

NIMPKISH RIVER
ECOLOGICAL RESERVE
MANAGEMENT
PLAN

APPENDIX 1
BACKGROUND REPORT

NIMPKISH RIVER ECOLOGICAL RESERVE

MANAGEMENT PLAN

SUMMARY

Ecological Reserves are designated Crown Provincial lands set aside for their scientific and educational value.

The Nimpkish River Ecological Reserve was established to preserve a unique plant community, a stand of first growth Douglas-fir growing on one of the most productive sites in coastal British Columbia. It also contains some of the tallest Douglas-firs in Canada.

Two issues, erosion and public use, dominate management planning for the reserve. The first, erosion, is a result of the reserve's location on a very active flood plain and in an area of intensive forest harvesting. It is the most significant threat to the reserve's integrity and continued role in the reserve system.

Tourism is an emerging industry on the north end of Vancouver Island. Old growth forest is an important attraction to visitors. The reserve has been touted as an area which could be promoted as a tourist attraction. However, the impacts of public use would conflict with the reserve's purpose.

The plan describes objectives and actions which will deal with the issues and guide management activities. Some key actions proposed are an adaptive approach to erosion control, an expansion of the reserve to enhance its role and ensure its security and designation of an adjacent stand of old growth for recreational use and development.

The term of the plan is five years. At that time, it will be reviewed and revised as required.

Work has been undertaken to mitigate the effect of river erosion and regular monitoring of the reserve will continue. In addition, discussions with Canadian Forest Products will continue to assure the wind-firmness of the stand and to meet public demand for viewing old growth forests.

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I INTRODUCTION

The Nimpkish Valley, Figure 1, supported some of the most productive and tallest forests in British Columbia. Today, logging has removed much of this forest and only remnants remain as forested islands.

The Nimpkish River Ecological Reserve, ER 118, was established to preserve one of these remnants. It contains a mature Douglas-fir community, with some of the tallest examples of this species in Canada, growing on one of the most productive sites in coastal British Columbia. Creation of the reserve required compensation be paid to Canadian Forest Products Ltd. who had the right to harvest the timber within the reserve.

As well as preserving the species, the reserve extends the range of genetic diversity of Douglas-fir represented within protected areas of British Columbia.

The purpose of this plan is to provide direction and guidance for management activities in the reserve. The primary goal is to protect the integrity of the reserve and preserve the trees and associated plant community. A secondary goal is to represent the alluvial forest communities, in particular the Douglas-fir/swordfern site. Objectives and actions will be defined for achieving the goals.

The term of the plan is five years.

II BACKGROUND SUMMARY

Established in May of 1988, this 18 hectare reserve, Figure 2, is located along the Nimpkish River near Vernon Lake on an active alluvial floodplain. Surrounding lands are part of TFL 37 and administered by their Englewood Division. The lands are old timber licence lands; TL 14062 and TL 14063.

The communities in the region are resource-based with the majority of residents earning or deriving their livelihood from the forest. Other industries include tourism, fisheries, and mining.

Tourism is being promoted as a significant employer in the future. Several key resources provide a base for the development of a tourism/ recreation industry. Caves, whales, fishing and natural history are all important to attracting tourists.

The dominant issue facing the reserve is retention of the trees. Erosion is the main threat to them. The Nimpkish River is one of the largest watersheds on the north end of Vancouver Island and the reserve is located on one the most active areas of the river. It is subject to significant erosion and a number of trees have been lost as a result of bank erosion.

Mitigating the impact of erosion has been the dominant focus of management. Department of Fisheries and Oceans, Ministry of Environment Lands and Parks, Water Management Branch, Habitat Protection Section, and BC Parks have had extensive involvement in trying to protect the reserve. Canfor has also been involved as the same forces pose threat to their TFL.

Works that have been carried out include:

- 1987 Log removal, re-channelling, and construction of a berm to keep the Nimpkish River in its existing channel.
- 1989 Preparation of an erosion control plan.
- 1990 Re-channelling of Nimpkish River near Kiyu Creek to reduce the erosion down stream from Kiyu Creek.
- 1991 Log jam removal near Kiyu Creek and erosion impact mitigation on the main channel of the River.

For the term of this plan the most significant issue will be retaining the trees and mitigating the effect of erosion.

With the removal of the surrounding forests, the potential for blowdown has increased. An assessment of this potential has been made with the study indicating the probability of blowdown is low. While low, it does exist and is an additional threat to the trees. The threat is mitigated by the presence of standing timber to the south and west. The retention of these stands, all in TFL 37, is important to maintaining the trees in the reserve.

Public use of the reserve is presently low. No promotion of the reserve has taken place but a proposal for development of a trail system was received. The proposal was discussed and it was determined that public use of the reserve was not appropriate. The impacts of high use would not be compatible with the ecological objectives of the reserve.

Discussions between Canfor and BC Parks regarding wind protection for the reserve and meeting the need for introducing the public to old growth forest on this part of Vancouver Island have taken place.

III PURPOSE

Ecological Reserves are broadly categorized into five areas based on their purpose, including:

- areas suitable for scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment;
- areas that are representative examples of natural ecosystems within the Province;
- areas that serve as examples of ecosystems that have been modified by man and that offer an opportunity to study the recovery of the natural ecosystem from such modification;
- areas in which rare or endangered native plants and animals in their natural habitat may be preserved; and
- areas that contain unique and rare examples of botanical, zoological or geological phenomena.

IV MANAGEMENT OBJECTIVES AND ACTIONS

The three-fold purpose of the reserve is to preserve a unique plant community, an area suitable for scientific research associated with a highly productive environment and a partial representative ecosystem.

A. Reserve Boundary and Legal Status

The reserve protects a relatively small example of a first growth forest once found throughout the Nimpkish Valley. Within the site is a unique stand of Douglas-fir, a young and vigorous stand of remarkable height, 80 to 96 metres. A representative example of the Douglas-fir/swordfern alluvial forest community is also included. The site is highly productive; one of the most productive in coastal British Columbia.

The reserve's boundary is located on only one side of the river. The other side has a stand of large old trees which help protect the reserve from the effects of wind. While part of TFL 37, these trees have been given a long term deferral by the company as both buffer, recreation site and wildlife habitat.

All adjacent lands are part of Canfor's private holdings within the TFL.

The boundary is described by metes and bounds based on the location of the river's main channel. This channel has changed location and may do so again. The boundary description should be reviewed and redescribed in a way that is independent of the river channel.

The current Ecological Reserve Regulations are not adequate to insure protection from incompatible uses. They also do not allow the flexibility to implement emergency or crisis management measures.

OBJECTIVE:

Ensure the reserve's boundaries protect the key resource and improve regulatory structure so management can be improved.

ACTIONS:

- Continue discussions with Canfor to ensure adjacent old growth will continue to provide a windfirm buffer to the reserve.
- Redescribe the boundary so that it is not dependent on the river channel location.
- Review Ecological Reserve Act and Regulations and include regulations to enhance management flexibility as required.

B. Resource Preservation and Representation

The original proposal for the reserve included a much larger area that was meant to reserve a representative ecosystem. The existing boundaries do not include the entire area originally proposed. This has limited the role of the reserve to one of reserving a unique community rather than truly representing an ecosystem.

While the lands within the original proposal have been logged, their modification provides an opportunity to enhance the value and significance of the reserve. Their inclusion would enhance the reserve by expanding its role to include scientific study of the recovery of a man modified ecosystem.

With the removal of adjacent forest through harvesting, light has penetrated further into the reserve. This may result in a shift in the composition of the plant communities of the island.

The biophysical conditions which contribute to the development of this site's uniqueness extend beyond the present reserve boundaries. The significance of the reserve is related to these conditions. To more fully represent the community, these lands should be included in the reserve (Figure 3).

Erosion is the most significant threat to the trees of the reserve. In 1989, a plan was developed to address this issue; two alternatives were proposed. The first suggested a massive program of re-channelling and water management. The second was an adaptive approach of reacting to erosion as it occurs. The second approach is being implemented.

Traplines and guide/outfitting territories may exist over the reserve. The Act prohibits such activities.

Although the volume of public use is not significant now, the reserve is well known and this level of use can be expected to increase. The vegetation and soils are not capable of supporting an increased level of use.

OBJECTIVES:

Maintain health and density of the forest stand by:

- expanding the reserve's purpose to include man-modified ecosystems,
- ensuring that the biophysical conditions which contribute to the creation of the unique community of the reserve are included in the reserve, and
- protecting the reserve from public use.

ACTIONS:

- Add adjacent lands (Figure 3) which contribute to satisfying the purposes of natural and man-modified ecosystem representation.
- Establish a monitoring program. This program will consist of regular inspections and photo documentation by operations staff. The reserve will be visited at least quarterly and photo and video records will be made during low and high flow periods.
- Fight all fires and those pest attacks that are likely to endanger the major tree species.
- Initiate discussions with Canfor to have adjacent old growth stand provide an opportunity to meet visitor expectations by pursuing provincial park status (Figure 3).
- Notify all tenure holders of the reserve and if required acquire portions of any guide/outfitters territory or trapline within the reserve.
- Based on the monitoring program, undertake minor works where required and feasible.

C. Research

The reserve protects one of the remaining unlogged stands of old growth Douglas-fir in the Nimpkish Valley. It is a relatively young stand, about 350 years.

Opportunities for research will be limited to non-destructive and non-intrusive projects which are management-focused and will give a better understanding of how the ecosystem functions and will provide a more rationale basis for management.

The reserve does not appear to be sensitive as far as time or season of research is concerned.

Should the adjacent lands be added, the role of research will change. The study of a man-modified ecosystem will be important. The existing reserve will act as a control.

OBJECTIVE:

Promote research that enhances our understanding of the function of the ecosystem.

ACTIONS:

- Support research which contributes to an understanding of how the ecosystem functions and how to manage it.
- Encourage research on community structure, especially soils and faunal composition.
- Encourage research on adjacent man-modified area.

D. Education and Visitor Use

Ecological reserves can be set aside for scientific study and education; however, some reserves are sensitive to human use. For these reserves, restriction of use may be required.

This reserve's purpose is protection with education secondary to that purpose. No facilities or programs will be considered on the island.

The reserve's soils and plants have a low carrying capacity for visitor use. Educational uses which require large numbers of people to visit the site are not appropriate, as they could be destructive to the resource.

While public use will not be encouraged, a regulatory closure is not required at this time. Such a closure may be considered if future conditions warrant it.

OBJECTIVES:

- Foster a better understanding of old growth forest and ecosystem function.
- Accommodate public use through development of areas outside the reserve.

ACTIONS:

- Prepare a video presentation based on the reserve's purpose and qualities.
- Develop an interpretive program and facilities on an adjacent old growth stand proposed as a provincial park.
- Monitor public use.

E. Other Uses

An 18 hectare reserve is too small to accommodate other uses. While the stock may be of significance to commercial forestry as a seed source or donor bank, until it is clearly demonstrated that the gene pool contained in the reserve is unique, no collection of cones or cuttings will be permitted.

As use is felt to be a threat to the reserve, no access facilities will be developed. Research access will be limited and no research specific facilities will be permitted.

OBJECTIVES:

Protection of the resource is paramount; no other uses will be encouraged or allowed.

ACTIONS:

- Monitor the reserve for unauthorized uses.

F. Surrounding Land Uses

Forest practices on adjacent lands may affect the health and security of the reserve. Close liaison will be established with Canfor to ensure that reserve needs will be incorporated into forest management plans.

OBJECTIVES:

Ensure use of adjacent lands is not in conflict with the reserve.

ACTIONS:

- An informal management committee will be established consisting of BC Parks, Canfor and DFO so that relevant issues can be dealt with quickly and efficiently. This committee will also offer a forum to review future needs and plans which might affect the reserve.

G. Wardenship

The warden program was intended to supplement monitoring by the reserve staff of the Ecological Reserve Unit which, at the time, had a limited capability. The Ecological Reserve Program has now been integrated with the operation of the park system and BC Parks now monitors activities in the reserve system on a much more regular basis.

The role of the warden has changed as a result of this integration of the park and reserve operation and management programs. A review of their role is required.

OBJECTIVES:

Review the role of wardens in the ecological reserve system.

ACTIONS:

- Review the warden program and its role in the management of reserves.

V PLAN IMPLEMENTATION

The implementation plan is divided into three components; ongoing management, priority one actions and priority two actions.

A. Ongoing Management

- Establish a regular monitoring program including photo documentation.
- Undertake minor works for erosion control.
- Encourage and support research.
- Establish informal management committee.
- Review the role and function of the warden to make it more effective.

B. Priority One Actions

- Continue discussions with Canfor to ensure adjacent old growth stand provides a buffer and educational opportunities for the reserve.
- Consider park status for the adjacent old growth stand.
- Add adjacent man-modified lands.
- Acquire trapline.
- Prepare video on reserve's purpose.

C. Priority Two Actions

- Redescribe boundaries.
- Review Act and Regulations.

REFERENCES

- Ecological Reserve Act. R.S. Chapter 101. 1989.
- Holland, Stuart S. 1976. Landforms of British Columbia: A Physiographic Outline. Ministry of Energy Mines and Petroleum Resources.
- Howes, D.E., 1981 Terrain Inventory and Geologic Hazards: Vancouver Island. APD Bulletin. Terrestrial Studies Branch. Ministry of Environment.
- Klinka, K., F.C. Nuszdorfer and L. Skoda. 1979. Biogeoclimatic Units of Central and Southern Vancouver Island. Ministry of Forests.
- Klinka, K. and R.E. Carter. 1980. Ecology and Silviculture of the most productive Ecosystems for Growth of Douglas-fir in Southwestern British Columbia. Land Management Report Number 6. Ministry of Forests.
- Klinka, K., M.C. Feller and L.E. Lowe. 1981. Characterization of the Most Productive Ecosystems for Growth of *Pseudotsuga menziesii* var. *menziesii* in Southwestern British Columbia. Supplement to Land Management Report Number 6, Ministry of Forests.
- Klinka, K., V.J. Krajina, A. Ceska and A.M. Scagel. 1989. Indicator Plants of Coastal British Columbia. University of British Columbia Press.
- Krajina, V.J., K. Klinka and J. Worrall. 1982. Distribution and Ecological Characteristics of Trees and Shrubs of British Columbia. University of British Columbia, Faculty of Forestry.
- Moore, K. An Assessment of the Windfirmness of the Nimpkish Island Proposed Ecological Reserve. 1987.
- Muller, J.E. 1977. Geology of Vancouver Island, Geologic Survey of Canada. Three maps.

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SUMMARY

Nimkish River Ecological Reserve, located in the Nimkish Valley southeast of Woss Camp, was established to preserve a unique plant community; the tallest Douglas-fir in Canada. Located on an active alluvial flood plain, the reserve is subject to regular flooding. Surrounding lands are part of an active tree farm licence.

Key issues are the loss of trees through erosion and maintenance of the health and stability of the plant community.

The reserve is affected by adjacent land uses such as industrial forestry and tourism.

I INTRODUCTION

Ecological reserves are Crown Provincial lands, representative of distinctive ecosystems, set aside to preserve opportunities for present and future scientific study. Lands in the reserve system serve as benchmarks, research areas, outdoor classrooms, and repositories of representative and rare genetic material.

The *Ecological Reserves Act* defines five objectives for reserving Crown Lands as ecological reserves:

1. Scientific research and educational purposes;
2. Represent the natural ecosystems of the province;
3. Provide opportunities to study the recovery and productivity of man-modified ecosystems;
4. Protect rare, endangered or unique native plants and animals in their natural habitats; and
5. Preserve unique or rare examples of botanical, zoological, or geological phenomena.

Nimpkish Island Ecological Reserve (Figure 1), was established to protect a unique plant community; a highly productive Douglas-fir stand; the tallest in Canada. Protection makes a significant contribution to protecting the full genetic range of this species.

This small, 18 hectare reserve includes one of the most productive sites in British Columbia. The trees are located on a large and very active alluvial flood plain formed by the confluence of Sebahall, Yookwa and Kiyu Creeks and the Nimpkish River.

The surrounding lands are part of Tree Farm Licence 37, held by Canadian Forest Products Ltd. (Canfor). All adjacent lands are part of the managed forest and either have been harvested or are subject to harvest in future. The reserve lands were purchased from Canfor.

II RESERVE DESCRIPTION

The reserve is located at the north end of Vancouver Island, 85 kilometres north of Campbell River and 18 kilometres southeast of Woss Camp in the upper section of the Nimpkish River at the confluence of four significant watersheds.

The surrounding mountains rise from 200 metres at the reserve to a height of between 1000 and 1500 metres and are situated within the Vancouver Island Range of the Vancouver Island Mountains of the Insular Mountains Outer Mountain area of the Western System of the Canadian Cordillera physiographic System (Holland, 1976).

The present arrangement of valleys and mountains is the result of uplift of a Miocene erosion surface during the Pliocene Epoch and subsequent uplift and erosion during the Tertiary Period (Holland).

A) Geology (Figure 2)

The reserve is underlain by Island intrusive rock (Muller, 1977), ranging from quartz-diorite to granite.

The Nimpkish River flows northerly along a northwest/southeast fault line (Muller, 1977). The reserve is located at a point where this fault is intersected by a west to east fault.

Geologic origins and physiography date from early Jurassic times and cover a period of mountain building involving folding and faulting regionally which lasted into the post lower cretaceous. During this time intrusions of granitic batholiths took place in the Insular Mountains. Subsequent erosion removed the cover of sedimentary rocks to expose the batholithic cores. This unroofing occurred contemporaneously with the deposition of upper Cretaceous and Early Tertiary sediments.

Surficial geology, Figure 3, was generated by fluvial processes and has resulted in a level site covered by sandy silty textured soils.(Terrain map, Ministry of Environment, Resource Analysis Branch, 1980).

Soils, Figure 4, have been labelled as Kaipit which are well to moderately well-drained sandy silty loams of fluvial origin overlying gravel. This soil group is less common and associated with an edaphic environment drier than the surrounding soils (Soils map, North Vancouver Island Study Area, Ministry of Environment, Terrestrial Studies Branch, 1980).

B) Climate

The regional climate is characteristic of the Coastal Western Hemlock Drier Maritime Subzone (CWHa), Vancouver Island variant.

C) Vegetation

The forest community is predominantly Douglas-fir and western red cedar growing on alluvial regosol, with a loamy sand topsoil up to 1 metre thick overlying fast draining gravel and sand. The majority of the reserve belongs to a Douglas-fir, Red Cedar, Devils Club, Vanilla Leaf, sword fern community. This community is one of the most productive sites for Douglas-fir in Canada.

This small site has some of Canada's largest and tallest Douglas-fir trees. The average age of the trees is in the range of 360 years.

Removal of the forest from adjacent areas has changed the amount of light which penetrates into the stand and as a consequence the species combination and abundance has shifted.

D) Hydrology

Nimpkish River is one of the largest river systems on Vancouver Island. It drains an area of approximately 1600 square kilometres, about 5% of Vancouver Island's surface area. The river has low gradient rising from sea level to 750 metres at its headwaters over a distance of about 100 kilometres.

Tributary drainages contribute significant volumes of water to the flows.

The reserve is located at the confluence of two large valleys, the Nimpkish and the Sebahall. The Nimpkish River at this point in the valley is unstable and prone to flash flooding. As a result, the banks of the river are subject to erosion. Over the last few years, a significant number of trees have been lost from the reserve. The river at this point has not found a stable bed. This instability resulted in a major stabilization project to be carried out in 1987. In 1990, the river moved its channel into a flood channel that this work was to protect.

E) Wildlife

No intensive surveys of the species present in the reserve have been carried out.

The Wildlife Branch has classified the region and provides the following description of the habitats of the area:

Humid Temperate Eco domain
Humid Maritime and Highlands Eco-Division
Coast and Mountains Eco-Province
Western Vancouver Island Eco-Region
Northern Island Mountains Eco-Section

Within the portion of the Northern Mountains Eco-section identified as in the CWha subzone, important habitats are young seral stages, old growth forest, managed second growth, floodplain, riparian, wetland, and salmon streams. Important species are deer, elk, wolf, cougar, black bear, bald eagle and salmon. The reserve contributes to protection of ungulate winter range.

The river is utilized by at least three species of salmon, coho, chinook and sockeye and two species of trout; cutthroat and rainbow. The river is highly significant to all five species and extreme care must be taken not to disrupt or disturb their utilization of the aquatic habitat.

III LAND USE AND OTHER ACTIVITIES

The reserve is located within TFL 37. Canfor is the current holder of this licence. The licence was first awarded in 1960 and has recently been renewed in 1981. Logging began in 1908 and has been continuous since that time.

Lands surrounding the reserve have been logged with the exception of a stand of Douglas-fir on the west side of the river opposite the reserve which has been deferred from this logging rotation.

The Nimpkish Valley provides important outdoor recreation opportunities, principally associated with fish and wildlife resources. The reserve is a natural history attraction. No promotion of it has occurred.

Tourism is becoming a more important part of the economy of the north end of Vancouver Island. It has been suggested that the reserve could be an important asset to the local tourist industry.

IV RESERVE MANAGEMENT

The reserve had a long history leading to its establishment. The original proposal was for a much larger area, 300 hectares. The final boundaries encompassed 18 hectares. The remainder of the proposal was logged.

The dominant issue to date has been the problem associated with the reserve's location on an active flood plain. The loss of trees to bank erosion is significant. Past work has included stream bank protection and channelization. Due to the unstable nature of the river, work is ongoing and requires monitoring to identify annual maintenance activities.

Of secondary concern is the attraction of the trees to tourists. Proposals have been received to build a trail system in the reserve to accommodate recreational use. This proposal was re-directed to an adjacent stand of large old trees.

Wind-firmness is an issue. In 1987, the potential impact of wind was assessed and the probability of blow-down was determined to be low. The standing timber to the south and west however did provide some measure of protection for the reserve. Its retention was felt important although not critical.

There is a concern that increased light penetration is having an effect on community composition. Some research may be required to confirm this effect.

The role as a contributor to ungulate habitat protection has not been defined.

V KEY RESOURCES AND MANAGEMENT ISSUES

The key resource of the reserve are the tall trees, 80 to 96 metres in height within the reserve. The trees are Douglas-fir growing on one of the most productive ecosystems in British Columbia.

Maintenance of the vegetation is the most important management concern. The present purpose of the reserve is to protect this plant association in its natural state.

The key management issue is the retention of the trees. Ancillary issues are tourism, public use and maintenance of stand health, stabilization of the river channel, and the effect timber removal may have on species distribution and abundance.



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92/11/04

File: AAA6-6-3-565

Mr. George Trachuk, Regional Director
BC Parks
South Coast Region
1610 Mt. Seymour Road
North Vancouver, BC

Re: Nimpkish Island Ecological Reserve Management Plan

Dear George:

Attached are two copies of a Management Plan for this reserve. I recommend approval.

Yours truly,

R. J. Lampard
District Manager
Strathcona District

Approved

G.T. Trachuk, Regional Director

RS/jr
encl: