope from the ESSFmwp at elevations usually above 1800 metres. The low growing season temperatures and very short frost- free period limit the vegetation of

the alpine tundra zone to mainly shrubs, herbs, mosses, liverworts and lichens. A significant amount of the Alpine Tundra zone lacks vegetation and comprises rock and ice. Low deciduous shrubs, primarily *Salix* species, dominate the lower elevations of the zone, while evergreen-leaved and deciduous dwarf scrub are more common at the middle elevations. Surviving near the edge of their tolerance limits, the complex mosaic of vegetative communities of this zone is extremely sensitive and vulnerable to change.

The forest cover map (Fig. 3) indicates that over 70% of the forested land within Birkenhead Lake Provincial Park is composed of mature coniferous forest over 140 years old. Much of this occurs in the Sockeye Creek drainage and on the west side of the lake.

West of the lake, most of the mature forest is in fir and lodgepole pine, with cedar and balsam also occurring. In the lower Sockeye drainage, most trees are mature fir, balsam, cedar and hemlock. In the upper drainage, fir is gradually replaced by balsam, hemlock and some yellow cedar and spruce. Less of this mature forest occurs east of the lake, which has a higher percentage of unstable terrain. Here the mature forests are primarily fir and lodgepole pine. In the main campground area, mature fir, hemlock and cedar predominate, with occasional mature cottonwood, birch and spruce trees.

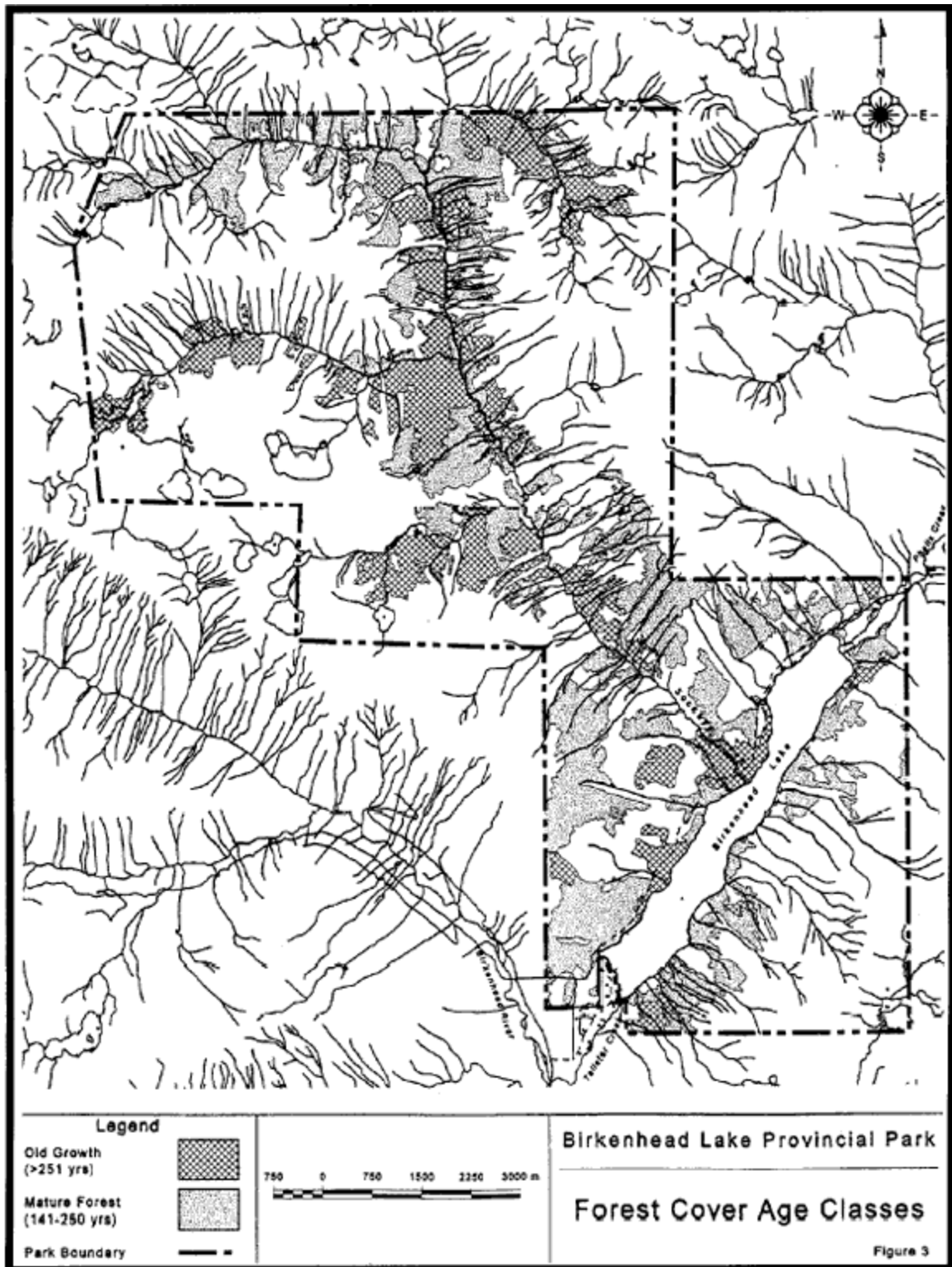
The minimum age criteria needed for old-growth designation is commonly accepted to be between 150-200 years old, depending on the tree species. Approximately 40% of the mature forest in the park is over 250 years old, and can be safely designated as old-growth. Other measurements of old-growth trees include percent of coarse woody debris, wildlife trees (snags), tree size, spacing and canopy structure.

Most of the old-growth stands occur on the west side of the lake and in the Sockeye drainage. They are comprised of fir, cedar and hemlock in the lower Sockeye drainage and balsam and spruce in the upper drainage. Few old-growth stands occur in the Phelix Creek drainage near the campground, comprised primarily of fir.

Fish and Wildlife

The fish of Birkenhead Lake Provincial Park are primarily associated with the lake itself. A 1985 stocking survey of the lake determined there were at least six resident species: Kokanee (*Oncorhynchus nerka kennerlyi*), Bridgelip suckers (*Ostomus columbianus*), Dolly Varden char (*Salvelinus malma*), Mountain whitefish (*Prosopium williamsoni*), Northern squawfish (*Ptychocheilus oregonensis*) and Rainbow trout (*Oncorhynchus mykiss*). Of these six species, the Kokanee, Bridgelip suckers, Dolly Varden and Mountain whitefish appear to exist in substantial numbers. The Dolly Varden sampled from the lake were by far the largest species

Figure 3



with a mean length of 407 millimetres. Their growth in the oligotrophic waters of Birkenhead Lake is probably attributed to the number of fish available for them to prey upon. The poor growth rates of the other more planktivorous species are likely due to the cool and nutrient deficient waters of Birkenhead Lake.

To increase the recreational fishery potential, Birkenhead Lake was stocked with approximately 162,000 Rainbow Trout from 1983 to 1988. The lake has not been stocked since 1988 and no lake surveys have been carried out in recent years to determine the present Rainbow trout numbers.

Birkenhead Lake has good available spawning habitat at its main outlet and at the lower reaches of many tributary streams. The lake outlet into Taillefer Creek provides some of the best spawning habitat for salmonids. It is believed that most of the Rainbow trout population of Birkenhead Lake is dependent on this lake outlet for spawning and juvenile rearing. Phelix Creek on the other hand is the most important inlet stream for overall fish production in Birkenhead Lake. The majority of Kokanee appear to spawn in the lower reaches, while some Dolly Varden and Rainbow trout are believed to use the creek for both spawning and rearing. The side channels on the alluvial fan of Sockeye Creek also provide spawning habitat for Kokanee. Unfortunately, the potential Kokanee production in these side channels has been reduced by poor egg to fry survival rates caused by fall freshets. This precipitous and unstable inlet stream also contains some small populations of Dolly Varden and Mountain Whitefish but essentially its contribution to the lake fishery is limited.

The old-growth/mature forest habitats which exist in the park support a wealth of wildlife species. Raptors believed to be present include Cooper's hawks (*Accipiter cooperi*), sharp-shinned hawks (*Accipiter striatus*), northern goshawks (*Accipiter gentilis*), barred owls (*Strix varia*) and northern saw-whet owls (*Aegolius acadicus*). Sightings and juvenile presence confirm the existence, and likely nesting, of the endangered spotted owl (*Strix occidentalis*). A number of woodpecker species are also expected to occur in the old-growth/mature forest habitats, including pileated woodpeckers (*Dryocopus pileatus*), hairy woodpeckers (*Picoides villosus*) and downy woodpeckers (*Picoides pubescens*). Along with the woodpeckers, an assortment of sapsuckers, flickers, warblers, jays, swifts and sparrows also exist in the later successional forests.

Some of the major small mammals found in these older forest habitats are voles, pikas, shrews, flying squirrels and cavity nesting bats. Lower elevation riparian areas provide the primary range habitat for pine marten (*Martes americana*) and beaver (*Castor canadensis*).

The major species appearing in the subalpine/alpine habitats are golden eagles (*Aquila chrysaetos*), bald eagles (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), water pipits (*Anthus spinoletta*), finches, hoary marmots (*Marmota caligata*), blue grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), ptarmigan and falcons.

Some ungulate species meet their seasonal requirements in habitats in the park. Populations of black-tailed deer (*Odocoileus hemionus*) and mountain goats (*Oreamnos americanus*) often use the more

southerly exposed slopes on the north-west side of the lake as their winter range. The Columbian black-tailed deer population tends to overwinter on the slopes leading into and out of the Sockeye Creek drainage. The mountain goat population, on the other hand, tends to overwinter on some of the more challenging slopes found between the Sockeye Creek and Phelix Creek drainages. During the summer months, these populations often migrate up into the alpine and subalpine habitats. Field reconnaissance has recorded from 30 to 40 goats observed in the headwaters of Sockeye Creek.

Black bear (*Ursus americanus*) are common in the park, with possible denning habitat at higher elevations. A grizzly bear sow and cub (*Ursus arctos*) were reported in the Sockeye drainage in 1995, confirming the presence of grizzly in the park (V. Drewshane, pers. comm.).

Based on habitat availability and species distribution, moose (*Alces alces*), gray wolves (*Canis lupus*), cougar (*Felis concolor*), and bobcats (*Felis rufus*) can be expected to periodically range into the park.

Visual Values

The landscape of Birkenhead Lake Provincial Park provides mainly two types of visual experiences; enclosure and focal. A third visual experience (panoramic) is also available but is limited to the remote areas of the park.

Enclosure - The large mountainous walls surrounding Birkenhead Lake provide an enclosed visual experience. The trough-like setting makes the mountain ridges, the mountain slopes and the lake the main areas of interest. These always provide an ever-changing blend of form, line, colour and texture. Coniferous stands, deciduous pockets, avalanche tracks, slides, rockfaces and the climatic conditions all contribute to a mosaic of visual experiences.

Focal - The landscape in the park sometimes focuses the viewer to a particular feature. The mountain peaks and the highly reflective Birkenhead Lake are often emphasized by the form and lines found within the landscape. Climatic conditions can also effect the focal visual experience by hindering the view.

Panorama - A panoramic view may be possible from the various peaks at the height of the Sockeye Creek tributaries and south-east of the lake. Several peaks and the alpine are known to mountaineers and skiers. Various peaks would provide views of the Coast Ranges and of the entire Sockeye drainage. The panoramic view, more distant horizon and change in perspective could enhance the visual significance of some park features, especially in areas of greater accessibility.

There is some forest harvesting outside the park boundaries which can be seen from some vantage points on the eastern side of the lake. Harvesting in the Birkenhead Estates and Crown land adjacent at the south end of the lake may have some impact on park users, especially from the lake and shore.

Outdoor Recreation Features

Birkenhead Lake is the main outdoor recreation feature of the park. The accessible shoreline and significant size are able to facilitate a wide range of lake-oriented recreational opportunities including fishing, boating and swimming.

The flat forested terrain at the north end of the lake accommodates significant development, such as the existing campground, and may be suitable for additional development. The Sockeye Creek drainage is also a major outdoor recreation feature for the year-round backcountry recreation opportunities provided to attractive and accessible subalpine and alpine.

An old fire road on the west side of the lake, developed as a mountain bike/hiking route, is a key feature attracting a host of regional recreationists passing through on larger biking circuits.

The park also contains abundant wildlife allowing relatively easy viewing opportunities.

Cultural Values

It is known that early First Nations people used the area for hunting, fishing and plant gathering for food and medicines. One oral history account relates that a summer camp was located on the eastern shore of Birkenhead Lake.

There are few known cultural resources in Birkenhead Lake Provincial Park. However, it is known that regions of the park were traditionally used by the Anderson Lake and Mt. Currie native bands for hunting, gathering plants and fishing. A red clay which was mixed with fish oil for paint used on pictographs and church pews, originated somewhere in the Sockeye Creek drainage, although the precise source is not known (MOF 1990). Culturally modified trees may be found in the area west of Sockeye Creek.

Historic trails used to access the gold fields were originally native trails. The Chism Pass Trail followed Phelix and upper Sockeye Creek to Chism Pass and on to Cadwallader Creek. Another trail descended the Chism Pass down Noel Creek. More research is required to determine the location of the Pass, which is not believed to have been at the head of the present day Chism Creek. Little evidence exists today of this trail.

Community interviews revealed that traditional berry gathering activity of the N'Quatqua was most concentrated in three areas, one of which was the Anderson Lake - Cayoosh Range - Birkenhead Lake area. Plant gathering was less widespread and centred closer to the main Anderson Lake - Birkenhead Lake and River and Duffey Lake core (E.V. Christensen Consulting 1995). A trapline is registered in

the name of the Anderson Lake Band, which covers a large area including the park. The park area is not likely actively trapped.

Resource Analysis

Most of the natural resources found within Birkenhead Lake Provincial Park make a substantial contribution towards achieving the recreation and conservation goals of the BC Parks system. Although not studied at present, the cultural and historic resources contribute to the conservation goals.

CONSERVATION GOALS

Goal 1 Protection of Representative Natural Ecosystems

- To protect areas that are representative of the natural ecosystems of B.C. thereby protecting the characteristic flora, fauna, landforms and waters of this diverse province.

The natural features and forest types found in the park are a sample of the natural landscape dominating the Leeward Pacific Ranges Ecosection of British Columbia. The granitic coast batholith and stratified bedrock structures typify the geological diversity of the ecosection. Low elevation lakes like Birkenhead and the biogeoclimatic units of the park are also important characteristics of the ecosection. The ESSFmwp, the IDFww and CWHms1 and CWHds1 subzones were all under-represented in the Leeward Pacific Ranges (i.e. less than 12% area of each subzone protected in parks in this ecosection prior to park establishment). Currently these subzones are protected with representation at 12%, 1%, 11% and 10%, respectively) (LUCO 1997). Habitat is protected for the endangered species of spotted owl and grizzly bear.

Goal 2 Protection of Outstanding Special Features

- To protect a wide scenic selection of the best provincial outdoor recreation resources, natural features, wilderness areas and historic resources of British Columbia.

Birkenhead Lake is a scenic and recreation feature that has been developing over the years as a significant recreational setting. Its beaches, tributaries, shoreline and open waters provide opportunities for the public to learn about and enjoy the attributes of this ecosection. The park also protects features of the cultural and historic resources which will be studied and be added to the interpretive plan for the park.

RECREATION GOALS

Goal 1 Outdoor Recreation Holiday Destination Opportunities

- To provide appropriate outdoor recreation lands and facilities for the use and enjoyment of major outdoor recreation destinations in B.C.

Attendance of outdoor recreationists has increased dramatically in the last few years seeking the high quality camping, boating, fishing and swimming offered within Birkenhead Lake Provincial Park. With the addition of Sockeye Creek as a backcountry wilderness and plans to extend trail opportunities, adjacent to the lake, the park will provide even more recreation opportunities and grow in its importance as a outdoor recreation destination.

Goal 2 Tourism Travel Route Opportunities

- To provide outdoor recreation lands and facilities in association with major provincial travel corridors to ensure that travelling vacationers are supplied with a basic network of scenic stop-offs.

Birkenhead Lake is situated near a highway which terminates in D'Arcy, and is not currently a major travel corridor. An existing four-wheel drive road does continue from D'Arcy to Lillooet and does offer future possibilities as a major corridor. In this case, Birkenhead Lake park would serve the travelling public.

Goal 3 Regional Recreation Opportunities

- To include, as a complement to other suppliers, land and facility-based opportunities for outdoor recreation close to home.

The park has served the local communities with its outstanding camping, boating, fishing and swimming opportunities with increasing importance over the years. It is also growing in importance for winter recreational use for locals.

Goal 4 Backcountry Recreation Opportunities

- To build the province's reputation for backcountry recreation by protecting and managing our most outstanding wilderness areas.

Sockeye Creek watershed supplies a large wilderness area with ample opportunity for backcountry hiking, climbing, nature study and winter recreation.

TENURES, OCCUPANCY RIGHTS AND JURISDICTIONS

Several permits are given by BC Parks for management, research and commercial purposes. These are summarized in Table 1.

Table 1
Park Use Permits Issued for Birkenhead Lake Provincial Park - 1998

Park Use Permit #	Permit Holder	Purpose	Expiry
GS9710001	Birkenhead Lake Estates	Utility Right-of-Way	
GS9710025	Park Facility Operator	Operations Permit	1998
GS9710073	Vivian Miao	Research/Collection	
GS9710074	Jambo Park Services	Canoe Rentals	1998
GS9710087	Dr. Olav Slaymaker	Research/Collection	
GS9710088	Poole Creek Stables	Recreational Guiding	1998

One other land management tenure occurs in the park area; a registered trapline covers a very large area managed by the N'Quatqua First Nation. The area of the park is not likely trapped.

Tenure	Tenure Holder	Purpose
Registered Trapline (#0210T008)	D'Arcy Company of Indians under former Chief Martin Thevarge for the Anderson Lake Band.	traditional trapping

RECREATION OPPORTUNITIES AND FACILITIES

There is a wide variety of recreational opportunities available at Birkenhead Lake, however, camping is the main reason most people visit the park. The main campground is situated at the north-east end of the lake in a forested area. Historically, this site was swampy, probably seasonally flooded and absorbed the destructive potential of spring freshets. The site now contains a network of 100 easy access campsites, (Fig. 4) complete with standard support facilities such as a hand pump for water and pit toilets. Although most of the sites provide good visual privacy, the open tree canopy still allows significant sunshine into the sites. The south-east sites remain susceptible to flooding and related damage. Two sites were closed in 1997.

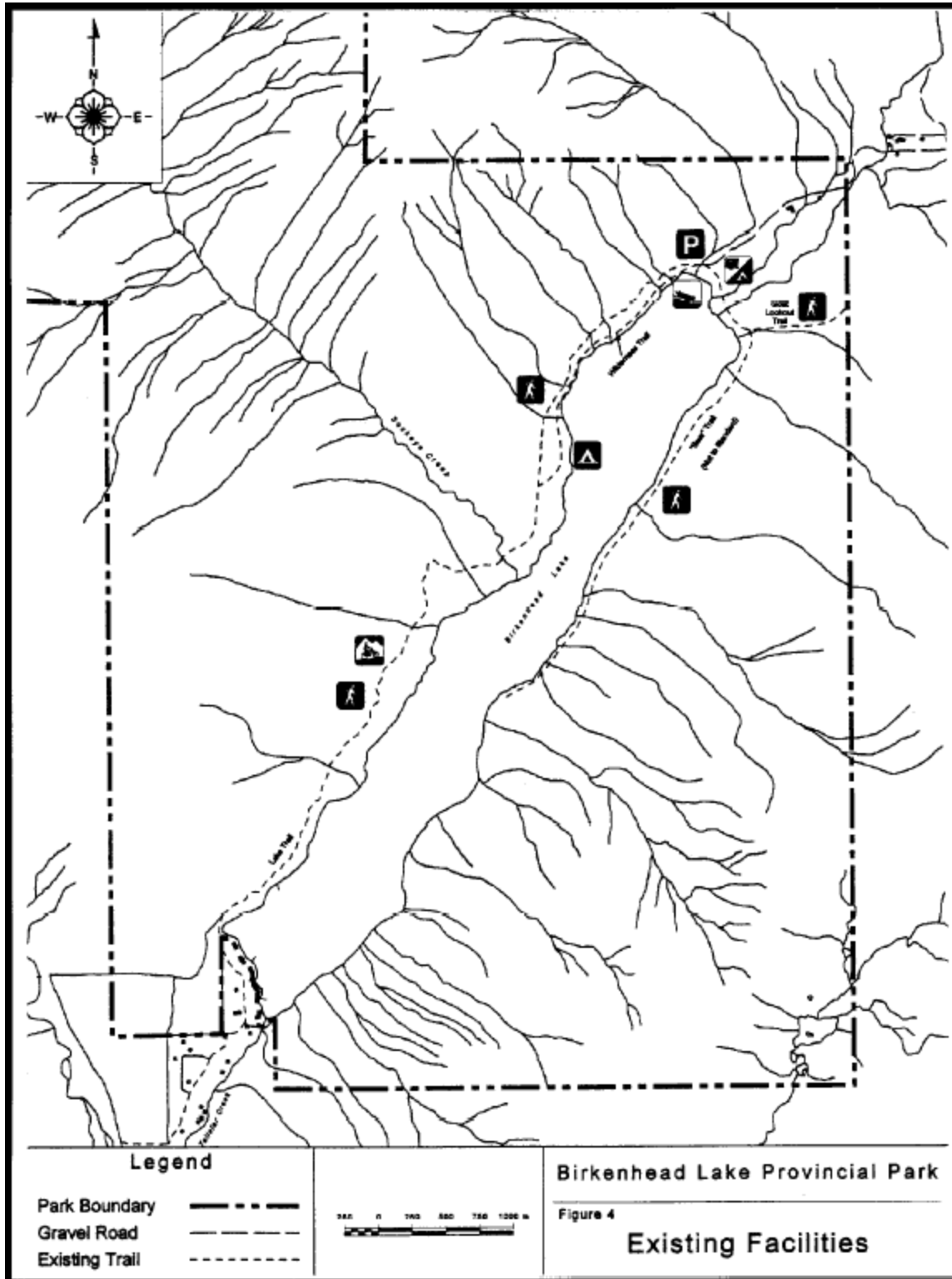
In addition to this campsite, there is a small wilderness camping area situated near the shoreline on the Sockeye Creek alluvial fan, in forest about two kilometres away from the main campground. Access is by boat or trail. Facilities are limited to a pit toilet. The sparse shrub cover and level grade enables room for a number of tents. This wilderness camping area is occasionally used as a group campsite.

From the main campground and boat launch are four different trails. The longest trail travels to the south end of the lake, a distance of about eight kilometres. It also forms part of the newly developed Sea to Sky Mountain Bike Trail, with terminuses in D'Arcy and Squamish. This trail, which is suitable for both hiking and mountain bike use, is wide, gently rolling on an old fire guard, paralleling the lake shore a few hundred meters distant. Trailside growth is relatively recent, and offers virtually no forest canopy for trail users. The Lakeshore Trail runs along the lakeshore for approximately one kilometre to the wilderness campsite, offering views of the lake and access to the lakeshore. The best developed viewpoint is found at the Goat Lookout Trail, which crosses Phelix Creek and traverses one kilometre up the steep east slopes above the campground, overlooking almost the entire lake. Branching off this trail at the bottom of the slope is the Bear Trail, which follows the east shore of the lake for about four kilometres. This trail passes through several scree slopes and is very rough, however, allows almost constant visual contact with the lake.

The day use area of the park consists of a sandy beach along the north end of the lake with grass lawns and picnic tables. Part of the swimming area has been marked off with floats. Although the water is quite cool, it is comfortable for swimming during the hot months of summer. To the west side of the picnic area is a parking lot, an area for small boats to launch, and two floats for tying up or fishing. While canoes and small power boats are typical for the lake, it is also used by some for wind surfing. A private contract for canoe rentals is licensed under a one year Park Use Permit. A horseback tour operator also is licensed to enter the park, restricted to the south-west corner away from the lakeshore, for day use only.

The climatic conditions experienced during the winter months can provide recreation opportunities such as cross country skiing, skating and backcountry skiing. Some skiing occurs, however, other areas are more commonly used in the region where access is easier.

Fig. 4



Several mountains within the region are popular with the climbing community. Mt. Shadowfax, within the park, is a destination peak.

Access to the park is primarily by paved road, 40 kms north of Pemberton and then 17 kms on a gravel road to the park. This road is also ploughed to the park entrance in the winter. Another summer access is by forestry road to the south-west corner of the park. The forestry road on Crown Lot 399 adjacent to the park, the road from the Birkenhead Estates and the fire guard in the park are, or will be, bermed to prevent vehicular access.

MARKETING ANALYSIS

The marketing analysis involves a review of the existing use levels, use patterns and overall demand. It is an important aspect of planning for effective park programs.

Existing Use

The ten year visitor use profile shows that the park has received increased use, beginning in 1992. The Duffey Lake Road paving and improvements in 1991, the rapid growth in tourism in the Sea to Sky Corridor and the Sea to Sky Mountain Bike Trail development have all resulted in the "discovery" of Birkenhead Lake Provincial Park as an accessible and superlative wilderness destination.

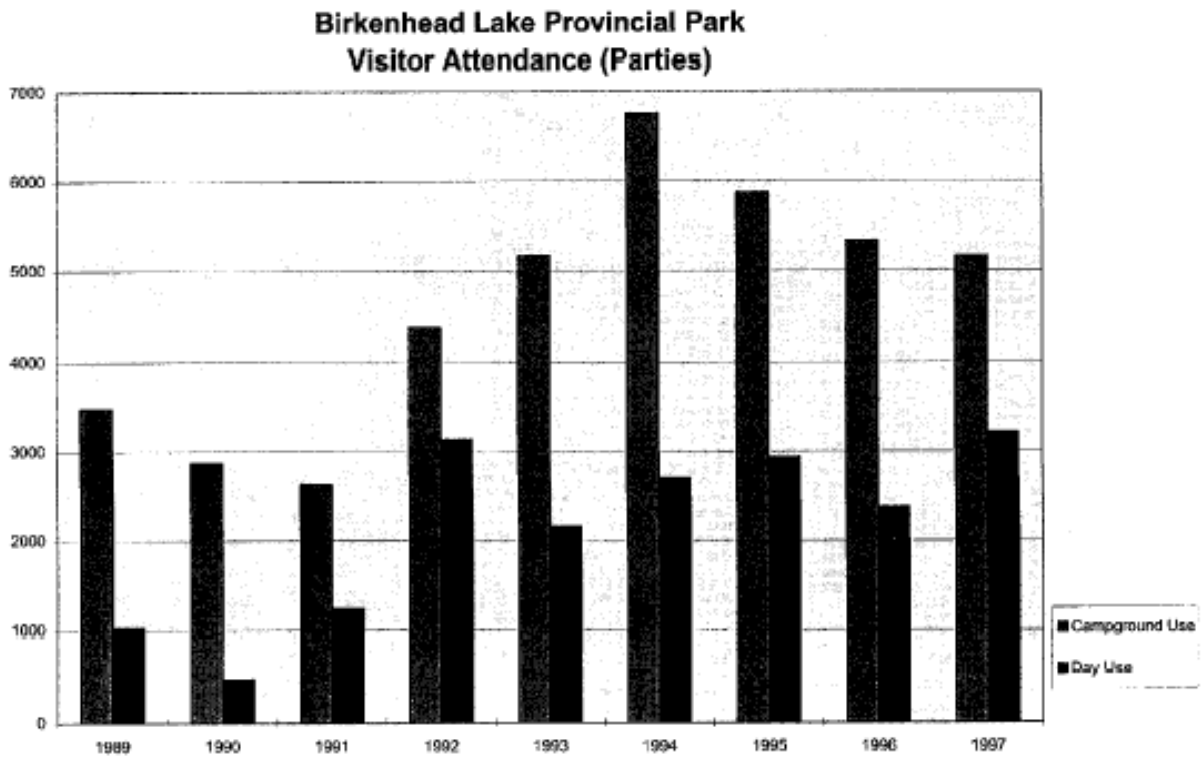
Based on the main visitation months which span from April to October, July and August typically receive the highest day use and overnight use in the park. The data show yearly overnight party visits ranged from as low as 3,000 parties to as high as 6,754 parties. Day use has also dramatically increased since 1989 (Fig. 5).

Demand

A measure of demand for recreational opportunities in the park can be seen from demand studies and use patterns. The last fifteen years of campground use in Birkenhead indicate a sudden increase since 1992. As indicators of the increased demand:

- Full campground on summer weekends has been experienced in Birkenhead;
- Increase in recreational use of provincial parks and forest recreation sites has been reported throughout the region;
- An increase in outdoor recreation use outside of the Greater Vancouver area based on GVRD demand studies; a higher importance of outdoor recreation to people living outside the Greater Vancouver area (i.e. significantly more Sea to Sky residents camp, backpack, drive for pleasure and/or off-road, etc.);
- A relatively high percentage of recreationists enjoy camping with a car/RV/motorhome (45% of GVRD and 50% of Squamish Lillooet Regional District residents);
- An even higher percentage enjoy swimming in outdoor natural sources;

Figure 5



Parties: 3.2 persons/party - campground
3.0 persons/party - day use

Figure 5

- As population pressures and development move into the Sea to Sky Corridor, the quest for backcountry experience and accessible front-country in a wilderness setting increases. The Squamish and Whistler/Pemberton growth has pushed the boundaries of the recreationist further north into the Birkenhead area.
- Projected growth rates for various recreation activities predict large increases in rock climbing, wildlife viewing, nature study, beach activities, bird watching, walking - all of which are draws to Birkenhead Lake.

KEY ISSUES

Phelix Creek Erosion - Campground Washouts

Phelix Creek is eroding the streambanks along the main campground and debris jams and potentially destructive freshets threaten the campground. In 1997, 2 campsites were washed out. However, removal of the debris jams would speed the stream flow and remove spawning substrate and thus effect overall fish production.

Protection of Endangered Species

Spotted owls have been recorded in the Sockeye Creek portion of the park. Recreational opportunities and facilities must be planned with adequate knowledge of the owl population and seasonal behaviours. Information on spotted owl populations must be acquired prior to facility development in the Sockeye drainage.

Grizzly bear have recently been sighted in the Sockeye drainage. Protection of habitat should be a priority to maintain this population.

Vehicle Access

Vehicle access to the park should be focused on the Blackwater valley entrance, not on the southwestern entrance.

Boundary Issues

Boundaries do not protect watersheds and are not established on an ecological basis. Numerous resource values require protection to the height of land. Revised boundaries may be required to protect Tallefer Creek where most of the rainbow trout from the lake spawn.

Fish Catches Reduced

Some visitors report reduced fishing catch in the lake. Studies are required to determine the populations and any improvements required to habitat and/or fishing restrictions.

Motorized Access to the Park

The majority of the park has a natural environment and wilderness conservation zoning designation which implies minimal facility development. Increasing boat use on the lake and some use of Birkenhead Lake and Birkenhead Road by snowmobilers may require determination of the capacity of the park for motorized use.

REFERENCES

- Balmer, Ken.** 1993. *Trends in Outdoor Recreation - Implications for the Protected Area Strategy*. Rethink Canada Inc.
- BC Parks.** 1993. *Biogeoclimatic Units of Birkenhead Provincial Park*. South Coast Region Planning Department, 4p.
- Beale-Kuurne, Roxanna L.** 1980. *Soil Survey of the Pemberton Valley, British Columbia*. RAB Bulletin 16, 200p.
- Blackburn, Ian.** personal communication. Ministry of Environment, Lands and Parks. Fish and Wildlife Branch. Habitat Biologist.
- Chin, Greg.** personal communication. BC Parks Planner.
- E.V. Christensen Consulting.** 1995. *N'Quatqua First Nation Community Assessment*. May 1995. Prepared for the N'Quatqua - In-SHUCK-ch Treaty Task Group.
- Drewshane, Vernon. personal communications.
- Environment Canada.** 1993. Birkenhead Lake Station (1983-1985). Climate Services, 4p.
- Harding and Offin.** 1969 unpublished. Lake Survey Data: Birkenhead Lake. BC Fisheries, 9p.
- Honey, Merv.** personal communication. BC Parks Area Supervisor.
- Hutchison, W. W. and J. A. Roddick.** 1973. *Pemberton (East Half Map Area) BC 92J Report and Map*. Geological Surveys of Canada, 25p.
- Knight, Rob and B. Usher.** 1985. (unpublished). Lake Stocking Evaluation. BC Fisheries, 4p.
- Meidinger, Del and Jim Pojar.** 1991. *Ecosystems of British Columbia*. Ministry of Forests, 329p.
- Ministry of Forests.** 1990 (unpublished) *Sockeye Creek Land Use Study*. Ministry of Forests, 22p.
- Ministry of Forests.** 1992. *An Old Growth Strategy for British Columbia*. Ministry of Forests, 74p.
- Ministry of Parks.** 1990. *Master Plan for Garibaldi Provincial Park*. South Coast Region, 61p.

Morgan, Geoff. personal communication. Ministry of Environment, Land and Parks. Forest Ecosystem Specialist.

Morris, J.R. 1978. *A Plan for Birkenhead Lake Provincial Park*. Ministry of Land, Parks and Housing. Parks Branch, 19p.

Neuman, Ross. 1980 (unpublished) *Stream Reconnaissance Report: Tributaries to Birkenhead Lake*. BC Fisheries, 9p.

Praxis. 1993. *A Household Survey for Planning Future Outdoor Recreation and Natural Areas*. Prepared for: Major Parks Plan Study Project Steering Committee. 105 pp.

Sebastian, D.C. 1992 (unpublished) Ministry of Environment, Lands and Parks. Fish and Wildlife Branch, 7p.

Stewart, Gregg. personal communications. Letter August 20, 1991 to Ministry of Forests from Ministry of Energy, Mines and Petroleum Resources

Valentine, K.W.G. et al. 1978. *The Soil Landscapes of British Columbia*. Ministry of Environment, 197p.

Woodsworth, G.J. 1977. *Geology. Pemberton (92J) Map Area*. Geological Survey of Canada