ENVIRONMENTAL ASSESSMENT
MODEL CLASS SCREENING REPORT

LICENSING OF
ECO-TOURISM RELATED BUSINESSES
OPERATING WITHIN
PACIFIC RIM NATIONAL PARK RESERVE OF CANADA

November, 2005

EXECUTIVE SUMMARY

Pacific Rim National Park Reserve of Canada (PRNPR), is located on the outer west coast of Vancouver Island, British Columbia, Canada. Ecotourism businesses have become an important economic revenue generator in the local communities. If commercial operators wish to conduct trips in the National Park, they are required to purchase a PRNPR business licence. The issuance of business license by the Park triggers the *Canadian Environmental Assessment Act* (CEAA, *the Act*). As outlined in CEAA, Pacific Rim National Park Reserve must conduct an environmental assessment of all activities it formally authorises (*i.e.* issues permits or licences). At PRNPR, over 45 ecotourism related business licences were processed last year. This annual review of multiple routine projects is suitable for a Class Screening type environmental assessment. The Class Screening process under the *Act* provides an appropriate, efficient, fair, flexible and consistent approach to the environmental assessment of these eco-tourism related business licences at PRNPR. This Class Screening Report (MCSR) assesses the following commercial activities: marine wildlife viewing, kayaking, surfing, surf kayaking, hiking, overnight use, scuba diving, and transportation services. All of these activities are ecotourism related, engage in low impact practices, and do not involve any construction projects in the Park.

PRNPR has just completed close to two years of public consultation to establish operator standards and mitigations for licensed ecotourism activities. Consultations included formal public meetings & workshops, informal meetings and one-on-one conversations with ecotourism operators, community members, and discussions with experts in the fields of marine mammal ecology and resource management. The goal was to ensure that the operator standards and mitigations adopted by the national park protected the ecological integrity of the Park, addressed the sustainability of ecotourism, ensured visitor safety and encouraged a positive visitor experience. Subsequently, all ecotourism related business licences issued by PRNPR now include these operator standards, which must be followed for the licence to remain valid. The operator standards and mitigations vary depending upon the activity.

The presence of commercial eco-tourism related businesses operating in the Park may have both negative and positive environmental effects. Negative effects include the potential for disturbance of wildlife, habituation and food conditioning of wildlife, and the potential for pollution. Many of these effects can be mitigated. Positive effects from commercial guided activities include an improvement in ecotourism sustainability because commercial operators are often at the forefront of developing and applying low impact standards of practice. Clients on guided trips often gain a greater understanding and appreciation for the environment and cultural resources when guides teach them about the area. As a result of guide influence, clients are more likely to follow practices designed to mitigate negative environmental effects. Clients may also experience new activities in new locations that they would not experience on their own. Finally, commercial operators may play an important role in increasing our understanding of marine mammal ecology and conservation by assisting in research projects and contributing observations to research databases. The influence of professional guides is, in many cases, expected to result in improved resource protection, enhanced visitor safety and a more positive experience.

At current levels, and with mitigations implemented, the commercial ecotourism activities licenced in PRNPR will likely result in no adverse residual effects on the ecological integrity of the National Park. The negative effects to the environment are likely to be non-significant. Any management decisions made regarding business licences for commercial ecotourism related activities within the Park must take into account cumulative effects and recognize that these activities do not act alone on the environment, but act in tandem with other recreational and commercial activities. Changes in the levels of use and cumulative environmental effects may be significant in the long term and therefore, they should require ongoing monitoring. In addition, effectiveness and compliance monitoring are required. PRNPR, will take an adaptive approach to decision making and will continue to consult with operators and resource managers. Annual reviews, reporting and roll-up of information will feed back into the park management plan review and State of the Park reporting for PRNPR.

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ACRONYMS

BGI	Broken Group Islands
BMP	Best Management Practices
CDC	Conservation Data Centre
CEA	Cumulative Effects Assessment
CEAA	*Canadian Environmental Assessment Act*
CEAR	Canadian Environmental Assessment Registry
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSPR	Class Screening Project Report
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EI	Ecological Integrity
EIS	Ecological Integrity Statement
ESA	Ecologically Sensitive Area
ESS	Ecologically Sensitive Site
FA	Federal Authority as defined under the *Canadian Environmental Assessment Act*
FEAI	Federal Environmental Assessment Index
IMG	Interim Management Guidelines
LBU	Long Beach Unit
LMU	Land Management Units
MOU	Memorandum of Understanding
NCN	Nuu-chah-nulth First Nations
PRNPR	Pacific Rim National Park Reserve of Canada
MCSR	Model Class Screening Report
RA	Responsible Authority as defined under the *Canadian Environmental Assessment Act*
SARA	*Species at Risk Act*
TEK	Traditional Ecological Knowledge
The Act	The *Canadian Environmental Assessment Act*
The Agency	The Canadian Environmental Assessment Agency
TUS	Traditional Use Study
VEC	Valued Ecosystem Component
VSC	Valued Social Component
WCSC	Western Canada Service Centre
WCT	West Coast Trail

1. INTRODUCTION

1.1. PACIFIC RIM NATIONAL PARK RESERVE

Pacific Rim National Park Reserve of Canada (PRNPR, Pacific Rim, the Park or the National Park), with it's rugged rainforest, rocky shorelines, sandy beaches, and colourful tidepools attracts hundreds of thousands of visitors each summer eager to hike, camp and explore the west coast of Canada. Marine areas, in particular, play host to special outdoor activities like whale watching, kayaking, scuba diving and surfing. Enjoyment of such marine based activities generally requires specialized, often expensive, equipment (e.g. a motor boat, kayak, or dive gear) and the requisite skills to use them. However, for the average visitor, enjoyment of these activities can be facilitated by private commercial operators who, for a fee, offer guided trips, instruction and equipment provision.

In Canada, commercial guiding within national parks has a long history, dating back to the early days following the completion of the Canadian Pacific Railway. In the Mountain Parks, (Banff, Jasper, Yoho etc.) guiding groups such as the Swiss Guides, the Alpine Club of Canada, and the Trail Riders of the Canadian Rockies have been conducting guided mountaineering and horse packing tours since the early 1900's. In PRNPR, guided marine wildlife viewing dates back several decades. However, it has seen most of its growth within the last 10 years. Similarly, guided kayaking trips to the Broken Group Islands are a popular summertime activity. New on the scene are the commercial operators that teach surfing. Surfing is growing in popularity with summer visitors wanting to try something new and the surf zone at Long beach is becoming a very busy teaching spot.

Commercial ecotourism guiding services provide a number of benefits to park visitors, park staff and the park environment. The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably visit and appreciate more remote areas of the parks. Guides often inform clients about the region's physical and cultural characteristics, as well as educate them on issues related to ecological integrity, good environmental practices, and park management. Many guiding operations have a strong focus on outdoor skills development and safety leading to an increase in the number of experienced and skilled backcountry users. This in turn, may result in fewer incidents that require park rescue services. Finally, the presence of skilled, professional guides provides an additional measure of safety for wilderness visitors, even for independent users. Guides have taken part in rescues managed by the Warden Service, have performed rescues independent from parks staff (usually for non-guided parties), and have voluntarily taken on the responsibility to guide independent visitors through difficult weather and ocean conditions.

Uncontrolled, commercial ecotourism activities may also have negative impacts on ecological integrity and cultural heritage in the Park. The activities of commercial guiding operations may increase user numbers in sensitive areas of the park that would otherwise see lower use. Some, although not all, guiding operations are associated with large group sizes and seasonal or repetitive use patterns that may result in increased disturbances to vegetation, wildlife and visitor experience.

If a commercial ecotourism business wishes to operate within the National Park it requires a PRNPR business licence. As a prerequisite to obtaining a business licence, commercial guiding operators within a national park are required to complete an environmental assessment pursuant to the *Canadian Environmental Assessment Act* (the *Act*) of their current and projected future guiding activities. The Class Screening process under the *Act* provides an appropriate, efficient, fair, flexible and consistent approach to the environmental assessment of commercial guiding activities. A Class Screening approach can also be readily adapted over time to accommodate both park and business operational changes, as well as new information related to changing patterns of visitor use or visitor use issues. This Model Class Screening Report (MSCR) addresses eco-tourism based commercial guiding activities for Pacific Rim National Park Reserve of Canada.

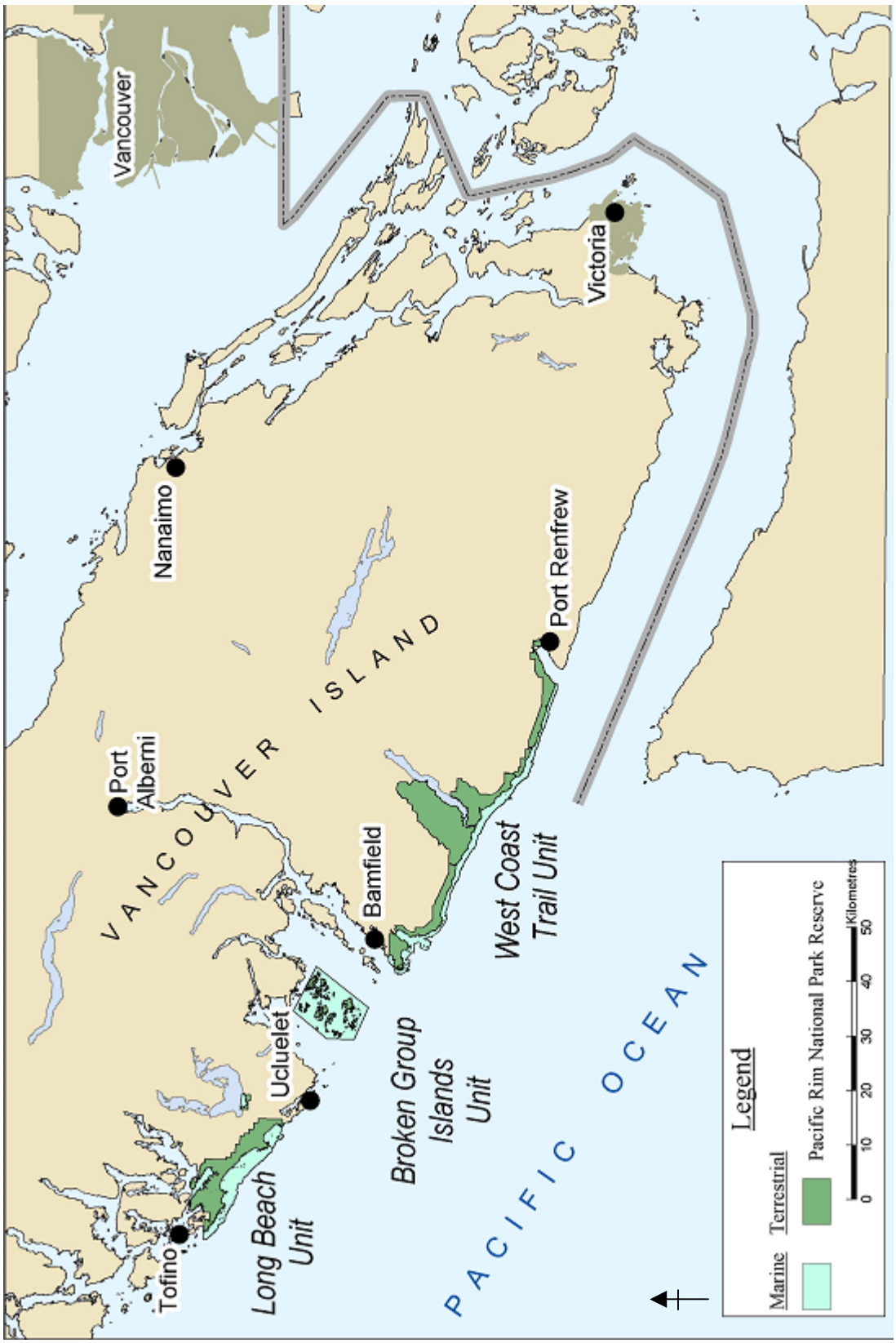


Figure 1. The three units of Pacific Rim National Park Reserve (from north to south); the Long Beach Unit (LBU), the Broken Group Islands Unit (BGI) and the West Coast Trail Unit (WCT).

1.1.1. Managing for Ecological Integrity

Pacific Rim National Park Reserve (PRNPR) was the first national park to be established on Canada's west coast. PRNPR is comprised of three separate units: the Long Beach Unit (LBU), the Broken Group Islands Unit (BGI), and the West Coast Trail Unit (WCT). Together, the three units encompass an area of land and ocean of ~50,000 hectares. The park forms a ribbon of land that spans the outer coastline of Vancouver Island, and crosses through the traditional territories of the Pachedaht, Ditidaht, Huu-ay-aht, Tseshaht, Ucluelet, and Tla-o-qui-aht First Nations.

The rugged landscape and picturesque beaches attract people from all over the world. Since its establishment in 1970, the Park has seen a steady increase in visitors, and last year Pacific Rim National Park Reserve welcomed well over three quarters of a million people to the Long Beach Unit alone. Visitor use of the BGI and WCT has grown at a slower pace, and may have reached a level plateau over the last few years.

The Parks Canada Mandate:
"To protect and present nationally significant examples of Canada's natural and cultural heritage, and foster public understanding, appreciation and enjoyment in ways that ensure their ecological and commemorative integrity for present and future generations."

The Vision for Pacific Rim Park Reserve:
" A leader in Coastal Zone Management, Pacific Rim National Park Reserve provides lasting examples of natural ecosystems and cultural landscapes managed as the core protected area on the central west coast of Vancouver Island, where present and future generations enjoy their national park heritage."
Draft PRNPR Interim Management Guidelines, 2003

National parks are "dedicated to the people of Canada for their benefit, education and enjoyment ... and shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations" *(Canada National Parks Act*, 1998). The approach taken to the environmental assessment of commercial ecotourism activities recognizes the benchmarks of ecological and commemorative integrity that are mandated to Parks Canada Agency for the management of national parks and historic sites. The approach also recognizes that many outdoor recreation activities in national parks are considered to be appropriate uses in accordance with Parks Canada policy and that the quality of the visitor experience is an important consideration in management decisions.

The *Canada National Parks Act* Section 8(2) identifies the importance of protecting park resources in relation to visitor use by stating, "*the maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks.*"

The *Canada National Parks Act* Section 2(1) states: "ecological integrity means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes."

Ecosystems can be characterized in terms of composition, structure and process. An ecosystem can be considered to have integrity when native components (plants, animals and other organisms), physical structure (such as habitat connectivity or vegetation patterns) and processes (such as interspecies competition and predation) remain intact and function unimpaired by human activities. Conversely, a loss in ecological integrity can be characterized by changes to physical structure or interference with ecosystem processes as a result of human activity that result in a loss of native species biodiversity.

Indicators of, and stressors affecting, ecological integrity were identified by consultating resource managers, experts, regional operators and (interim) park management guidelines (IMGs), Ecological Integrity Statements (EIS) and EI monitoring plans. All potential indicators were reviewed to identify the environmental components most likely to be affected by commercial eco tourism based commercial activities.

1.1.2. Managing for Cultural Resources

The protection of cultural resources is a priority for Parks Canada, with the highest obligation being to protect and present those resources of national historic significance in order to retain their historic value and extend their physical life (Canadian Heritage Parks Canada, 1994). The protection of cultural resources also involves the consideration of the cumulative impacts of any proposed actions with respect to the historic character of cultural resources, the goal being to preserve cultural integrity.

A cultural resource is defined as "a human work, or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has been determined to be of historic value" (Canadian Heritage Parks Canada, 1994). Within national parks, cultural resources are inventoried and assigned a value based on the particular qualities and features that make up their historic character. Resources are evaluated for their historical associations, their aesthetic and functional qualities, and their relationships to social and physical environments (Canadian Heritage Parks Canada, 1994). Cultural resources are considered to be potentially sensitive sites for the purposes of the environmental assessment of commercial ecotourism activities.

1.1.3. Managing for Visitor Experience

The *Canada National Parks Act* states that "the national parks of Canada are hereby dedicated to the people of Canada for their benefit, education and enjoyment." To fulfill Parks Canada's mandate of facilitating the education and enjoyment of national parks by the public, a variety of outdoor recreation opportunities are permitted, consistent with direction provided by *Parks Canada Guiding Principles and Operational Policies* (Canadian Heritage Parks Canada, 1994). Outdoor activities that promote the appreciation of a park's purpose and objectives, and respect the integrity of the ecosystem, are intended to serve visitors of diverse interests, ages, physical capabilities and skills. The private sector and non-governmental organizations are encouraged to provide skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks.

At PRNPR, the *Draft Interim Management Guidelines* (2003) outline an overall zoning plan for the park which specifies the types and ranges of both new and existing appropriate outdoor

recreation activities and allowable supporting facilities. Parks Canada, working in cooperation with others, is committed to offering high-quality visitor services by ensuring that park resources do not deteriorate and that quality visitor experiences are not diminished.

The contribution of the private sector in the delivery of "skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks" is recognized under Section 4 of *Parks Canada Guiding Principles and Operational Policies.* Ecotourism based commercial guiding activities provide a number of benefits to park visitors, park staff and park residents including:

- Safe access to the backcountry and marine areas for unskilled or inexperienced visitors
- Visitor education on the physical, biological, and cultural resources and ecological integrity of the national parks
- Outdoor skills development, safety equipment and safety training,
- Skilled resource pool for dealing with emergencies and rescues
- Job opportunities and economic benefits.

1.1.4. Park Management Plans & PRNPR's Interim Management Guidelines

A Park Management Plan is a tool that allows National Parks to review the status of selected indicators, prioritize actions and fulfill the mandates for the conservation of ecological integrity, cultural resources and visitor experience. These documents are tabled in Parliament and contain "a long-term ecological vision for the park, a set of ecological integrity objectives and indicators and provisions for resource protection and restoration, zoning, visitor use, public awareness and performance evaluation" *Canada National Parks Act* Section 11(1). Management plans provide the direction for all activities within the park. Based on the management plan, human use strategies and other plans can be developed to further direct activities within the parks.

Management plans must be developed within five years of park proclamation. Pacific Rim National Park Reserve, though established in 1970, was not proclaimed as a national park until 2001. PRNPR is currently operating under the 1994 Park Management Guidelines but has also prepared an updated draft document entitled the Draft Interim Management Guidelines (IMGs) (2003). It is anticipated that this updated document will, unless delayed by extenuating circumstances such as the ongoing regional treaty negotiations, form the basis of the new Park Management Plan for PRNPR.

The IMGs clearly outline the park specific management objectives, the stressors threatening the ecological integrity of PRNPR and the strategies adopted to meet the management objectives. With respect to tourism and eco-tourism, the IMGs contain the following descriptions of park management goals for each of the three units:

> *"**The Long Beach Unit** will continue to be able to offer a wilderness experience in the outer reaches of the unit on the west coast , north of Schooner Cove and along Grice Bay.*
>
> ***The Broken Group Islands Unit** will continue to be recognized as one of the finest island boating destinations on the west coast of Canada. This archipelago will be managed to provide a remote and challenging marine experience for the growing market in coastal paddling, by both kayak and canoe, as well as vessel cruising (power and sail). The Broken Group Islands are well known for their safe, sheltered waters that attract boaters of all skill levels, most aware of the element of risk that is always present in the waters of the Pacific. As is the case today, these waters will harbour a wide variety of wildlife, both marine and terrestrial. Commercial fishing will be managed in concert with the Department of Fisheries and Oceans, and sport fishing practices will be conservatively managed to encourage the renewal of the marine environment of the Broken Group Islands to a near natural state.*

The largely undisturbed environment of this archipelago will continue to offer the solitude, the opportunity to explore and to practice the skills of self reliance, that similar but more remote areas on the coast of British Columbia can offer the more advanced adventurer. Primitive camping facilities will also be provided in keeping with the wild and pristine character of these islands. Parks Canada will offer off-site interpretation services through a variety of media to tell the many stories of the rich natural and cultural heritage of the Broken Group.

***The West Coast Trail Unit**, renowned as a premiere hiking experience, will continue to attract intermediate and experienced long distance back-packers and hikers from around the world. The 77 kilometre long trail will live up to its reputation as being one of the higher quality and more demanding hikes available in North America. Trail standards will be designed to retain the rugged character of the trail and to ensure that the personal challenge it presents will continue to be one of its most attractive features while reducing the risk of injury. Facilities associated with the trail will be primitive in design and as unobtrusive as possible in location. While public safety will continue to be a high management priority, the need for total self reliance will be emphasized. The trail will offer the opportunity to experience the wildness of this isolated stretch of coastline and, through a new guide book and videos for the trail, to learn of its long history of Native occupation, and of human tragedy associated with the many ships that foundered on these shores."*

(PRNPR, 2003)

1.1.5. PRNPR Ecological Integrity Statement (EIS)

The *Ecological Integrity Statement* (EIS) outlines how the primary mandate of Parks Canada, the maintenance of ecological integrity, will be incorporated into the day to day operations of Pacific Rim National Park Reserve. It outlines a specific vision for maintaining and/or restoring ecological integrity in PRNPR.

The intent of the EIS is to link the park vision for ecological integrity to all planning documents including the Management Planning Guidelines and annual Business Plans. The EIS framework is also be tied to the park's Ecological Integrity Monitoring Program, linking monitoring to park management goals and actions so as to gauge ongoing progress towards the achievement of the vision. PRNPR's Management Goals as outlined in the EIS are as follows:

Goal 1 – Maintain Ecosystem Structure:
Goal 2 – Maintain or Restore Natural Ecosystem Processes and Indigenous Floral and Faunal Communities:
Goal 3 – Minimize Impacts of In-Park Activities:
Goal 4 – Maintain the Integrity of Cultural Resources Within the Landscape and Seascape:
Goal 5 – Motivate Audiences to Practice Environmental Stewardship:
Goal 6 – Enhance the Global Biosphere by Ensuring that the Park Practices Environmental Citizenship:

The EIS also lists the following top six stressors that may be cumulatively affecting the ecological integrity of PRNPR:

1. Human Disturbance
2. Forestry
3. Urbanization
4. Commercial Fishing (not including Commercial Sport Fishing)
5. Sport Fishing (including Commercial Sport Fishing)
6. Petrochemical Pollution

(*Refer to Appendix C for descriptions of each stressor*)

1.2 . APPLICABILITY OF THE CLASS SCREENING PROCESS TO ECOTOURISM BASED COMMERCIAL GUIDING ACTIVITIES IN PRNPR

The *Canadian Environmental Assessment Act* (the *Act*) was brought into force in 1995 to establish a Canadian environmental assessment process for projects in which the federal government has decision-making authority. The Act ensures that all federal authorities thoroughly consider the environmental consequences of projects before the projects are undertaken and before irrevocable decisions are made.

In February of 2001, PRNPR was proclaimed under the *Canada National Parks Act.* As a federal agency, PRNPR must fulfil its obligations to conduct an environmental assessment of all projects it undertakes or funds, and all activities it formally authorises (*i.e.* permits or licences).

The *Act* applies to projects where a Federal Authority performs one or more of the following duties, powers or functions in relation to that project:

- proposes the project;
- grants money or other financial assistance to a project;
- grants an interest in land for a project; or
- exercises a regulatory duty in relation to a project, such as issuing a permit or licence that is included in the *Law List Regulations* as prescribed under the *Act*., as is the case here with the issuance of business licences for ecotourism related commercial activities.

> Section 13.1 of the Inclusion List Regulations states that recreational activities which take place outdoors in a national park or national reserve outside the boundaries of a town or a visitor centre as defined in subsection 2(1) of the *National Parks Lease and Licence of Occupation Regulations (1991)* and that require a licence under the *National Parks Businesses Regulations (1998)*, require an assessment unless the proposed activity is the same activity carried on in the same location for which an environmental assessment has been previously conducted under the Canadian Environmental Assessment Act or the Environmental Assessment and Review Process Guidelines Order and: a) as a result of the assessment, the environmental effects have been determined to be insignificant, taking into account the implementation of mitigation measures, if any; and b) the mitigation measures and follow-up program, if any, have been implemented as required in accordance with any timetable established by the responsible authority.

The majority of projects subject to the *Act* are assessed through a screening level assessment. Screenings are self-directed assessments, whereby the Federal Authority (FA) (as proponent, land administrator, funder or regulator), takes responsibility for the environmental assessment and acts as a *Responsible Authority* (RA) under the *Act.* Section 19 of the *Act* provides that a class screening can be declared where projects in the class, as described in the report, are not likely in the opinion of the agency to cause significant environmental effects when design standards and mitigation measures, as described in the class screening report, are applied.

At Parks Canada, a " business" is defined as any trade, industry, employment, occupation, activity or special event carried on in a park for profit, gain, fund raising or commercial promotion, and includes an undertaking carried on in a park by a charitable organization, or by an organization or individual on a non-profit basis.

A number of applications for ecotourism based commercial business licences will be routinely processed each year by PRNPR. This process is suitable for a Class Screening type environmental assessment for the following reasons:

- The projects are relatively routine or repetitive (businesses in each class are involved in similar outdoor activities),
- The potential environmental effects of these activities are well understood, predictable and mitigable,
- The proposed activities meet the established environmental standards outlined in the model class screening report (MCSR), and are unlikely to be of substantive public concern,
- There is a reduced administrative burden in using a class screening approach to business licensing review.

1.3. APPLICATION OF THE MCSR TO THE BUSINESS LICENCE PROCESS

1.3.1. Integration of Environmental Assessment and Business Licence Administrative Process

The business licensing process and the environmental assessment process are individual legal requirements mandated by separate legislative requirements under the *Canada National Parks Act* and the *Canadian Environmental Assessment Act.* However, the requirements for issuing a business licence encompass the requirements for environmental assessment under the *Act.* In order to ensure operational efficiency and consistency, and to facilitate cumulative effects assessment, the environmental assessment process has been integrated into the overall business licensing process.

The National Parks business licence administrative process will continue to operate, as it has in the past, on an annual basis. The issuance of licences and renewals, collection of licence fees, and reporting requirements will be completed annually. Application for new, expanded or altered commercial guiding operations will also be considered on an annual basis. The licensing process can be divided into three stages as illustrated in Figure 2:

- Licence Pre-Screening
- Licence Application and Team Review
- Monitoring and Annual Reporting.

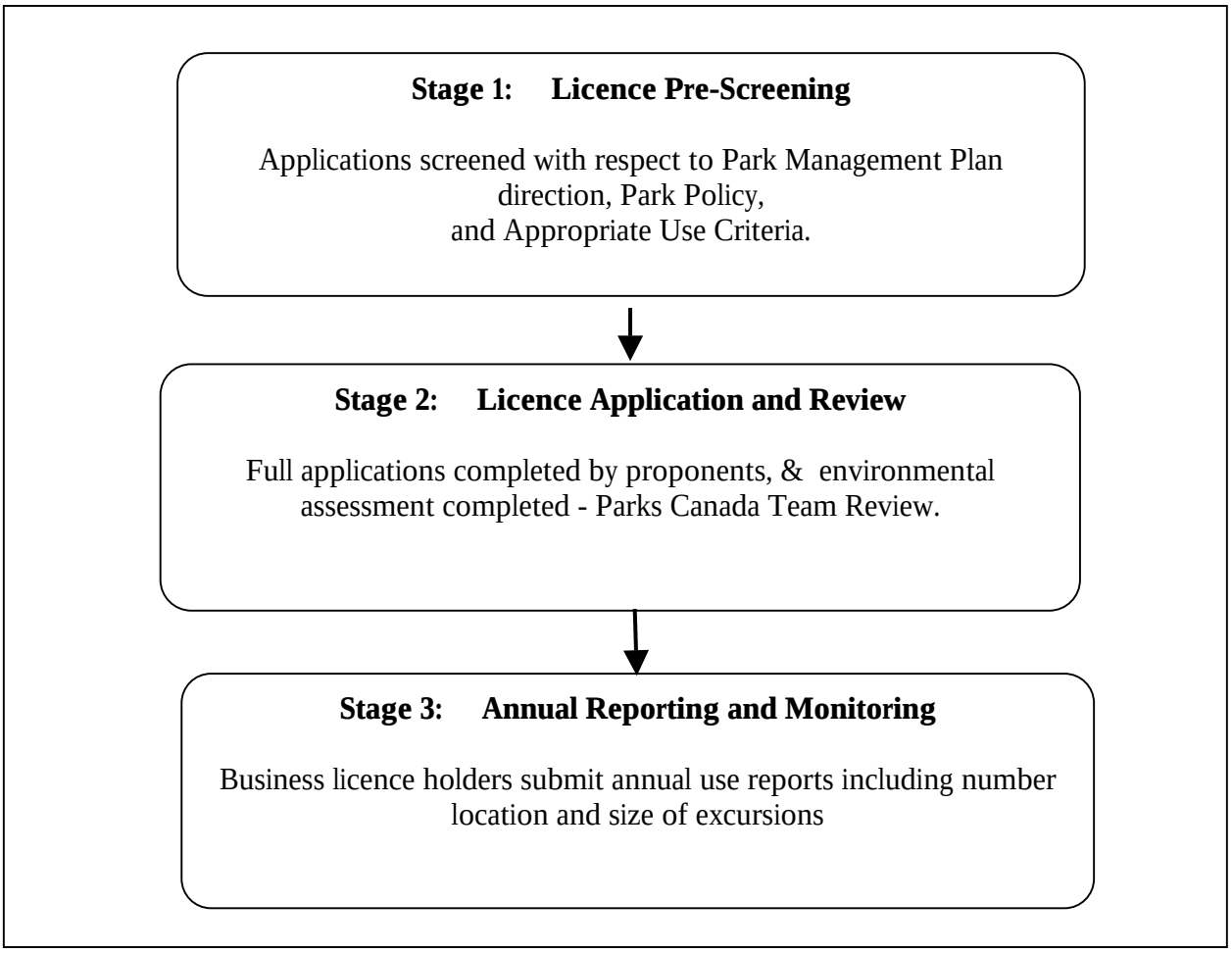


Figure 2: Overview of the Annual Business Licence Review Process at PRNPR.

Environmental assessment requirements are incorporated within the licence application and team review stages (Stage 2 and 3). A brief description of the stages is outlined below.

STAGE 1: LICENCE PRE-SCREENING

At this stage, applications for new, expanded or altered licences for commercial ecotourism guiding operations are reviewed by Parks Canada against existing appropriate use, policy, and management plan direction. Applications that are not consistent with policy and management plan direction may be rejected or returned to the applicant for modification. Applications that are considered to be compatible with policy and management plan direction may proceed to the licence application stage.

STAGE 2: LICENCE APPLICATION AND REVIEW

There are two streams to the licence application stage: the licence application, itself, and the environmental assessment process. The licence application deals with the nature and administration of the business, itself, including collection of information on contacts, management, office location, business size, nature of the business, etc. Stipulations on group

size, guide/client ratios, public safety, and certification requirements are applied based on approved and standardized business licensing policies and procedures. The environmental assessment process may take the form of either a class screening, as outlined in this MCSR, or a regular screening under the *Act*. Both the licence application and the environmental assessment must be completed and reviewed by business administration, public safety and environmental assessment staff of Parks Canada prior to proceeding to the next stage. At any point in the review, it may be necessary for Parks Canada to request additional information from the applicant in order to properly assess the application.

Completed applications are reviewed by a Parks Canada team. The team review focuses on the identification of additional, site-specific issues and mitigation, on the identification of cumulative effects issues and mitigation, and on potential impacts to park facilities, budgets, and public safety. Mitigations required by the environmental assessment are attached as a condition of the business licence. Failure to reasonably comply with the mitigation could result in the cancellation of the business licence. The review team may add stipulations and mitigations to the business licence for an individual operation in order to deal with site-specific or cumulative effects or other operational concerns as required. Finally, the review team makes a recommendation to the Park Superintendent with respect to licence approvals.

STAGE 3: ANNUAL REPORTING AND MONITORING

Business licence holders are required to submit annual reports on commercial activities, including the number, location, and size of excursions. Reports are submitted, and the information is held in an electronic database that can be used to confirm and evaluate patterns of commercial use over time. Annual reports are used as baseline information for the Parks Canada Team Review and for the identification of cumulative effects issues and mitigation.

Application of Section 13.1 Inclusion List Regulations

In accordance with section 13.1 of the Inclusion List Regulation, completed and approved environmental assessments conducted through the Class Screening process will be considered valid unless the scope and nature of the business changes. Commercial guiding operations that do not plan to significantly alter or expand commercial operations would not require a new or updated environmental assessment until the scheduled five year class assessment review. Every five years, ideally following the completion of the park management plan review, all commercial guiding operations would be reevaluated and notified with respect to the need for a new or updated environmental assessment.

1.3.2. Class Screening Project Report (CSPR)

The Class Screening Project Report (CSPR) functions as the environmental assessment documentation for business licence applications that are assessed using the Class Screening process (Appendix A). Sections of the CSPR that document the proposed business activities are completed by the applicant. Sections of the CSPR that evaluate the environmental impacts of the proposed business activities are completed by Parks Canada.

The class screening project report (CRPR) is divided into 6 sections:

- Section 1 provides proponent identification and references the business licence application number.
- Section 2 provides information to ensure the class screening applies to the proposed activity.
- Section 3 describes the activities being proposed and identifies the standard mitigation requirements for activity-specific and site-specific environmental impacts.
- Section 4 identifies any additional environmental effects and mitigation required with respect to the proposed activity.
- Section 5 identifies potential cumulative effects associated with the proposed project and specifies cumulative effects mitigation as required.
- Section 6 records the decision statement and signature of the Responsible Authority.

1.3.3. Roles and Responsibilities

Parks Canada is the sole Responsible Authority under the *Act* as well as the sole business licensing authority in the National Parks. Parks Canada will be responsible for reviewing completed CSPRs submitted as part of a business licence application, for making a determination of significance of environmental effects, and for incorporating the appropriate mitigation measures as outlined in the MCSR as conditions of a business licence approval.

Business licence applicants will be responsible for submitting completed CSPRs along with their business licence application. Licence holders will be responsible for notifying Parks Canada in the event that their business operations are expanded beyond the scope of activities approved in the business licence and assessed under the Class Screening process. Licence holders who wish to expand their operations may be required to reapply for a new licence and complete a new CSPR at the discretion of Parks Canada.

1.4. PROJECTS SUBJECT TO THE MODEL CLASS SCREENING

1.4.1. Projects Subject to the Act

All commercial guiding operations in national parks require a business licence in accordance with direction provided by Section 3 of the *National Parks Businesses Regulations* 1998. Section 13.1 of the *Inclusion List Regulations* under the *Canadian Environmental Assessment Act* defines recreational activities that take place outdoors in a national park, outside of a town or visitor centre, as projects under the *Act.* Because a permit is required pursuant to subsection 5.1 of

the *National Parks Businesses Regulations* 1998 (included in section 24.1 (Schedule I, Part II) of the *Law List Regulations* under the *Act*), the issuance of such authorization triggers the *Act*, and an environmental assessment will be required. Subsection 5.1 of the *National Parks Businesses Regulations 1998* requires that the superintendent consider the effects of a business on:

- the natural and cultural resources of the park;
- the safety, health and enjoyment of persons visiting or residing in the park;
- the safety and health of persons availing themselves of the goods or services offered by the business; and,
- the preservation, control and management of the park.

The net result of applying the above regulations is that all commercial ecotourism guiding operations require a business licence: and, prior to the issuance of a business licence, the proposed operation must undergo an environmental assessment under the *Act* as a means of evaluating the impacts of the business on the park.

1.4.2. Projects Subject to the MCSR

Commercial guiding activities included within the scope of the model class screening report include all motorized and non-motorized, land-based and water-based guiding activities taking place in Pacific Rim National Park Reserve. For the purposes of this screening report, those businesses are reviewed based on the activities in which they engage (note: one business may engage in several activities). Activities (or subclasses) include: i) guided marine wildlife viewing, ii) kayaking, iii) surfing, iv) surf kayaking, v) hiking, vi) overnight use (including camping, food handling, waste disposal) and vii) transportation services.

All ecotourism related business licences issued by PRNPR include a set of operator standards that must be followed for the licence to remain valid. The operator standards and mitigations vary depending on the activity. For example, the operator standards for marine wildlife viewing include descriptions of vessel approach distances to whales, pinnipeds, sea birds, and boat routes through Grice Bay. The operator standards for surf instruction describe the beaches that may be used by the groups, the times of year, and suggested group size to guide ratios. These sets of PRNPR operator standards, in particular those for marine wildlife viewing, were derived from public consultation sessions conducted over several years (2002-2004). Sessions included formal workshops, informal meetings and phone calls with many ecotourism operators, community members and experts in the fields of marine mammal ecology and resource management. The goal was to ensure that the operator standards adopted by the National Park protected the ecological integrity of the Park, addressed the sustainability of ecotourism and, ensured safety and a positive visitor experience.

The activities are not meant to be mutually exclusive. Rather, activities are separated to make it easier to analyze for environmental effects and identify mitigations. The list of specific activities covers most commercial guiding services known to be currently operating in PRNPR. The list does not include all recreational activities that may occur in national parks; only those that are the focus of current commercial ecotourism guiding services in PRNPR.

1.5. SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The scope of the environmental assessment for commercial ecotourism guiding activities must remain consistent with PRNPR management directions with respect to ecological and cultural integrity as well as with the quality of visitor experience. Existing management direction is used

to focus this environmental assessment on the most relevant management issues. The mitigation identified within the MCSR and CSPRs will be consistent with management plans, human use strategies and any other appropriate guiding documents.

1.5.1. Scope of Factors to be Considered

The environmental assessment of commercial guiding activities in Pacific Rim National Park Reserve is based on factors as outlined in section 16(1) of the *Act*. Direction from the PRNPR Interim Management Guidelines (IMGs) is used to focus the environmental assessment on the most relevant management issues, through the identification of valued ecosystem components.

1.5.2. Valued Ecosystem Components

Valued Ecosystem Components (VECs) were selected based on regional and park specific issues of concern as well as on ecological integrity indicators as identified in the PRNPR PMP, IMGs, and Ecological Integrity Statement (EIS). The VECs selected in this assessment represent ecosystem components that are particularly sensitive and vulnerable to disturbance and/or are likely to be impacted by the activities covered by this MCSR. The selected VECs serve as the focus of the "environmental effects analysis".

VECs in this report are grouped into six broad categories:

i) Soils
ii) Vegetation (includes plant species and communities),
iii) Wildlife (includes all animals terrestrial and aquatic),
iv) Water Quality,
v) Cultural Resources, and
vi) Visitor Experience.

Information from the park IMGs, the EIS statement, the BC Conservation Data Centre (CDC) and the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has been used to advise on the selection of VECs. Additional VECs were added based on the expert advice of park ecologists.

1.5.3. Identification of Potential Environmental Effects and Standard Mitigation Practices

The environmental impact analysis of ecotourism based commercial guiding activities is based upon a three-tiered assessment approach organized into 1) activity-specific, 2) site-specific and 3) cumulative effects analysis (Figure 3). The three-tiered environmental assessment approach is designed to address the requirements of the *Canadian Environmental Assessment Act,* and to be consistent with guidance provided by the *Canada National Parks Act, Guiding Principles and Operational Policies* (Canadian Heritage, Parks Canada 1994) and the PRNPR Management Plan (1994) and the draft Interim Management Guidelines (2003).

First, the ***activity-specific*** environmental assessment describes the project activities and evaluates the environmental impacts associated with each specific category of commercial guiding activity covered under the scope of the model class screening: guided marine wildlife viewing, kayaking, surfing, surf kayaking, hiking, overnight use, SCUBA diving and transportation services. Mitigation to address environmental impacts at this level of assessment focuses on the development of a set of standardized Best Management Practices (BMPs) for

each activity. BMPs associated with each activity are researched, reviewed and selected for their application to a national park setting. Including BMPs as a condition of a business licence is intended to ensure that operators in the field implement appropriate environmental practices in a consistent fashion. The activity-specific environmental assessment and mitigation is completed within the scope of the MCSR.

Second, the ***site-specific*** environmental assessment identifies and evaluates environmental or culturally significant sites with unique characteristics that may be considered vulnerable to the impacts of commercial guiding activities. Special Preservation Zones and Environmentally Sensitive Areas (ESAs) are identified through park management plans (and IMGs). Culturally sensitive sites, and other sites identified by Parks Canada are evaluated for environmental sensitivities and potential impacts that may not be effectively mitigated through the application of the standard BMPs. Site-specific mitigations for commercial operators using these areas are identified as appropriate. The site-specific environmental assessment and mitigation is completed within the scope of the MCSR.

Third, the ***cumulative effects*** assessment (CEA) describes and evaluates the impacts of commercial guiding activities in combination with other past, present and future human use impacts. The approach to the CEA of commercial guiding activities has been aligned with the approaches and direction taken to human use management as outlined in other park management plans across the national park network. The CEA identifies and evaluates areas that are considered to be vulnerable in PRNPR to overall human use impacts based on indicators of ecological integrity. Areas considered vulnerable to cumulative human use impacts are assessed using the Class Screening Project Report process. The CSPR also provides the opportunity to identify any additional activity-specific or site specific environmental effects that may not have been addressed within the scope of the MCSR.

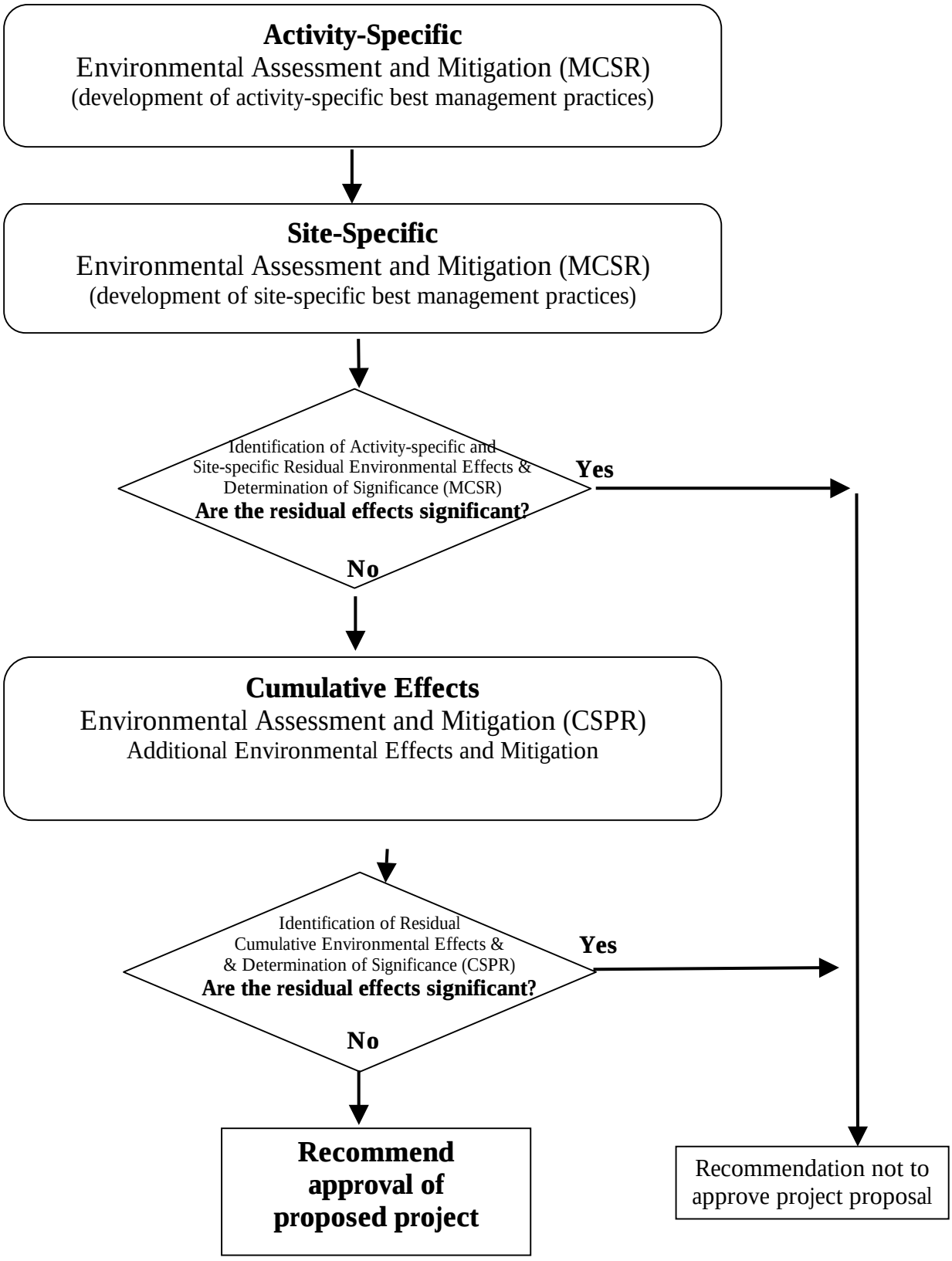


Figure 3. PRNPR: Business Licences Model Class Screening environmental assessment review process portrayed as a decision flowchart.

1.5.4. Definition and Evaluation of Significant Environmental Effects

Responsible Authorities are required to make a decision on the significance of adverse environmental effects of a proposed project pursuant to Section 20 of the *Act*. A determination of the significance of effects is required for all VECs identified.

Significant, adverse, environmental impacts to ecological integrity are considered to be those likely to threaten the continued existence of native species or biological communities, or the ecological or cultural integrity of the National Park. Adverse impacts to cultural resources are evaluated in terms of risk to the integrity and context of the site in consultation with Parks Canada cultural resources experts. Potential impacts to the use of cultural resources or impacts to related functions of other governments and communities, especially First Nations, will also be considered (Environment Canada, National Historic Sites Directorate *et al*., 1993). Adverse impacts to visitor experience are evaluated in terms of potential effects upon visitor satisfaction, health and safety.

The criteria of magnitude, geographic extent, duration, frequency, and reversibility will be used to evaluate the significance of environmental impacts. These are defined in Table 1. Significance is determined at the activity-specific and site-specific scale in the MCSR and again, with respect to additional and cumulative environmental effects, through the CSPR process.

Table 1: Significance Criteria Description

Criterion	Negligible	Minor	Considerable
Magnitude	Effect results in disturbance which is small in area or intensity, and is well below the threshold of leaving permanent impacts	Effect results in damage	**Effect results in destruction**
Geographic Extent	Effect is limited to the activity footprint and adjacent areas	Effect is likely to have impacts at an ecosystem scale	**Effect is likely to have impacts at a regional scale**
Duration of Activity	Minutes to hours	Days to weeks	**Months or longer**
Frequency	Effects occur on a monthly or yearly basis	Effects occur on a monthly to weekly basis	**Effects occur on a weekly to daily basis or more often**
Irreversibility	Effects are reversible, (VEC's can recover from the disturbance) over a short period of time, without active management	Effects are reversible, with active management, over a short period of time; or, if active management is not possible, effects are reversible over a season	**Effects are reversible with active management over an extended period of time; or if active management is not possible, effects are permanent**

2. ENVIRONMENTAL SETTING

The land base of PRNPR includes representative natural areas of the coastal plain portion of the Pacific Coast Mountains Natural Region (coastal temperate rainforests) and the near shore waters of the West Vancouver Island Marine Region. The definition of the area is part of the *National Parks System Plan* devised in the early 1970s. Canada was divided into 39 distinct "National Park Natural Regions" based on (the appearance of the land) and vegetation. The goal of the System Plan is to represent each natural region in the national parks system in order to protect a representative sample of each of Canada's landscapes.

PRNPR protects representative samples of the Pacific Coast Mountains natural region ecosystems while encouraging public understanding, appreciation and enjoyment of the area in a way that will leave it unimpaired for future generations. Pacific Rim contains significant areas of old growth coastal rainforest, and riparian ecosystems. Coastal dune systems, wetlands and Spruce fringe habitats harbour a number of rare species. The marine component includes intertidal as well as sub-tidal regions, which affords a range of ocean habitats for a rich marine flora and fauna. An important stop for migratory birds, Pacific Rim hosts a diversity of bird species which is amongst the largest in North America.

Section 2 describes the environmental setting within PRNPR wherein commercial ecotourism activities take place, focussing on a discussion of land use and management within the National Park (2.1.) and a description of the natural and cultural resources of PRNPR, identifying VECs (2.2.).

2.1. LAND USE AND MANAGEMENT IN THE NATIONAL PARKS

Canada's national parks have a long history of land management for outdoor recreational purposes. However, the national parks also have an established history of resource management for the conservation of ecological and cultural values. The *Canada National Parks Act* and The *Parks Canada Guiding Principles and Operational Policies* (Canadian Heritage, 1994) document the overarching laws and policies that guide the management of all national parks including PRNPR. PRNPR has the legal authority under the *CNPA* to enforce the regulations contained therein and to manage activities and protect resources within the park. To this end, PRNPR has engaged in ecological and cultural resource inventories, planning and zoning activities, installation of appropriate park facilities and employment of trained staff.

2.1.1. National Park Zoning System

The national parks zoning system is an integrated approach to the classification of terrestrial and aquatic areas in the national parks. Areas are classified according to the need to protect the ecosystem and the parks' cultural resources. The capability and suitability of areas in terms of providing visitor use opportunities is also a consideration in making decisions about zoning. The zoning system has five categories, which are described in *Parks Canada: Guiding Principles and Operational Policies* (Canadian Heritage Parks Canada, 1994).

As the zoning system generally addresses the appropriate types and intensity of visitor use in a given area, it is relevant and should be considered in the assessment and management of commercial guiding activities.

2.1.2. The Zoning System as Applied at Pacific Rim National Park Reserve.

The zoning system for national parks PRNPR is defined in *Guiding Principles and Operational Policies,* (Heritage Canada, 1994) and is summarized in Table 2. This zoning system, as applied at PRNPR,

forms the basis for the PMP, and draft IMGs. The zoning for PRNPR is displayed graphically as Figures 4, 5 and 6. (Appendix B gives a written description of the areas defined in the maps).

Table 2. The Zoning system as applied at Pacific Rim National Park Reserve (Canadian Heritage 1994).

The National Parks Zoning System	
The Terrestrial Zoning System	**The Marine Zoning System**
Zone 1 - Special Preservation Areas which contain or support unique, threatened or endangered natural or cultural features, or which are among the best examples of the features that represent a natural region. Preservation is the key consideration. Motorized access and circulation will not be permitted. Other access and use will be strictly controlled. No facility or service development will be allowed.	**Zone 1 - Preservation** Areas which contain or support unique, threatened or endangered natural or cultural features, or which are among the best examples of the features that represent a marine natural region. Preservation will be the key consideration. Motorized access and circulation will not be permitted. Other access and use will be strictly controlled. No facility or service development will be allowed.
Zone 2 - Wilderness Extensive areas which are good representations of a natural region and which are conserved in a wilderness state. The perpetuation of ecosystems with minimal human interference is the key consideration. Motorized access will not be permitted. Few, if any, rudimentary facilities and services will be allowed.	**Zone 2 - Natural Environment** Highly representative marine areas which provide opportunities for non-consumptive recreational use, public education and research in as natural an area as possible. Resource harvesting will be kept to a minimum. The use of non-motorized transport will be encouraged. Only minimal facility development will be allowed.
Zone 3 - Natural Environment Areas which are managed as natural environments and which provide opportunities for visitors to experience a park's natural and cultural heritage values through outdoor recreation activities requiring minimal services and facilities of a rustic nature. Access by motorized transport may be permitted, but non-motorized access will be preferred.	**Zone 3 - Conservation** Areas which can provide for a broad spectrum of outdoor recreation and public education activities consistent with the conservation of a marine park. Related facilities for conservation area administration, public education and visitor service will be allowed. Approved fisheries and motorized transportation will be permitted.
Zone 4 - Outdoor Recreation Limited areas which are capable of accommodating a broad range of opportunities for understanding, appreciation and enjoyment of the natural and cultural heritage values of the park along with related, essential services and facilities, in ways that impact the ecological integrity of the park to the smallest extent possible. Motorized access will be permitted.	

Zone 5 - Park Services Communities in existing national parks which contain a concentration of visitor services and support facilities.	
Environmentally Sensitive Areas (ESA's) Areas within an existing zone with significant and sensitive features which require special protection. Unlike Zone 1 designated areas, an ESA may accommodate some levels of controlled visitor activity. Area-specific guidelines are developed for each ESA.	**Environmentally Sensitive Sites (ESA's)** Areas within an existing zone with significant and sensitive features which require special protection. An ESA may accommodate some levels of controlled visitor activity. Area-specific guidelines are developed for each ESA.

The *Canada National Parks Act* provides for the designation, by regulation, of wilderness areas of the park. A high level of ecological integrity is synonymous with wilderness. The intent of the wilderness declaration is to assist in ensuring a high level of ecological integrity by preventing activities likely to impair wilderness character. The perpetuation of ecosystems with minimal human interference is the key consideration in maintaining wilderness character. Only development and activities required for essential services and the protection of the park resources will be permitted in declared wilderness areas. Human use levels in declared wilderness areas will be managed based on landscape management unit objectives and human use strategies.

Long Beach Unit (LBU)

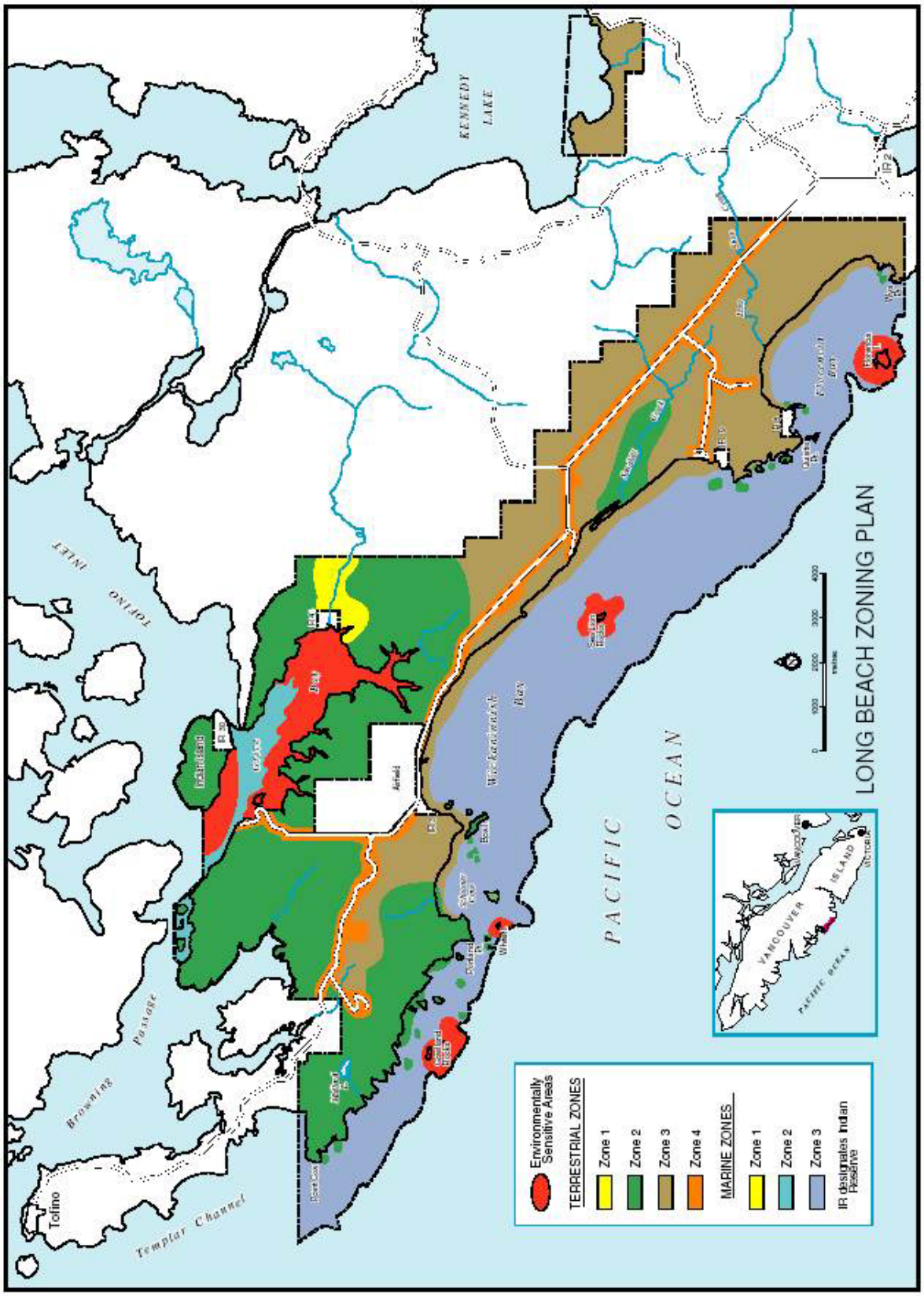


Figure 4. Zoning map of the Long Beach Unit, PRNPR

Broken Group Islands (BGI) Unit

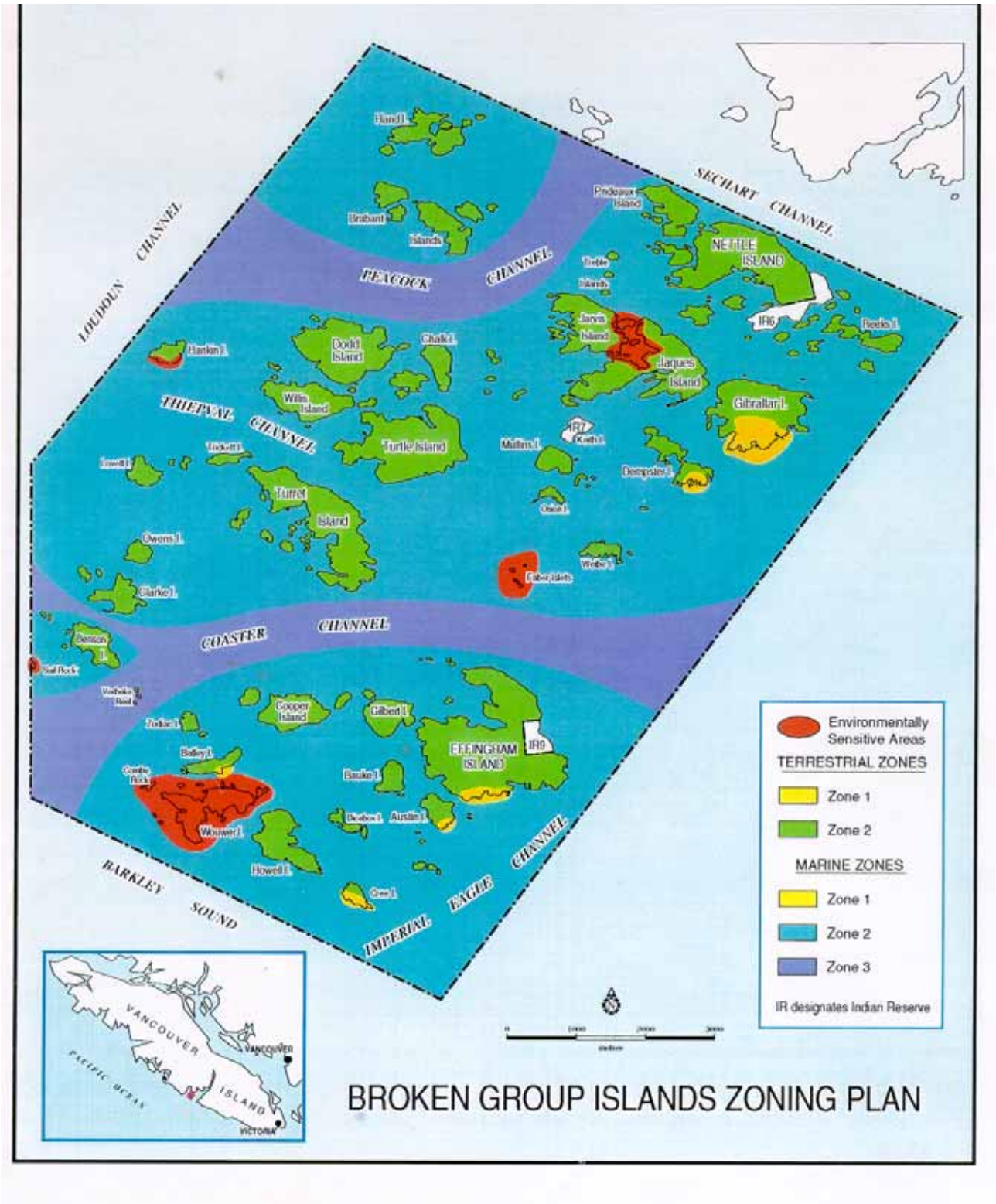


Figure 5. Zoning map of the Broken Group Islands Unit, PRNPR

West Coast Trail (WCT) Unit

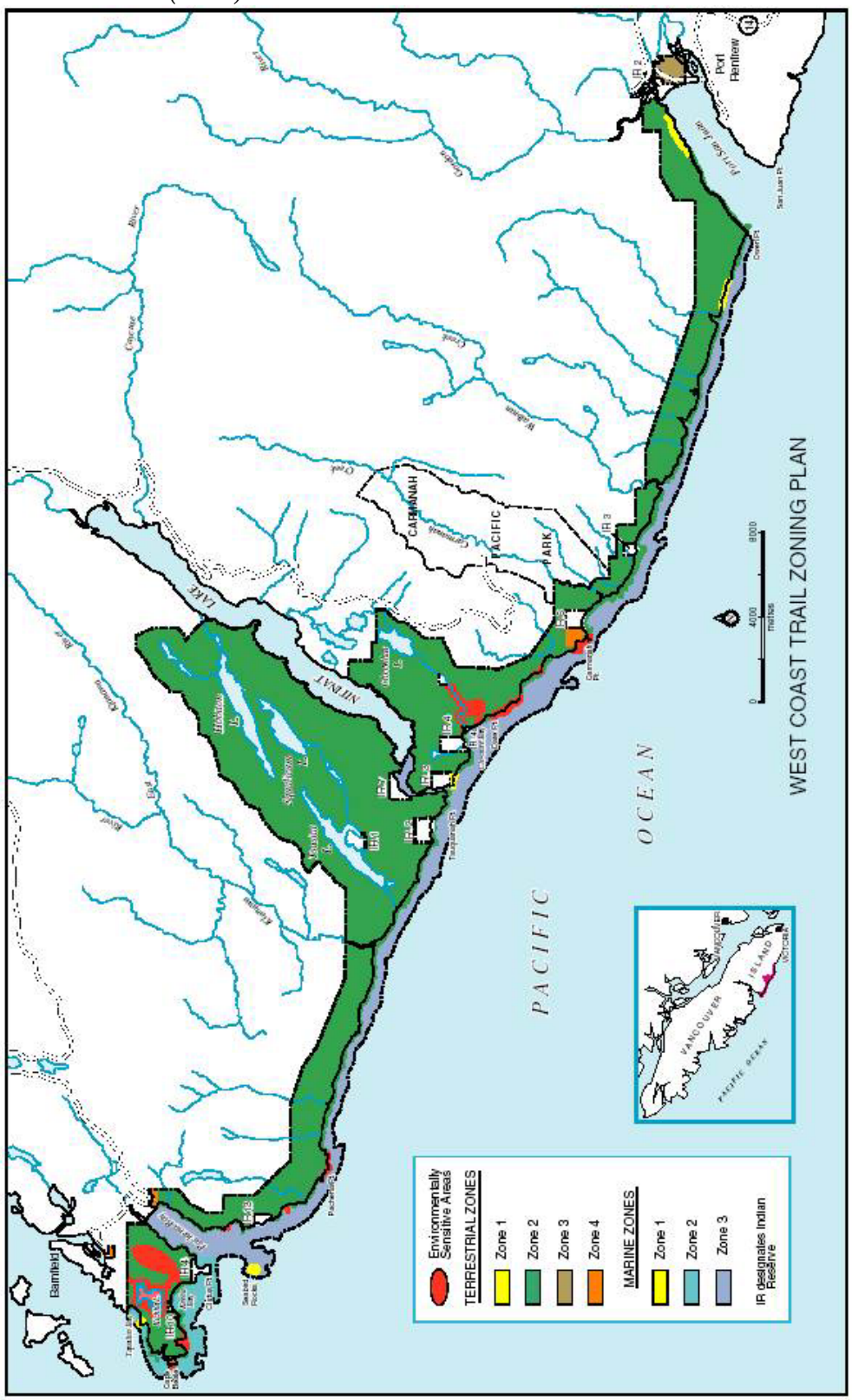


Figure 6. Zoning map of the West Coast Trail Unit, PRNPR

2.1.3. Aboriginal Land Use in PRNPR

PRNPR spans sections of the traditional territories of six different First Nations: the Tla-o-qui-aht, Ucluelet, Tseshaht, Huu-ay-aht, Ditidaht, and Pachedaht First Nations. Traditional use of the region by these First Nations continues today, and it is reflected in the MOU's that the Park currently holds with each.

Traditional uses within the boundary of the Pational Park include travel, gathering, hunting, fishing and ceremonial functions. References to "visitors" within the context of this environmental assessment do not refer to aboriginal people.

Increasingly, traditional knowledge of the area contributes to the parks operation and management. The PRNPR First Nations Program Manager and First Nations Liaison staff are responsible for various aspects of the first nations partnerships, including negotiating tourism MOU's, and educating visitors about local first nations culture. Last year the Park unveiled a new interpretive trail entitled the Nuu-chah-nulth trail, which features signs written by Nuu-chah-Nulth elders and others highlighting first nations traditional ecological knowledge (TEK) and culture.

All work relating to first nations cultural activities falls under the partnership agreements that PRNPR has with the aboriginal nations in the region. No first nations cultural work takes place without the partnership and involvement of the first nation in whose territory the activities take place. Where traditional use or culturally important sites are negatively impacted by visitor use or park operations, PRNPR takes management actions in partnership with the first nations to mitigate negative impacts

2.1.4. Visitor Numbers at PRNPR

Of the three units of the Park, the Long Beach Unit sees the greatest numbers of visitors. Over the past two seasons, visitation numbers to the Long Beach Unit alone have been well over 700,000 people (Figure 7). On average, the park sees a 2-8% increase in the numbers of visitors each year to the LBU. In the other two units we have seen the numbers reach a steady plateau. There is some indication that the numbers of people kayaking in the BGI is beginning to decrease (possibly by as much as 30%).

The West Coast Trail sees about 1% of the total number of LBU visitors (Figure 9). Based on the physical capacity of the trail to accommodate hikers, each year a maximum of 8000 hikers are allowed to hike the West Coast Trail. For the past several years the number of hikers on the trail has averaged about 5700 people. The trail is open between May 1st and September 30th each year. The seasonal operation and quota limitation serves to constrain the extent of negative environmental effects (trail braiding, vegetation trampling, campsite expansion, and outhouse/pit-privy use).

All overnight users of the West Coast Trail (WCT) must participate in an orientation session. The purpose of the orientation is to:

- reduce the number of hiker injuries by addressing common safety issues,
- reduce environmental impacts of human use by providing backcountry etiquette information,
- provide information to hikers about current issues and trail conditions, and
- provide a brief history of the West Coast Trail and its place in Canada's heritage.

During the orientation session the overnight user passes are issued and the user fees are collected. The whole process takes ~1.5 hrs. (Pre-trip information is also available on the internet, refer to example shown as Appendix D).

In the summer of 2004, the BGI saw ~4000 visitors (~22,000 user nights). The average stay for a visitor in the Broken Group Islands is ~ 4-5 days. Visitor numbers, based on the numbers of camping permits sold indicate that overnight use in the BGI has plateaued over the past 3 years, and may be decreasing. PRNPR warden staff in the BGI report that the 2004 BGI user numbers reflect a significant drop from previous years. These data reflect only overnight kayaking trips in the BGI. Other un-recorded uses include extensive "day use" by kayakers, recreational motor boats, and commercial & sport fishing.

All overnight kayaking groups, commercial and non-commercial, are offered orientation sessions at the Tsehsart Lodge, a privately owned facility in Barkley Sound that is a popular location for kayakers to begin their trip. Orientation sessions are similar to those offered for hikers on the WCT, and include information on the ecology of the area, wildlife viewing guidelines and public safety. (Pre-trip information is also available on the internet, refer to example provided as Appendix D).

The majority (>95%) of the visitation in the LBU is for the purposes of non-commercial recreational activities with the peak visitation occurring in August (Figure 11). On the WCT, about 30% of the use can be for educational/school and commercially guided groups. However, user data indicate that the numbers of commercially guided groups on the WCT have remained less than this in any given year. In comparison, 40% of kayaking visitors in the BGI were on commercially guided trips in 2000 (Randall, 2001). That percentage dropped to 16% in 2003, and 21% in 2004 (based on overnight camping permit data).

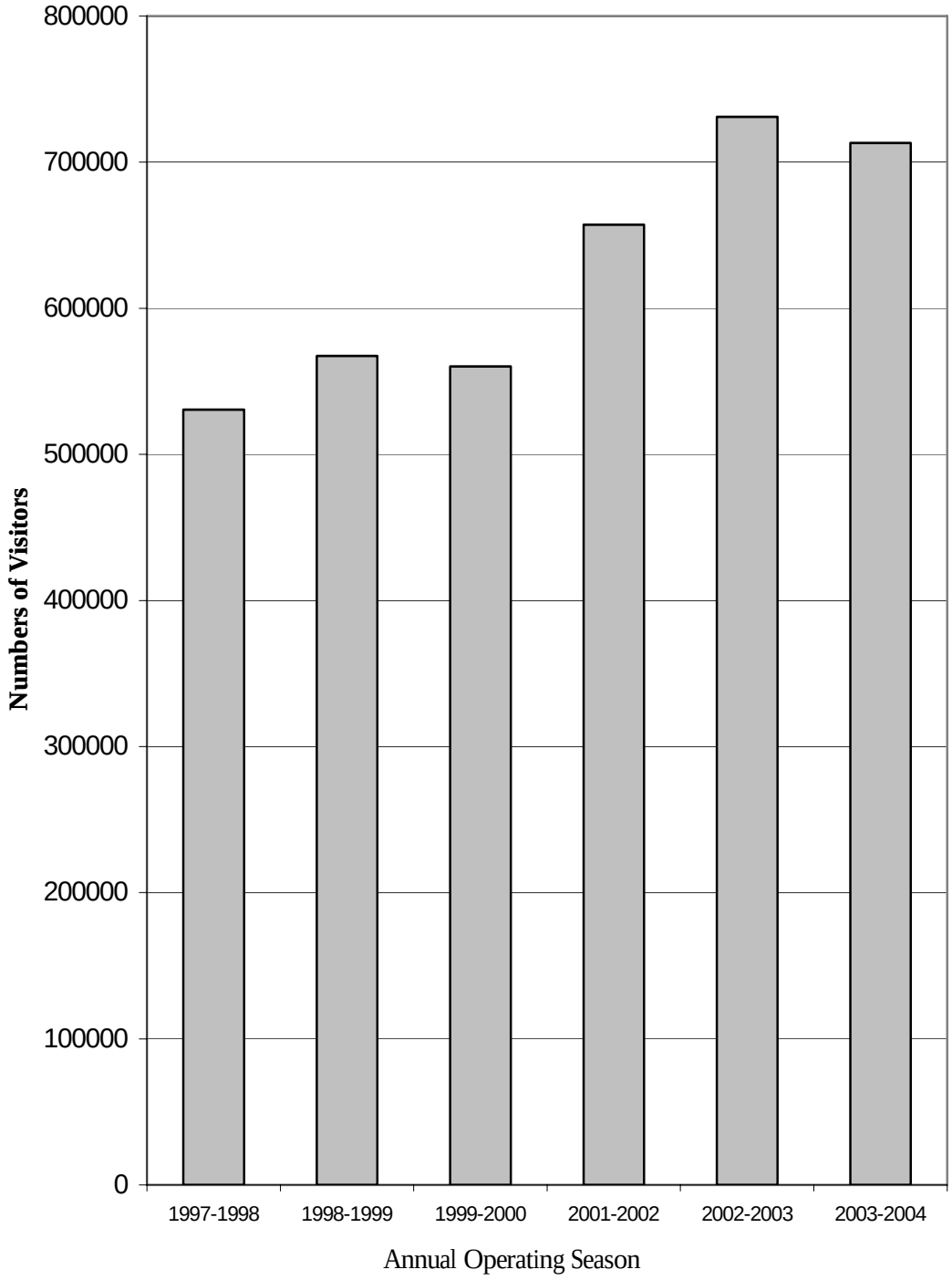


Figure 7. Long Beach Unit visitor numbers (Data were collected using highway counters and converted to numbers of visitors based on formulae derived from detailed visitor exit surveys).

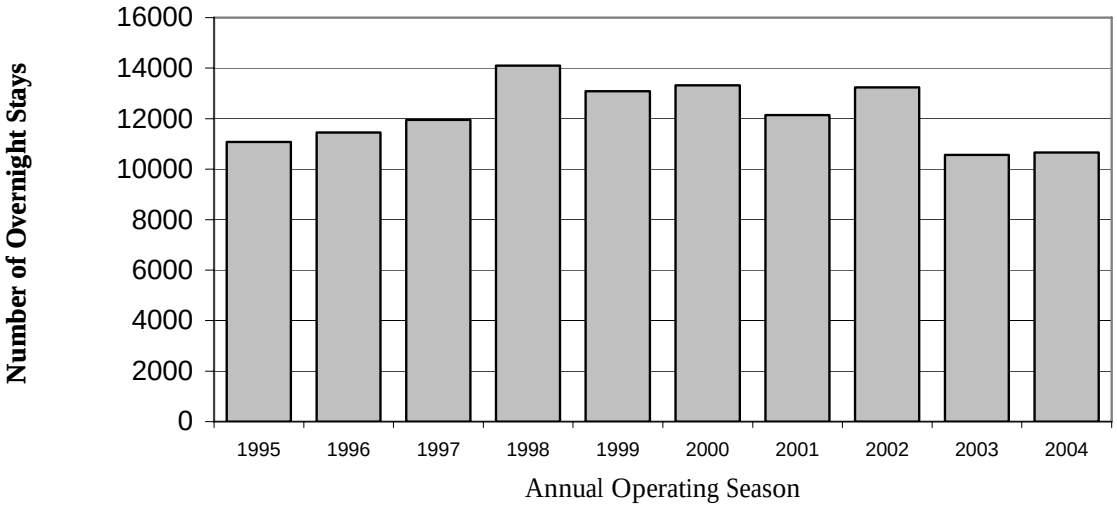


Figure 8. Numbers of overnight stays in the Broken Group Islands by year. These data represent only the numbers of camping permits sold each year between May 1st and September 30th. These data represent the number of user nights for the campsites in the BGI each year, and do not reflect the amount of day use nor the amount of other types of boating and mooring in the BGI. The data show a peak in user nights in 1998. User levels in 2004 have dropped by about 3000 user nights since 1998.

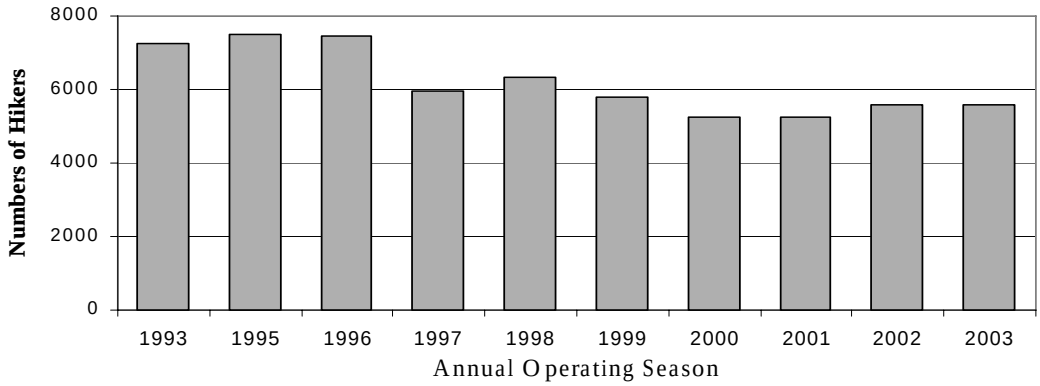


Figure 9. West Coast Trail hiker numbers. Data were collected by PRNPR staff at the north and south trailheads. These data represent the total numbers of people who purchased passes and attended the orientation sessions to hike the West Coast Trail each year. Note that day use numbers are not included in these figures.

Different outdoor ecotourism related activities show differing trends in popularity. For example, while beach use in the LBU has dropped (Figure 10), surfing has increased over 400% in the past five years (Figure 11). This trend is likely due to the new found popularity of the sport, its promotion in media and television, and the accessibility afforded by commercial operators in the region offering gear rental and instruction.

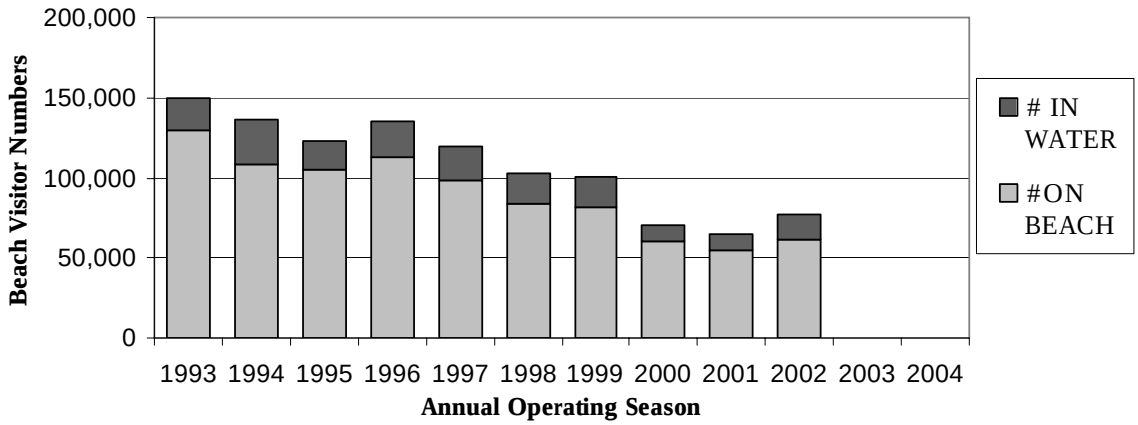


Figure 10. Long Beach: Beach user numbers (collected by the PRNPR Surfguard Staff stationed at Long Beach surf guard tower, at 14:00 hrs each day during their operational season Canada Day to Labour Day). No data were available for the 2003 and 2004 operating seasons.

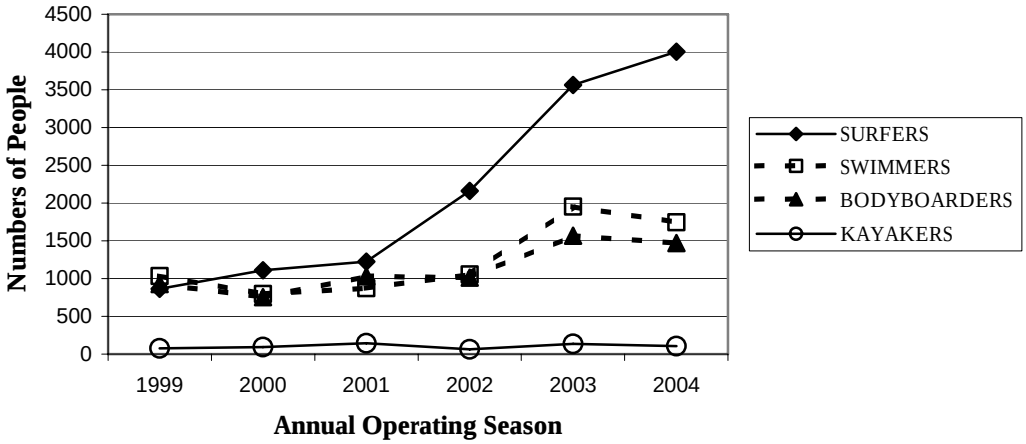


Figure 11. Long Beach Water Use: Numbers of visitors engaged in surfing, swimming, bodyboarding, & surf kayaking. This information was collected by the PRNPR Surfguards at 14:00 hrs each day during their operational season (Canada Day to Labour Day). These data show a 400% increase in surfing over the past five years.

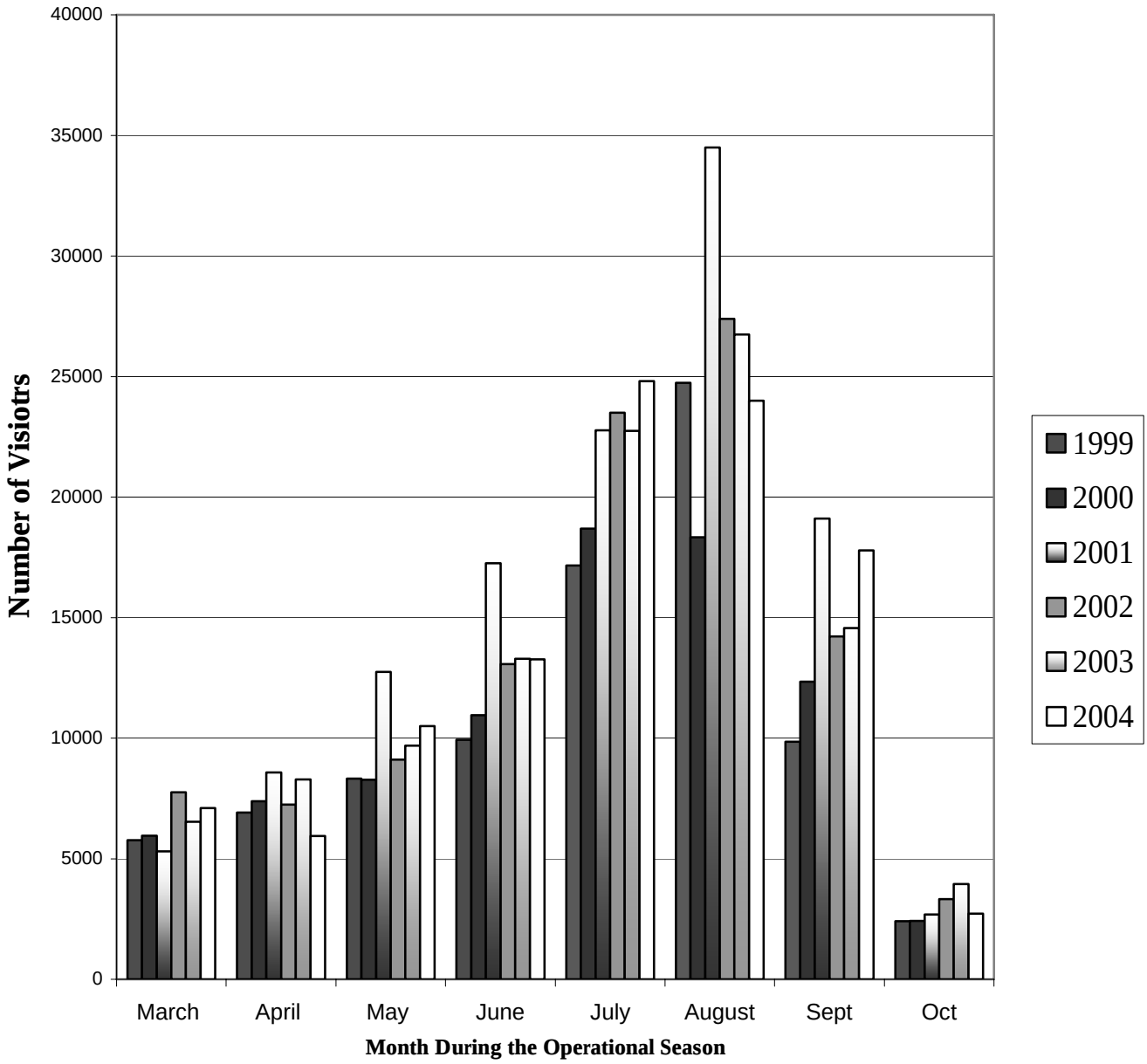


Figure 12. Wickanininsh Interpretive Centre (LBU) visitor numbers. Data collected by PRNPR Heritage Communication staff at the centre every day during the operational season (March-October). The busiest months for the Park are July-September, with August showing peak visitor numbers.

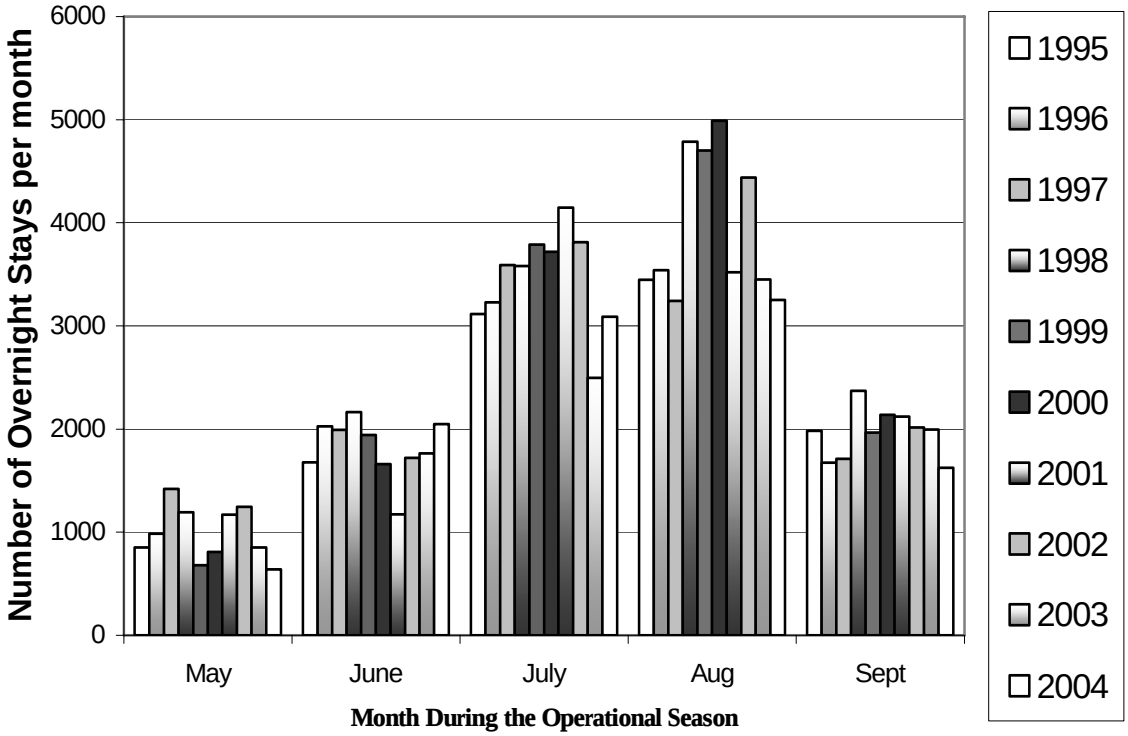


Figure 13. Numbers of camping permits purchased in the BGI by month during the 1995-2004 operational seasons. These data show the same general trends as the LBU user numbers. The busiest times in the National Park are July and August.

2.2. DESCRIPTION OF NATURAL AND CULTURAL RESOURCES

For the purposes of this assessment natural and cultural resources are divided into the following groups: a) soils, b) plants and vegetation communities, c) wildlife (includes both terrestrial and aquatic species), d) water resources and, e) cultural resources.

In British Columbia, both the Ministry of Water Land and Air Protection and the Conservation Data Centre (within the British Columbia Ministry of Sustainable Resource Management) maintain tracking lists of rare animals, vascular plants and plant communities for each Forest District in British Columbia. PRNPR is located in the South Island Forest District which covers the southern third of Vancouver Island. Under the ranking system, elements at high risk of extinction or extirpation are placed on the Red List, while those considered vulnerable to human activity or natural events are placed on the Blue List.

The *Species at Risk Act* defines criteria for listing species under federal legislation, affording listed species additional protection. Several of the federally listed species occur and breed within the National Park. PRNPR is responsible for the conservation and recovery strategy for the Seaside Centipede lichen (*Heterodermia sitchensis).* Further, there are requirements under section 2(1) of the *Canadian Environmental Assessment Act*, to assess environmental effects as they pertain to species at risk:

> *"environmental effect" means, in respect of a project,*
> *(a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act.*

Lists of rare plants and animals for Pacific Rim National Park Reserve are currently being updated. Interim lists of species designated under the provincial and federal systems are shown in Tables 3 and 4, respectively.

Table 3. Red & Blue ranked species in Pacific Rim National Park Reserve according to BC Conservation Data Centre ranking system (See definitions of the rankings below). This table summarizes best information available to date with some gaps identified. This information is currently being compiled, verified and updated by B. Campbell and C. Webb (2004, report *in progress*).

RED: *Includes any indigenous species, subspecies or plant community that is extirpated, endangered, or threatened in British Columbia. Extirpated elements no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered elements are facing imminent extirpation or extinction. Threatened elements are likely to become endangered if limiting factors are not reversed. Red listed species and sub-species have- or are candidates for- official Extirpated, Endangered or Threatened Status in BC. Not all Red-listed taxa will necessarily become formally designated. Placing taxa on these lists flags them as being at risk and requiring investigation.*

BLUE: *Includes any indigenous species, subspecies or community considered to be of special concern (formerly vulnerable) in British Columbia. Elements are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed elements are at risk, but are not Extirpated, Endangered or Threatened.*

Group	Common Name	Latin - Scientific Name	BC Status	In Park	Breeds in Park	Source and Comments
Arthropods Butterflies	Moss' Elfin, Mossii Subspecies	*Incisalia mossii mossii*	BLUE	Unconfirmed		Needs stonecrop, some of which is in the PRNPR
Arthropods Butterflies	Johnson's Hairstreak	*Loranthomitoura johnsoni*	RED	Unconfirmed		PRNPR contains larval food plant
Birds	Canada Goose, Occidentalis Subspecies	*Branta canadensis occidentalis*	BLUE	Unconfirmed		Barry Campbell
Birds	Band-tailed Pigeon	*Columba fasciata*	BLUE	Yes		Barry Campbell
Birds	Tufted Puffin	*Fratercula cirrhata*	BLUE	Yes	Likely	Barry Campbell; The Tufted Puffin likely nests in small numbers in park
Birds	Northern Pygmy-owl, *Swarthi* Subspecies	*Glaucidium gnoma swarthi*	BLUE	Yes	Potentially	WBT checklist list (rare year round, breeds in area)
Birds	Surf Scoter	*Melanitta perspicillata*	BLUE	Yes	?	Barry Campbell; bird list (common)
Birds	Brandt's Cormorant	*Phalacrocorax penicillatus*	RED	Yes	Sometimes	Barry Campbell, note that breeding has occurred on sea lion rocks
Birds	Pine Grosbeak, *Carlottae* Subspecies	*Pinicola enucleator carlottae*	BLUE	Casual	No	Bird list (casual)
Birds	Cassin's Auklet	*Ptychoramphus aleuticus*	BLUE	Yes	Rare	Barry Campbell, breeding occurrences at Sea Bird rocks (WCT)
Birds	Common Murre	*Uria aalge*	RED	Yes	Rare	B. Campbell; PRNPR bird list, numbers of breeding occurrences in PRNPR would be minor – need cliff faces
Fish	Cutthroat Trout, *Clarki* Subspecies	*Oncorhynchus clarki clarki*	BLUE	Yes	Yes	Barry Campbell Common in many creeks around area
Mammals	Roosevelt Elk	*Cervus elaphus roosevelti*	BLUE	Yes	?	Barry Campbell Animals and tracks seen in park; Minor range in the park which is a recent development.
Mammals	Townsend's Big-eared Bat	*Corynorhinus townsendii*	BLUE	Potentially		

Table 3. BC CDC List Con't

Group	Common Name	Latin - Scientific Name	BC Status	In Park	Breeds in Park	Source and Comments
Vascular Plants	Yellow Sand-verbena	*Abronia latifolia*	BLUE	Yes		
Vascular Plants	Two-edged Water-starwort	*Callitriche heterophylla ssp. heterophylla*	BLUE	Yes	Yes	Rare plants; PRNPR plant survey Broken Group Islands
Vascular Plants	Paintbrush Owl-clover	*Castilleja ambigua ssp. ambigua*	RED	Yes		Barry Campbell
Vascular Plants	Beach Bindweed	*Convolvulus soldanella*	BLUE	Yes	Yes	PRNPR records Records from LBU and WCT
Vascular Plants	American Glehnia	*Glehnia littoralis ssp. leiocarpa*	BLUE	Yes		Park records
Vascular Plants	Fleshy Jaumea	*Jaumea carnosa*	BLUE	Yes		PRNPR plants Barkley sound
Vascular Plants	Gray Beach Peavine	*Lathyrus littoralis*	RED	Yes		Barry Campbell
Vascular Plants	California Wax-myrtle	*Myrica californica*	BLUE	Yes		PRNPR records
Vascular Plants	Redwood Sorrel	*Oxalis oregana*	RED	Yes		Barry Campbell
Vascular Plants	Black Knotweed	*Polygonum paronychia*	BLUE	Yes		Barry Campbell, sand dune habitat
Vascular Plants	Tracy's Romanzoffia	*Romanzoffia tracyi*	BLUE	Yes		PRNPR records
Vascular Plants	Menzies' Burnet	*Sanguisorba menziesii*	BLUE	Unconfirmed		Ucluelet record, and West Coast Trail
Vascular Plants	Olney's Bulrush	*Schoenoplectus americanus*	RED	Yes		PRNPR records, but rare plants range map shows no records of this species on the west coast
Vascular Plants	Oregon Selaginella	*Selaginella oregano*	BLUE	Yes		These plants are rare in the park; Barry Campbell, Broken Group Islands

Table 4. Federal COSEWIC list of species at risk in Pacific Rim National Park Reserve. Table summarizes best information available to date with information gaps identified. Data in tables compiled by Barry Campbell and Conan Webb (2004, report *in progress*). A more complete table will be included with their final report. The following definitions are applied by COSEWIC:

Species Any indigenous species, subspecies, variety, or geographically defined population of wild fauna and flora.
Extirpated (XT) A species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E) A species facing imminent extirpation or extinction.
Threatened (T) A species likely to become endangered if limiting factors are not reversed.
Special Concern (SC) * A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.

COSEWIC GROUP	COMMON NAME	LATIN NAME	STATUS	LAST EXAMINATION / CHANGE	IN PARK	BREEDS IN PARK	SOURCES
Amphibians	Toad, Western	*Bufo boreas*	Special Concern	November 2002 (New)	Yes	Potentially	B. Campbell reported a few on trails in the 1970's; 1972 Herpitile report
Amphibians	Frog, Red-legged	*Rana aurora*	Special Concern	May 2002 (No Change)	Yes	Yes	COSEWIC report; Amphibian study- Beasley 2003
Birds	Goshawk laingi subspecies, Northern	*Accipiter gentilis laingi*	Threatened	November 2000 (In a higher risk category)	Yes	Potentially	WBT Checklist Database(casual); PRNPR Bird Database vrW
Birds	Heron fannini subspecies, Great Blue	*Ardea herodias fannini*	Special Concern	April 1997 (New)	Yes	Doubtfull	Barry Campbell; PRNPR Database
Birds	Owl, Short-eared	*Asio flammeus*	Special Concern	April 1994 (New)	Casual	No	Nonbreeding in Park; WBT checklist Database (rare in winter)
Birds	Murrelet, Marbled	*Brachyramphus marmoratus*	Threatened	November 2000 (No Change)	Yes	Potentially	Park bird Database
Birds	Falcon *anatum* subspecies, Peregrine	*Falco peregrinus anatum*	Threatened	May 2000 (No Change)	Yes	Potentially	Museum samples; pers comm.
Birds	Falcon pealei subspecies, Peregrine	*Falco peregrinus pealei*	Special Concern	November 2001 (No Change)	Yes	Potentially	Museum samples; pers comm.
Birds	Screech-Owl kennicottii subspecies, Western	*Megascops kennicottii kennicottii*	Special Concern	May 2002 (Reassigned)	Yes	Yes	Barry Campbell; PRNPR Bird Database
Birds	Curlew, Long-billed	*Numenius americanus*	Special Concern	November 2002 (No Change)	Casual	No	Spring occurrences, Barry Campbell
Birds	Shearwater, Pink-footed	*Puffinus creatopus*	Threatened	May 2004 (New)	Potentially	No	WCT checklist (Common in winter, does not breed in area but pelagic)
Birds	Murrelet, Ancient	*Synthliboramphus antiquus*	Special Concern	April 1993 (New)	Yes	Doubtful	WBT Checklist Database (casual); birds of BC; Barry Campbell
Fishes	Sturgeon, Green	*Acipenser medirostris*	Special Concern	April 1987 (New)	Potentially	No	
Fishes	Sturgeon, White	*Acipenser transmontanus*	Endangered	November 2003 (In a higher risk category)	Potentially	No	SAR website; no large river system

Table 4. COSEWIC list Con't

COSEWIC GROUP	COMMON NAME	LATIN NAME	STATUS	LAST EXAMINATION / CHANGE	IN PARK	BREEDS IN PARK	SOURCES
Fishes	Salmon, Coho	*Oncorhynchus kisutch* Interior Fraser population	Endangered	May 2002 (New)	Yes	No	GINPR; Barry Campbell (coho present)
Fishes	Salmon, Sockeye	*Oncorhynchus nerka* Cultus Lake population	Endangered	May 2003 (No Change)	Probably	No	GINPR (COSEWIC)
Lichens	Seaside Centipede	*Heterodermia sitchensis*	Endangered	May 2000 (No Change)	Yes	Yes	COSEWIC Report , T. Goward
Lichens	Oldgrowth Specklebelly	*Pseudocyphellaria rainierensis*	Special Concern	April 1996 (New)	Potentially	_	
Mammals	Otter, Sea	*Enhydra lutris*	Threatened	May 2000 (No Change)	Transient	No	Barry Campbell
Mammals	Sea Lion, Steller	*Eumetopias jubatus*	Special Concern	November 2003 (In a higher risk category)	Yes	Doubtfull	COSEWIC report; Barry Campbell
Mammals	Wolverine	*Gulo gulo* Western population	Special Concern	May 2003 (No Change)	Potentially	_	COSEWIC report; Barry Campbell – thinks he sighted it in area
Mammals	Bat, Keen's Long-eared	*Myotis keenii*	Data Deficient	November 2003 (Changed)	Potentially	_	Found in Clayoquot study
Molluscs	Jumping-slug, Dromedary	*Hemphillia dromedaries*	Threatened	May 2003 (New)	Yes	Yes	COSEWIC report
Molluscs	Jumping-slug, Warty	*Hemphillia glandulosa*	Special Concern	May 2003 (New)	Probably	_	COSEWIC report
Molluscs	Oyster, Olympia	*Ostrea conchaphila / Ostrea lurida*	Special Concern	November 2000 (New)	Yes	Yes	SAR website
Mosses	Moss, Poor Pocket	*Fissidens pauperculus*	Endangered	November 2001 (New)	Potentially	_	
Vascular Plants	Sand-verbena, Pink	*Abronia umbellata*	Endangered	May 2004 (New)	Yes	Yes	
Vascular Plants	Corydalis, Scouler's	*Corydalis scouleri*	Threatened	May 2001 (New)	Probably	_	SAR website

COSEWIC GROUP	COMMON NAME	LATIN NAME	STATUS	LAST EXAMINATION / CHANGE	IN PARK	BREEDS IN PARK	SOURCES
Mammals	Whale, Killer	*Orcinus orca* Northeast Pacific southern resident population	Endangered	November 2001 (Reassigned)	Yes	_	Barry Campbell
Mammals	Whale, Humpback	*Megaptera novaeangliae* North Pacific population	Threatened	May 2003 (No Change)	Yes	No	Barry Campbell
Mammals	Whale, Killer	*Orcinus orca* Northeast Pacific northern resident population	Threatened	November 2001 (Reassigned)	Yes	_	Barry Campbell
Mammals	Whale, Killer	*Orcinus orca* Northeast Pacific transient population	Threatened	November 2001 (In a higher risk category)	Transient	_	Barry Campbell
Mammals	Porpoise, Harbour	*Phocoena phocoena* Pacific Ocean population	Special Concern	November 2003 (Changed)	Yes	_	COSEWIC report
Mammals	Whale, Gray	*Eschrichtius robustus* Eastern North Pacific population	Special Concern	May 2004 (In a higher risk category)	Yes	No	Barry Campbell
Reptiles	Seaturtle, Leatherback	*Dermochelys coriacea*	Endangered	May 2001 (No Change)	Potentially	_	Barry Campbell, COSEWIC report; dead ones have been seen within park boundaries
Fishes	Bocaccio	*Sebastes paucispinis*	Threatened	November 2002 (New)	Potentially	_	Potential juvenile habitat; Heather has info
Fishes	Sculpin, Spinynose	*Asemichthys taylori*	Data Deficient	April 1997 (New)	Potentially	_	Park marine biology researcher (J. Yakimishyn) observed one in tide pool on Wizard island
Molluscs	Abalone, Northern	*Haliotis kamtschatkana*	Threatened	May 2000 (No Change)	Yes	Yes	Park marine biologist H. Holmes, has data available on the occurrence of this species in the park.

2.2.1. Soils and Terrain

Since the retreat of the glaciers 10,000 years ago, weathering, slope processes, fluvial (stream and river) processes and marine coastal (wave and current) processes have modified the local bedrock and glacial deposits. The results include erosional landforms such as steep sided watersheds and ravines, accumulations of colluvium, fluvial sediments and marine deposits including river deltas, estuaries and beaches (Clayoquot Sound Scientific Panel, 1995). Since the last glaciation, the upper part (1-2m) of surficial material has been modified by soil forming processes. The soils formed in the perhumid environment are prone to erosion, particularly if the surface organic soil horizons are removed or damaged (Clayoquot Sound Scientific Panel, 1995). The soils and terrain of all three units of Pacific Rim National Park Reserve were mapped for the PRNPR Resource Description and Analysis (1978-1980). These maps indicate a variety of soil types, including significant organic deposits in the WCT Unit. A significant portion of the coastlines of each unit, particularly those of the islands in the BGI, contain cultural soils (midden sites).

The wet environment and lush vegetation have contributed to significant areas of rich organic deposits. The poor drainage and heavily organic soils in the region can be particularly susceptible to negative impacts from hiking. Repeated trampling in water saturated areas may cause the breakdown of soil structure and root matrices, the net result over time being large "mud-puddles" (Figure 14 a and b). Hikers encountering a mud hole along a trail tend to hike around its perimeter, causing trail widening, extending the damage into adjacent areas, and making the site highly susceptible to further erosion. In severe cases this can cause significant slope instability. The vulnerability of trails to the negative impacts from hiking tend to be worse in the rainy, winter months rather than in the dry summer months.

The terrain of the LBU is predominantly flat, harbouring areas of imperfectly draining soils. Most of LBU is below 100 m elevation, but the border in the northern part of the unit (Grice Bay) follows a ridgeline up to about 200 m above sea level (a.s.l.). The entire BGI unit is below 100 m a.s.l. The soils are well drained but highly erodable. The highest point in the Park is located in the WCT unit. Midway along the trail, the Park boundary turns inward to include an upland area referred to as the Nitinat triangle. The boundary follows a line along Hobiton Ridge where elevations approach 700 m a.s.l. However, the majority of the hiking trail itself is close to sea level (i.e. 0-50 m a.s.l.).

Figure 14 (a and b). A hiker along the West Coast Trail and a muddy area along the trail that has expanded due to the effects of multiple hikers seeking a dry path. Negative effects to soils are usually localized in extent, but may not improve without active management.

2.2.2. Plants and Vegetation Communities

PRNPR is located within the southern very wet hypermaritime variant of the Coastal Western Hemlock Biogeoclimatic Zone (or CWHvh1) (Figure 15). Annual precipitation in areas of the Park ranges from 400mm to 600mm. The area typically experiences cool summers and mild winters, with significant periods of fog, drizzle and heavy precipitation.

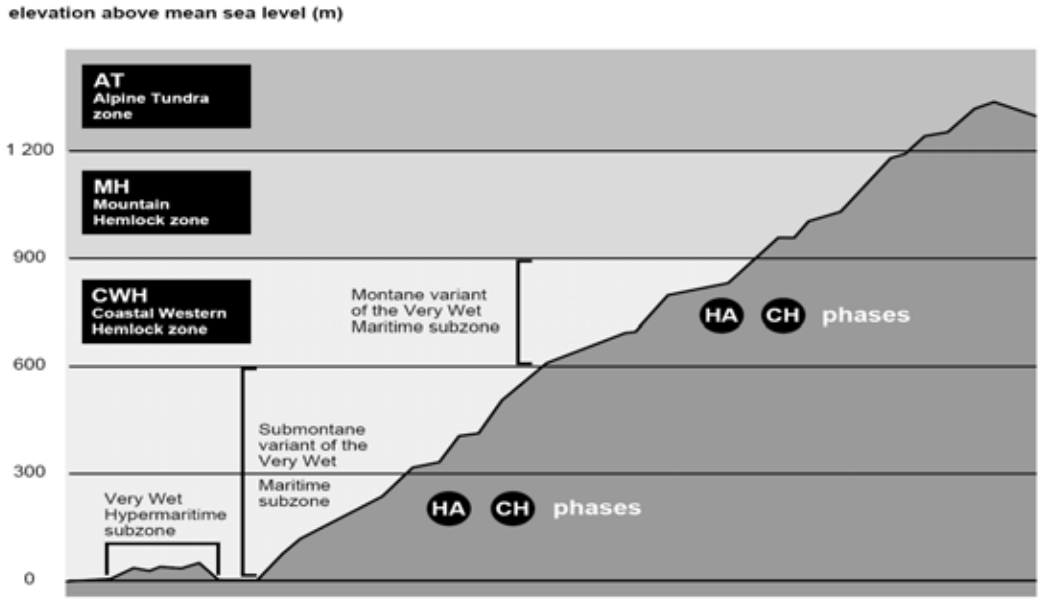


Figure 15. Location of biogeoclimatic units as a factor of elevation (y axis) (Scientific Panel, 1995). The entire Park is located in the Coastal Western Hemlock (CWH) biogeoclimatic zone below 900 m elevation. The majority of the Park is located below 100 m elevation. The entire BGI Unit is located below 90 m a.s.l.

Western hemlock (*Tsuga heterophylla*) and western redcedar (*Thuja plicata*) are the most common tree species in the vh1 variant of the CWH biogeoclimatic zone. Red alder (*Alnus rubra*) is found often in riparian areas and is a pioneering species on disturbed sites. Lodgepole pine (*Pinus contorta* var. *contorta*) is common in very dry and very wet microsites. Sitka spruce (*Picea sitchensis*) is dominant along exposed shorelines where it tolerates wind whipping and the salt spray from the ocean (Figure 14), forming what is known as the spruce fringe forest.

Though not listed as a threatened species, itself, Sitka Spruce (*Picea sitchensis*) has been identified as a principle component in several rare plant communities. Spruce fringe forest associations have been ranked as Imperilled (S2) or Vulnerable (S3) by the BC CDC (BC Conservation Data Centre, 2002). Similarly, bog and wetland ecosystems, and sand dune ecosystems harbour plants of rare occurrence.

Older coniferous forest stands, including old-interior forest, provide habitat of great diversity, as does riparian forest (Scientific Panel, 1995). Common understory species in the vh1 variant include salal (*Gaultheria shallon*), Alaskan blueberry (*Vaccinium alaskaense*), and red huckleberry (*Vaccinium parvifolium*). Salal can form nearly continuous and impenetrable thickets in the coastal forests. Areas of flat terrain, combined with poorly draining soils and heavy precipitation, frequently give rise to wetland or bog ecosystems.

Figure 16. Typical stormy coastline along the outer west coast of Vancouver Island. The ocean swell hitting the rocky shores can produce powerful rolling waves, and sea foam. The Spruce fringe forest can tolerate wind whipping and salt spray from the ocean, and provides important protection the less salt tolerant tree species located behind.

The acidic soils of boggy areas support distinctive plant communities of sphagnum moss (*Sphagnum* spp.), sedges (*Carex* spp.), Labrador tea (*Lednum groenlandicum*), and bog cranberry (*Oxycoccus oxycoccus*). Bogs are often fringed by lodgepole pine (*Pinus contorta* var. *contorta*) and yellow cedar *(Chamaecyparis nootkatensis).* Rare plants are also found in Dune ecosystems, and Spruce Fringe Forest.

Invasive or introduced plant species also exist in the area. Scotch broom (*Cytisus scoparius*) can often be found associated with areas of human disturbance. In beach areas, especially in the LBU, European dune grass (*Ammophila arenaria)* has taken hold, and may be altering the sand movement dynamics of the beach. Other non-native plant species cultivated by European homesteaders are still found associated with some historic sites (e.g. English Ivy - *Hedera helix*). The extent of non-native vegetation is one of the indicators of ecological integrity identified in park management plans. Despite implementation of the mitigation, non-native species may be introduced or spread further through the Park. Non-native species can compete with native species and change natural ecosystems. These impacts would affect the ecological integrity of the Park.

In the marine environment, the communities are structured around factors including tidal cycles, wave energy, salinity, substrate, and the availability of nutrients and light. In the marine environment, eelgrass beds (*Zostera marina*), rocky reefs and kelp forests provide important habitat.

2.2.3. Wildlife

"Wildlife" means "all wild mammals, amphibians, reptiles, birds, fish, insects and other invertebrates and any part thereof, and includes their eggs and young" (National Park Wildlife Regulations, 1999). Wildlife observation includes any activity whose main purpose is to observe wildlife, including but not limited to bird-watching and photography. With respect to marine mammals, DFO defines disturbance as an activity that alters, disrupts or prevents a marine mammal from carrying out its normal life processes. Lien (2001) states that, to survive, a marine mammal must rest, forage, feed, communicate and socialize with its group, mate and care for young.

The presence or absence of wildlife in an area is mostly a function of habitat. Without a place to safely feed, sleep, breed and raise their young, wildlife cannot thrive. The survival and success of any species is ultimately determined by the availability of good quality habitat. Many species, particularly those which are “specialists” (rather than “generalists”), have very rigid and specific habitat requirements. As a result, few places can provide them with all the necessary habitat elements to meet their needs. For this reason, their populations are often limited by the amount of available habitat *(PRNPR, 2000).*

Many of the species sought after for wildlife viewing are “specialists”. Indeed, their rarity and uniqueness are part of their appeal. Typically, these animals are found in isolated clusters at a small number of sites. Their clumped distribution attests to the limited habitat available to them and underscores the significance of these sites. It is important to ensure that our actions do not impact the habitat elements which combine to make sites a home for wildlife *(PRNPR, 2000).* A number of such special sites have been identified within PRNPR and have been designated in the IMGs as Environmentally Sensitive Areas (ESAs) (refer to Figures 3-6). These areas are primarily marine breeding and foraging sites, and support a diverse array and concentration of species. They include: Gowlland Rocks, Sealion Rocks, Grice Bay, White Is., Florencia Is., Wouwer Is., Seabird Rocks, and Carmanah Point.

Important wildlife habitats may include feeding areas, breeding areas and migration corridors connecting the habitats (Figure 15). In addition, some foraging habitats may be of higher quality than others. This does not mean that the animals will not be encountered in other feeding areas. The conceptual model (Figure 15) below illustrates the connection between these habitats. The basic needs of the animal are met when all three types of habitat are accessible and functioning properly. Threats to one required habitat (e.g. breeding sites) may impact the fitness of the animal and, possibly, the whole population (especially if no alternative sites exist).

The boundaries of PRNPR do not necessarily encompass all required habitats of all wildlife species encountered in the Park. Habitat requirements vary widely according to each animal. Individual members of some species may spend their entire lives within the boundaries of the Park (e.g. red-legged frog, *Rana aurora*). Red-legged frogs are, however, widely distributed on Vancouver island. Other species may move throughout the landscape, denning in one area and hunting or foraging in another. Such species (e.g. marbled murrelets, wolves, & cougars) may move in the course of a day, a week, or a month, in and out of the Park.

Other wildlife (e.g. gray whales) encountered in PRNPR may also be migratory, occurring in areas of the Park only at certain times of the year. Their habitat requirements may not only transcend the boundaries of PRNPR, but international boundaries as well.

Populations of top predators, like wolves, cougars and black bears, may travel extensively in the greater watersheds of which the Park is only a small section. Cougars and wolves have a relatively low population abundance, making them vulnerable to ecosystem disturbances. On the west coast, some forest dwelling animals have adapted their foraging strategies to include marine

ecosystems. It is not uncommon to see black bears feeding in rocky intertidal areas, flipping over beach rocks and eating the small crabs that they find beneath. In the fall, black bears may catch salmon in estuaries and rivers. Wolves have also been observed feeding on salmon.

Terrestrial wildlife travel corridors may cross hiking trails and highway corridors heavily traveled by visitors to the Park. Bears, cougars and wolves, may also use beaches, trails, and roads as travel corridors. Wolves, in particular, show a preference for long, linear travel corridors and open spaces. Bears, wolves and cougars, may move through the landscape at any time of the day. Heavy human use of an area during the day may result in a shift of the timing of animal movements to late evening and early pre-dawn. In the Long Beach Unit, beaches are closed to visitor use after dark to allow for wildlife movement. In these wilderness settings, being aware of the potential to encounter wildlife and managing attractants like food and garbage is important for limiting wildlife human conflict.

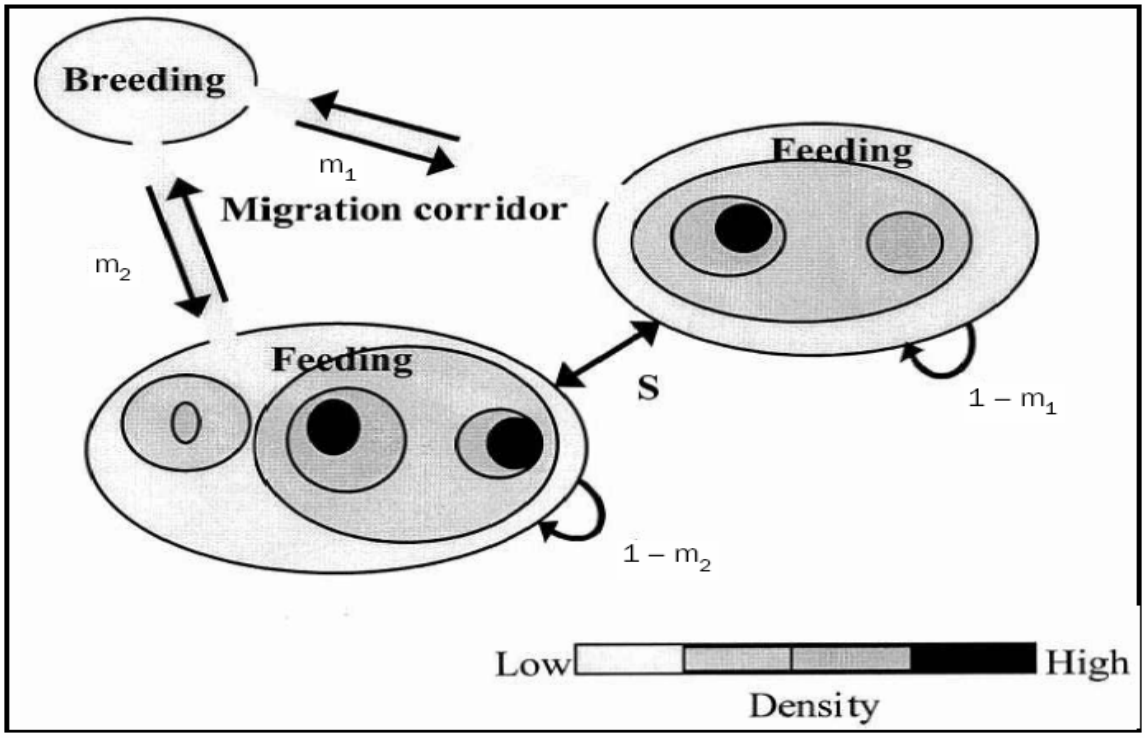


Figure 17. A schematic diagram representing the habitat requirements of some marine and terrestrial animals. Habitats are separated spatially into discrete feeding and breeding areas, with migration corridors between them. Abbreviations: m, migration rate (m1 and m2 indicate different rates for migration to each feeding area); S, mixing between feeding areas. (Hooker and Gerber, 2004)

Black tailed deer and Roosevelt elk also forage in the watersheds and along the coastlines. All five species of salmon are found in the Park: chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), coho Salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), and sockeye salmon (*Oncorhynchus nerka).* The restoration and protection of salmon spawning habitat is a conservation priority. Seven species of amphibian and three species of garter snake exist in the region.

Several species of whales may be found in Park. During the spring migration, over 18,000 Gray whales may swim through Park waters on their way up from the warm waters of Baja to the

northern Pacific feeding grounds. A small population of approximately 50-70 individuals remains along the west coast of Vancouver Island from March – November, with some individuals returning to the same area year after year (Darling 1978, 1984, Reeves and Mitchell 1988). Orcas are not as abundant in the waters of PRNPR as Gray whales. Resident pods, off-shore and transient whales may all travel within Park waters, but their presence is sporadic and unpredictable (PRNPR 2000). Increasing numbers of Humpback whales have been seen in the region.

Steller sea lion (*Eumetopias jubatus)* and California sea lion *(Zalophus californianus)* haulouts are found in all three units of the park (Table 5). These haulouts are primarily resting areas where herds gather to feed and socialize. However, some pupping has been reported at one location. Steller sea lions are identified as a species of concern by COSEWIC. Both male and female Steller sea lions can be found in PRNPR.

Table 5. Location and population of significant Steller sea lion haulouts in PRNPR

Site	Park Unit	Number of Mammals	Time of Year
Sea Lion Rocks	Long Beach Unit	Average 130 with maximum of 400 animals	All year
Wouwer Island	Broken Group Island	About 300 animals	May to October
Pachena Point	West Coast Trail	25 to 150 animals	September to May only
Carmanah Point	West Coast Trail	120 to 170 animals	All year

Source: Barry Campbell, 1990

California sea lions *(Zalophus californianus)* are also present in the Park. California sea lions give birth at only a few rookery sites in Mexico and southern California. The females remain there all year long, while the males may venture north up the coast arriving in late July early August. The California sea lions in the National Park, are therefore, likely all males. They generally arrive in the late summer and fall, with numbers increasing to a peak in February (coinciding with the herring spawning runs). Most of these animals depart for southern breeding sites in May; however, some of the population now appears to be residing in the Park year round. Their main haulout is at Wouwer Island in the BGI (although separate from the Stellers). Sea lion haulouts, and seabird nesting colonies are considered environmentally sensitive areas in PRNPR.

Over 200 bird species have been documented in the region, over one quarter of these are known to breed locally. The high bird diversity is attributable to several factors, including: proximity to rich marine feeding areas, location along the Pacific migratory bird flyway, and the juxtaposition of many specialized habitats (e.g., marine shoreline, forest, bog, lake, rocky islets, etc.) within the Park. Estuaries and mudflats in this region provide extremely important habitat for migratory birds. One of the most important areas in the region is the Grice Bay mudflats located in the Long Beach Unit of the Park (Refer to Figure 4). Mudflats offer abundant food and safety from predators. They are used by several species of birds during their moulting period . The sandy expanses of beach (including Long Beach, and Wickaninnish beach in the LBU) along outer west coast of Vancouver island are also important stopover locations for species of migratory shorebirds. Bald eagles (*Haliaeetus leucocephalus*) also nest in the National Park.

Many sea birds breed on small, isolated islands or on rock outcroppings that are remote and well protected from predators. Some nest in large colonies, comprised of a variety of species. Typically, the various species within these colonies will use different physical features for nesting, including burrows, cliffs, open ground, and shoreline rocks and logs. Some nests can be very simple (depressions in the rock), and are often difficult to see. People can cause significant damage to nesting sites through trampling and disturbance.

Seabird species of concern include the following:

Marbled murrelet *(Brachyramphus marmoratus):* These seabirds forage for food in the inshore marine environment, primarily in protected waters where both sand lance and surf smelt occur. They travel long distances daily between at-sea forage locations and nest sites. The greatest threat to Marbled murrelets is thought to be loss of their nesting habitat (Environment Canada, 2004). They have specific nesting requirements that are met in old-growth forests, areas which also tend to be the focus of much commercial logging activity in BC. The birds do not build nests per se, but use large tree limbs covered with deep moss mats that serve as a platform in which they make a depression for their single egg (Hull 2000, Environment Canada, 2004). Marbled murrelets have a protracted breeding period, with the individuals of a population not all breeding at the same time. The species has a very low reproductive rate. Conservation is dependent on the species being long-lived and on each pair producing many young over its lifetime. Human-induced factors threaten the survival of the adults, thereby putting the population at substantial risk (Burger and Chatwin 2002). Marbled murrelets are protected under the *Migratory Birds Convention Act* of 1916. They are also protected under numerous Provincial Acts in British Columbia (*Wildlife Act, Parks Act*, *Forest and Range Practices Act*, *Fisheries Act* and *Firearms Act*).

PRNPR is currently working on producing reports summarizing data from at-sea surveys of sea bird densities on the waters in the BGI and along the WCT. While it is recognized that seabird densities are significant in Barkley Sound, (the Toquaht river watershed showing some of the highest densities in BC; Burger A and B. Schroeder, 2003) the PRNPR data indicate higher "at-sea" densities along the WCT.

Tufted Puffin (*Fratercula cirrhata*): This is the southern limit of the range for tufted puffins. They nest in burrows, on offshore islands, free of terrestrial predators. Similar to penguins. and marbled murrelets, these birds use their short wings to "fly" under water in search of prey. The parents may make many trips per day back to the burrows to feed their young. There are a number of small, productive colonies in PRNPR. Tufted puffins are blue-listed in BC (PRNPR, 2000).

Cassins Auklet *(Ptychoramphus aleuticus):* BC contains a significant portion of the world's population of this species. These birds lay a single egg, and return to the colony at night to feed their chicks regurgitated plankton caught well out at sea. They nest in burrows, within large colonies, located on a small number of offshore islands. They are blue listed in BC. (PRNPR, 2000).

Rhinoceros Auklet (*Cerorhinca monocerata*): BC contains a significant percentage of the world's population of this species. They nest in burrows, within large colonies, on a small number of offshore islands (PRNPR, 2000). These birds lay a single egg, and the parents return to the colony at night to feed their young whole fish. These birds can be seen near shore, at night, with their beaks full of fish.

Common Murre *(Uria aalge)*: Very few areas provide suitable nesting habitat for this species. They nest on the rocks of cliff ledges. Eggs may be dislodged or preyed upon if adults are disturbed. It is unlikely that PRNPR contains any breeding locations for this species (PRNPR, 2000).

Surf Scoter (*Melanitta perspicillata*): Blue listed in BC. Surf Scoters may forage for mussels in the zone of breaking waves, and habitually dive through foaming wave crests. However, Surf Scoters

favour shallow waters in bays, estuaries and river mouths. They form very large rafts of several hundred birds that may dive or flush in unison (PRNPR, 2000).

Cormorant (Pelagic and Brandt's): Sea Lion Rocks was the first recorded breeding site in BC for Brandt's cormorant, a red-listed species. Both species form nesting colonies. Brandt's build their nests on flat ground of offshore islands. Pelagic cormorants nest on the rock ledges of cliffs and sea caves. Eggs and young chicks may be dislodged or preyed upon if adults are forced to flee the nest (PRNPR, 2000).

Pigeon Guillemot (*Cepphus columba):* This species often nests on the ground, under logs, and in rock hollows. Nests are located on offshore islands free from terrestrial predators (PRNPR, 2000). Groups of Pigeon Guillemots may be found in feeding areas closer to shore. These birds usually have two chicks, and the parents return to the nest throughout the day to feed the chicks shallow bottom dwelling fish such as sculpins.

Shorebirds

Black Oyster Catcher (*Haematopus bachmani)*. Only 11,000 of these birds exist in the world. The BC coastline is home to a considerable percentage of that population. They nest on the ground, in open areas of offshore islands and isolated headlands. Few young survive to become adults. They can only feed at low tide, when intertidal food is exposed (PRNPR, 2000).

Other Waterbirds

Harlequin Duck (*Histrionicus histrionicus*): These ducks are residents of rocky shorelines, along offshore islets and reefs. During their moult, they are flightless for up to 6 weeks in summer and early fall. While molting, they are vulnerable to predation, particularly if disturbance from boats displace them from secure shoreline sites. The are yellow-listed in BC and endangered in eastern Canada (PRNPR, 2000).

Great Blue Heron (*Ardea herodias*): This solitary bird is frequently found along a variety of seashores. The west coast of Vancouver Island, and PRNPR, contains a large number of year-round residents. Heron rookeries occur in large tree-top colonies. Their survival is threatened by loss of mature trees for nesting areas and competition with humans for space along shorelines. They are blue-listed in B.C (PRNPR, 2000).

Waterfowl**:** The waters in and around PRNPR are home to some of the largest concentrations of wintering waterfowl in Canada. These birds form large flocks which can be easily disturbed by boats, and by people walking near nesting sites, or by dogs chasing flocks. The extensive mudflats and eelgrass beds of Clayoquot and Barkley Sounds are recognized as internationally significant waterfowl habitat (PRNPR, 2000).

2.2.4. Water Resources

The proper functioning of the aquatic ecosystems of PRNPR is dependant on good water quality (and quantity). Water contamination may pose a risk to public health and the enjoyment of visitors. Water quality can be altered by chemical contamination (e.g. nutrient addition), bio-contamination (e.g. faecal coliforms and other pathogens posing a threat to public health) and by the addition of contaminants that alter the physical nature of the water or aquatic ecosystems (e.g. sedimentation altering light penetration and/or affecting spawning gravels). Streams that run

through the Park, in particular those containing salmon spawning or rearing habitat, are protected both by the *Federal Fisheries Act* and the *Canada National Parks Act.*

2.2.5. Cultural Resources

The people of the Nuu-chah-nulth First Nations have lived along the outer pacific coastline of Vancouver Island for thousands of years. Archaeological research and radiocarbon dating of features found at local First Nations village sites indicate occupation 4000-5000 years before present.

In more recent times, early European explorers and settlers arriving on this coast found the ocean waters treacherous. Many ships have been lost in the coastal waters off Vancouver Island, along the shores that became known as the "Graveyard of the Pacific". Both Aboriginal and non-aboriginal traditions have contributed to the rich cultural record preserved at archaeological and heritage sites within the Park. Pacific Rim National Park Reserve, in partnership with local first nations, upholds its responsibility to maintain and protect these cultural resources.

The *Guiding Principles and Operational Policies* (Canadian Heritage, Parks Canada 1994) state that Parks Canada will assess effects on cultural resources whether or not they flow from biophysical effects (Parks Canada 1994). To address both the requirements of the *Canadian Environmental Assessment Act* and Parks Canada's policies, direct impacts to cultural resources will be assessed in addition to indirect impacts caused as a result of changes in the environment.

PRNPR has completed an inventory of cultural sites, both first nations and non–first nations sites, within the Park. Additionally, several of the first nations have completed their own TUS inventories of the lands within their traditionally defined territories. Where requested by the first nation, traditional use sites in the park are respected and protected. Park cultural resource management staff, archaeologists from the Western Canada Service Centre in Victoria, and representatives from each of the first nations conduct field visits and site assessments to monitor cultural resources. Particularly sensitive or important sites are given additional attention and protection. The National Park holds in high esteem its partnerships with the local first nations. Protocols are followed to observe traditional rights and interests. No first nation archaeology work is permitted without the approval and attendance of a representative from the local first nation in whose traditional territory the site lies.

Each unit contains features of historic or cultural significance. For example, the Broken Group Islands contain many sites of great spiritual and cultural significance to the T'seshaht First Nation. There are T'seshaht First Nation Reserves on Effingham, Nettle, and Keith Islands, and visitation to these Reserves is not allowed without permission. Anyone wishing to visit the Reserves must contact the Park and the appropriate first nation prior to their trip and abide by all directions given.

Many of our cultural heritage sites are especially sensitive to human disturbance, the damaging effects of which are often irrecoverable & permanent. Disturbing, destroying or removing natural and cultural artifacts such as shipwrecks, shells from midden sites, plants and bones is strictly prohibited without prior written permission or license. This regulation will continue to be enforced at PRNPR, and all visitors to the Park should carry all applicable licenses with them.

Cultural site assessments will be ongoing in the national park. If additional information arises regarding impacts to cultural sites, it will be incorporated into the annual review and advise the business licences approval process accordingly.

Figure 18 (a and b). A Ditidaht First Nations archaeology representative, Parks Canada Archaeologist and the PRNPR First Nations Liason check site forms and assess the condition of a cultural site where a bridge has been constructed for a river crossing along the West Coast Trail (July 2004). Cultural sites are assessed on an ongoing basis in all units of the Park. Sites are prioritized based on the levels of impact and risk. Impacts may come from either ongoing natural processes and degradation, or human use (in this case, the hiking trail).

2.2.6. Selection of VECs

Conducting an environmental assessment may be challenging, with large numbers of environmental components to review. The Canadian Environmental Assessment Agency recognizes that, since it is not possible, nor particularly useful, to measure effects on all possible receptors (at the component or species level), it is advantageous to focus on a limited number of locally significant and measurable receptors that will serve as surrogates for the environmental components as a whole. This same approach can be applied to examining the social context.

The process involves the selection of a few locally significant and measureable **Valued Ecosystem Components** (VECs) and **Valued Social Components** (VSCs). VECs can be defined as features of the regional environmental setting selected because of their ecological value or their vulnerability to the project proposed. A VEC can be an important ecosystem attribute (for example old-growth forest), or they can be consist of the abundance of a single species (for example Marbled murrelets).

Similarly, VSCs (valued social components) are cultural, social, economic or health aspects which, if affected by the project, would be of concern to local human populations and/or government regulators.

The VEC/VSCs listed in this document were selected during the scoping phase of this environmental assessment, based on the following criteria, the rationale for selection of which are identified in Table 6:

- presence in the regional study area;
- ecological importance (as identified in the PRNPR IMGs, EIS etc);
- existing monitoring data that has established a baseline;
- vulnerability to project-specific effects;
- socio-economic importance; and
- traditional use importance.

Table 6. Summary of VECs and the rationale for selection.

VEC	RATIONALE FOR SELECTION AS A VEC
Soils	
Organic soil deposits, and soils prone to erosion	▪ Prone to impacts from ecotourism activities like hiking and overnight use (although effects tend to be localized). ▪ Areas may take a significant amount of time to recover from disturbance, or may require active management.
Vegetation and Plant Communities	
Sea side centipede lichen (*Spruce Fringe Forest habitat*)	▪ Red listed under COSEWIC ▪ Known to occur in very few sites in PRNPR, ▪ PRNPR is responsible for the conservation and recovery strategy ▪ Potential for overnight use to affect this species.
Introduced exotic species.	▪ Some species known to colonize sites of disturbance (edges of clearings, hiking trails) ▪ Contribute to a loss of ecological integrity in an ecosystem ▪ May be carried into sites accidentally by visitors.
Terrestrial Plant Communities	
Coniferous forest: "Old" and "Old Interior" conditions, & Riparian Forest	▪ Naturally high plant diversity and habitat complexity. ▪ Above average plant diversity (dependent on maintaining existing moisture regime) ▪ High forage values for wildlife ▪ Potential wildlife movement corridors – and nesting and denning habitat. Importance to cavity dependent wildlife ▪ Limited regional distribution ▪ Bioregional monitoring target/indicator community at PRNPR ▪ Areas of potential damage to stream habitat from hiking, and/or for wildlife human conflict
Wetlands, Cedar swamp & Bog ecosystems, Sand dunes, Spruce Fringe Forests	▪ Above average potential for rare plants ▪ Limited regional distribution; dependent on maintaining existing moisture regime ▪ Dunes: Extremely limited regional distribution; ▪ Wetlands, cedar swamp, bogs: Amphibian breeding habitats ▪ Potential for wildlife movement corridors ▪ Areas of potential damage to habitat from hiking , and/or for wildlife human conflict
Marine plant and algae communities	
Eel grass beds, Kelp forests	▪ High diversity of fish ▪ Limited distribution on the marine landscape ▪ Important rearing (nursery) habitat for young fish ▪ Eelgrass: Vulnerable to damage from low light due to sedimentation of water and/or eutrophication, damage from boat propellers and to habitat loss from shoreline development ▪ Bioregional monitoring target/indicator communities at PRNPR

Table 6. Cont.

VEC	***RATIONALE FOR SELECTION AS A VEC***
WILDLIFE	
Large predators (Carnivores): Black bear Wolf Cougar	▪ Cougars & Wolves: Top predators, low population abundance and high vulnerability to human disturbance ▪ Black bears: Somewhat common and widespread in the region, high vulnerability to human disturbance ▪ Potential for wildlife movement corridors or foraging areas to intercept visitor routes. ▪ Encroachment into habitat by urbanization, and human development ▪ High potential for habituation leading to wildlife human conflict, and wildlife mortality ▪ Bioregional monitoring target/indicator species at PRNPR
	Marine Species
Gray whale	▪ Limited regional distribution ▪ COSEWIC listed as Special Concern ▪ Bioregional monitoring target/indicator species at PRNPR ▪ Important species for marine wildlife viewing
Steller Sealion (Haulouts)	▪ Limited regional distribution ▪ COSEWIC listed as special concern ▪ Bioregional monitoring indicator species at PRNPR ▪ Important species for marine wildlife viewing
Killer whale	▪ Limited regional distribution ▪ COSEWIC listed as special concern ▪ PRNPR does not host a resident pod of Orcas, rather residents from areas further south or transients may move through the park waters. ▪ Important species for marine wildlife viewing
Marbled murrelet, (Marine foraging sites)	▪ Limited regional distribution ▪ COSEWIC listed as threatened (Red listed in the province of BC) ▪ Nesting habitat is on decline due to forestry and watershed development ▪ Foraging may be interrupted by marine activity (Energetic costs to the birds) ▪ Vulnerable to pollution ▪ Bioregional monitoring target/indicator species at PRNPR ▪ May be disturbed in the marine environment from boat traffic and pollution
Seabirds – (Protect nesting sites) Black Oyster Catcher Tufted Puffin, Surf Scoter, Brandt's Cormorant Cassin's Auklet	▪ Limited regional distribution ▪ Nesting habitat is on decline, ▪ Foraging may be interrupted by marine activities (Energetic cost). ▪ Vulnerable to pollution (including hydrocarbons) ▪ Nesting and foraging habitat is important and highly sensitive to disturbance (e.g. nesting islands) ▪ Bioregional monitoring target/indicator species at PRNPR ▪ May be disturbed in the marine environment from boat traffic and pollution

Table 6. Cont.

VEC	***RATIONALE FOR SELECTION AS A VEC***
Salmon (spawning and rearing habitat)	▪ Limited populations and distribution ▪ Important in the west coast food webs and forest nutrient cycles. ▪ Habitat requires protection from damage due to stream crossings triggering sedimentation, and other disturbance to spawning sites
WATER QUALITY	
Clean drinking water and appropriate treatment of human waste.	▪ Protection of health of visitors is a priority ▪ Protection aquatic habitats important for protecting ecological integrity
Reduce hydrocarbon pollution in marine waters	▪ Potential for pollution to negatively impact aquatic habitats and animals
CULTURAL RESOURCES	
Cultural sites (FN and non-FN sites)	▪ Parks Canada Mandate to protect cultural heritage ▪ Cultural sites are part of an ongoing site assessment, monitoring and annual reporting program at PRNPR
VISITOR EXPERIENCE	
Positive and appropriate visitor experiences	▪ Parks Canada Mandate

2.3 DESCRIPTIONS OF ACTIVITIES

Backcountry and Frontcountry: "Backcountry" refers to those more remote or islolated portions of a park that are not accessible by paved road. At PRNPR, backcountry includes much of the BGI, all of the WCT and a small portion of the LBU. Frontcountry therefore refers to portions of a park that are accessible by paved road. For example, much of the LBU is considered frontcounty. This includes some of the beach areas where paved roads and parking areas (and some well maintained trail systems) facilitate easy visitor access.

2.3.1. Unique Characteristics of Commercial Guiding Activities

Several characteristics may make some commercial guiding activities unique when compared to similar activities undertaken by independent park users. This section discusses typical differences between guided commercial activities and the activities of other recreational visitors.

The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably visit and appreciate more remote areas of the Park. Many people would not take part in certain activities in the Park without the availability of a guide and the equipment provided. As a result, commercial guided activities may, in some cases, have the effect of increasing overall visitor use in areas that would otherwise see lower levels of use. The presence of a guided group may also, in some cases, attract other visitors to sites or locations that would not have otherwise been visited.

One of the primary, unique characteristics of commercial activities is the presence and influence of trained, professional guides. Guides often take the opportunity to inform clients about the region's physical, ecological and cultural characteristics, as well as to educate them on issues related to ecological integrity and park management. Many guiding operations have a strong focus on outdoor skills development and safety, leading to an increase in the number of experienced and skilled backcountry users. The presence of skilled, professional guides provides an additional measure of safety for all backcountry visitors, including independent users.

Some guided activities typically support larger group sizes than those of non-commercial park users. For example, non-commercial kayaking groups tend to be smaller (2-3 people) compared to commercial groups (5-7 people). Large groups have the potential to result in increased disturbance to vegetation and to wildlife. Larger groups sizes may detract from visitor experience (Monz *et al.* 2000). However, the potential impacts of large group sizes are countered by a theoretical decrease in the number of wildlife disturbance events. Larger groups are more intimidating to animals and are therefore less likely to have negative predator encounters. Commercial groups may also provide for their clients different wilderness facilities and overnight accommodations (for example common areas/eating, cook tents). If commercially guided groups implement mitigations to protect the environment, many of the negative impacts associated with camping in a group can be avoided (Monz *et al*. 2000). Initial observations indicate that compliance with "low impact" forms of camping and wilderness use is high among commercial kayak guiding outfits. Indeed, the professional organizations representing kayak guides have themselves pioneered the "best management practices" for that industry. Further, within commercial guiding, there is incentive to ensure sustainable ecotourism in order to meet the expectations of their clients and to sustain their industry in the long term.

2.3.2. Guided Marine Wildlife Viewing

In 2000, an estimated 20,000 visitors took part in guided marine wildlife viewing trips from Tofino, Ucluelet and Bamfield (PRNPR, 2001). The number has likely grown since then. The season for whale watching and marine wildlife viewing extends from March through to September. Several of the operators may offer trips year-round, but most local marine wildlife viewing businesses shut down entirely during the winter. Winter weather conditions often prohibit boat travel. Furthermore, there are usually no whales in the area to view, since gray whales migrate south to overwinter in areas near Baja, Mexico.

The areas most heavily used in the Park for marine wildlife viewing are the Broken Group Islands (BGI), Grice Bay and the reef & rocky outcrop areas in Long Beach Unit (LBU). Operators entering the park waters from Tofino may take visitors to areas in the Long Beach Unit such as Sea Lion Rocks or Grice Bay (refer to Figure 4). Frequently, those operators bring visitors to other areas in Clayoquot Sound outside of national park waters. Operators from Ucluelet mainly bring visitors to the BGI; however, they may also go up to areas in the LBU (e.g. Sea Lion Rocks). Methods of transportation for commercial marine wildlife viewing include (but are not limited to) rigid hulled inflatable boats (Figure 19) and larger-hulled vessels that have been refitted to carry passengers.

Figure 19. Typical rigid-hulled, inflatable boat used for marine wildlife viewing. On the trips, customers are required to adhere to marine safety requirements including the donning of brightly coloured (orange) buoyant safety suits or “Floater suits”.

No data is available on the exact numbers of trips that occur in the Park each year however some very general estimates can be made. There are currently about 9 businesses offering whale watching trips from the town of Tofino and 4 from Ucluelet. In 2004, PRNPR issued 6 businesses licences for commercial marine wildlife viewing in the National Park. Commercial operators tend to offer trips twice a day: once in the morning and once in the afternoon. Some companies offer three trips per day. Companies in Ucluelet tend to operate only one or two vessels. The town of Tofino has a greater number of marine wildlife viewing businesses, and almost all of these companies own more than one vessel (some up to four). An average trips lasts ~ 3.5 hours. The numbers of people on a single trip may range from 4 to 25, depending on the vessel and the time of year.

Wildlife species most often observed on commercial wildlife viewing trips include: Gray whale, Steller sea lion, California sea lion, harbour seal, Bald eagle, and black bear. Humpack whales may also bee seen on occasion as well as killer whales. Additionally, people may be transported to shallow, marine areas to view intertidal and subtidal marine wildlife like sea stars, anenome and sea urchin.

What makes wildlife observation distinct from other activities is the potential for closer approach to (and thus potential harassment of) wildlife in order to enhance the visitor experience. For commercial ecotourism operators the temptation is ever present to cater customers wishing to experience wildlife at a closer range. Some operators cater to this pressure while others attempt to better educate their customers about appropriate expectations and wildlife viewing behaviour. However on average commercial operators are more disciplined on adhering to wildlife viewing guidelines than recreational boaters. In this region, the local commercial operators have a long history of involvement in the development of wildlife viewing guidelines. The rationale being a recognized concern for the animals and the sustainability of ecotourism. As a result, marine wildlife viewing operators tend to be better informed on the rules and regulations regarding wildlife viewing. They also tend to educate their clients about these rules.
Commercial operators in this region support each other in locating animals and tend to self-police by reporting infractions and being conscious of the potential to crowd an animal.

2.3.3. Guided Kayaking Tours

Guided kayaking tours take place mainly during the summer months (June-September) with peak months of activity being July and August (Figure 20). The BGI is a highly used and valued destination for kayakers. We generally see only very low levels of kayak use in the LBU and along WCT, primarily day use and we have not yet received an application for a commercial kayaking business licence in these two units (although this may happen in the future). Accordingly this assessment focuses primarily on the commercial kayaking use of the BGI.

In 2000, roughly 40% of estimated 12,000 kayaking visitors in the BGI were on commercially guided trips (Randall, 2001). Data from 2003 and 2004 indicate a drop in both the overall camping use in the BGI (down to just over 10,000) and a drop in relative levels of commercial use (16%, and 21% respectively). Last year the park received and approved 16 business licences for guided kayaking businesses.

Figure 20. Kayakers in the Broken Group Islands, PRNPR. Note the approaching motor boat in the left of the photo. The travel routes taken by kayaks and motorboats may overlap. It is important that all vessels be operated in a responsible manner and that all marine users observe rules of navigation and collision regulations.

Average kayaking routes are indicated in Figure 30. Principle access points include departures from the Sechart Lodge, the Toquart Bay Forest Recreation site (Figure 21). Lesser used access points include the Ucluelet harbour or Bamfield. Mothershipping, defined as "operating or anchoring any recreational or commercial powered vessel in order to supply, store or collect equipment or provisions, or to accommodate, pick or drop off people for the purposes of overnight use" is prohibited in Pacific Rim National Park Reserve.

Commercial kayaking group sizes range from 2 to 10, and average about 7 people. There is a maximum group size of 10 applied in the BGI due to the availability of camping spaces at each site. Commercial kayaking groups consist of a group leader – referred to as the "lead guide", possibly an assistant guide, and a group of paddlers. Kayaks are non-motorized small boats where the propulsion comes from human energy using a specialized, double bladed paddle. Kayaking groups may go on day trips or may stay out for overnight camping trips. Kayakers are usually very "self-contained" with respect to provisions, bringing with them all the supplies that they require for the entire trip. Commercially guided groups are most often very environmentally conscientious. They are often well planned, take good care of the safety needs of their clients, and tend to observe low impact camping techniques.

While in the BGI, paddlers may travel to almost any destination depending on weather conditions. Kayaks allow paddlers access to the shallow waters close to shorelines, enable them to tuck into quiet coves and stop at small beaches. Some paddling groups may haul their kayaks up onto beaches and venture onto the various small islands to explore the forests and rocky intertidal shoreline habitats.

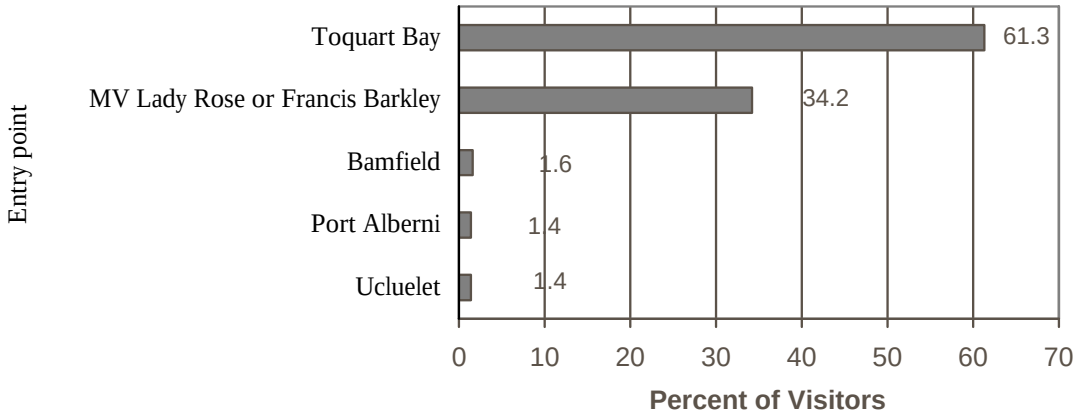


Figure 21. Entry Points for Kayakers into the BGI. (Data from Randall, 2001)
Note that over 60% of visitors enter through Toquart Bay, while 34% enter via the M.V. Lady Rose or Francis Barkley, disembarking at Tseshart Lodge or Bamfield.

2.3.4. Guided Surfing

Guided surfing at PRNPR consists mainly of instructional groups wherein only the instructor is experienced in the activity (Figure 22). The remainder of the group, which can consist of various numbers of students (anywhere from 1-~15+) is generally comprised of people who want to learn to surf and or who do not have any of their own gear. The majority of commercial use of the Park for surf instruction comes from locally operated businesses.

The majority of the commercial use of the Park for surfing occurs at Long Beach (north and south parking lots)(Figure 31), and to a lesser extent at Wickaninnish beach. Guided surf instruction takes place primarily in the summer months (June-September); however, some local operators remain open throughout the winter months. Last year, the Park received and approved applications from 3 businesses wishing to offer surf instruction in the park. No data is available on the levels of use by commercial surfing operators of the Park last year.

"All Surf Sister Instructors meet the requirements for safety and training as determined by the British Columbia Association of Surf Instructors and hold certificates for Standard First Aid, CPR, and Lifesaving–safety is a priority at all of our lessons. Our classes are held on the beautiful beaches near Tofino **such as Long Beach,** Canada's number one surfing destination. Tofino's spectacular beaches are some of the most pristine in the world and are surrounded by a majestic temperate rainforest–the backdrop for our lessons. Long Beach is located in the Pacific Rim National Park, a ten minute drive from the town of Tofino on the West Coast on Vancouver Island, BC Canada." *Excerpted from the Surf Sister Website.*

Photos copyright Surf Sister, Tofino, BC. (Used with permission).

Figure 22. Images from the website of a local business operator advertising surfing lessons in Tofino. The upper text box contains an excerpt from the website describing that some of the lessons may take place in the National Park, the middle photos show a class of surfing students at Long Beach posing with their rented surf boards and gear, and another class going into the waves. The lower photo shows an instructor teaching students about surfing technique, ocean safety and surfing etiquette, which are standard components of every course. Several of the local surfing operators are also at the forefront of developing industry teaching and operating standards for surf schools, including: instructor/student ratios, and first aid certification requirements.

2.3.5. Guided Surf Kayaking

There are two, distinct types of surf kayaking. The first uses white water kayaks (Figure 23); the second type uses ocean kayaks. The first requires a specially designed, smaller kayak, and the objective is to "play" in the waves. Currently, there are no local operators offering this first type of commercial surf kayaking instruction or equipment provision. All type 1 commercial surf kayaking operators are from outside the immediate area. However, some local ocean kayaking outfitters will offer special training courses from time to time for the second type of kayak surfing. The objective of this second type of surf kayaking is to learn how to negotiate waves in order to land an ocean kayak on wave washed beaches. Instructional groups most often select the stretch of beach break at northern Long Beach as the preferred location to teach students. Surf kayaking is taking place year round in the Long Beach Unit of the Park (Figure 31), with the peak being in the shoulder season (March – April, and October). Winter months see very low levels of commercial use. Due to the significant differences between the types of activities, surf kayaking businesses must operate under a different set of park guidelines and operator standards than the businesses offering regular, guided, kayaking trips. There is currently no data available on the exact levels of use. However, there are very few companies (less than 5) offering this type of instruction in the National Park.

Figure 23. A surf kayaker walks to the oceans' edge carrying a white water kayak and all the equipment needed to "play" in the waves.

2.3.6. Guided Walks and Guided Hiking

This activity is divided into two categories distinguished by their length and level of intensity. Guided walks tend to be 2-3 hours in length, are generally tend to be for the purpose of natural history interpretation (Figure 24). These tend to take place primarily in the Long Beach Unit of the National Park(Figure 32). Guided hikes (Figure 25) on the other hand, take place primarily on the West Coast Trail (Figure 33), a rugged, wilderness trail, close to 77 km in length. Hiking the West Coast Trail requires 5-7 days, involves overnight camping, and hiking over challenging terrain, while carrying a heavy back-pack.

For purposes of this assessment, hiking means walking, running, scrambling, small river crossing, and other pedestrian use of flat and sloped surfaces, along trails maintained to a varying degree, in the frontcountry and backcountry.

Last year, PRNPR received and approved business licence for 17 operators wishing to offer guided hikes and walks. The business licence for each of those activities requires a slightly different set of qualifications for the guides, especially with respect to first aid. However licensees for both activities are required to remain on the managed trails within each unit.

Business offering guided walks in the Long Beach Unit may be expanding their operating season to accommodate the increase in winter time visitors coming to “storm watch”; however, the peak visitation is during the summer months. The West Coast Trail is closed to all hiking from October through to May1st. There are no additional data available of the total amount of use in the Park from those activities.

Figure 24 (a and b). Typical areas for guided walks in the Long Beach Unit of the National Park. The trails in the LBU provide opportunities for shorter hikes (half day or less). The trails range in difficulty, but are generally well maintained. The trails provide many interpretive opportunities to learn about the ecology of the region, and provide access to 14 km of sandy beaches. Some guided walks focus on rocky, intertidal areas as well.

Figure 25 (a, b, c, & d). Typical terrain and challenges facing hikers on the West Coast Trail (clockwise from top left): a) boggy difficult trail conditions, b) rudimentary gulley and obstacle crossings, c) rugged, rocky shoreline and, d) steep ladder systems.

2.3.7. Guided Scuba Diving

SCUBA diving as a recreational activity is also increasing in popularity. The marine waters around the Park offer some spectacular, underwater experiences. Scuba diving occurs in the National Park for the purpose of viewing marine organisms and cultural sites (shipwrecks). No data is available on the exact levels of use; however, the numbers of guided groups is presently very low. Operator standards and certification levels are very high for guided scuba diving. Popular diving spots are located in the Broken Group Islands Unit of the Park. Scuba diving can take place at any time of the year. The most favourable conditions are often in the summer months (July-August).

2.3.8. Overnight use (Camping)

"Campsite" means "an area of land used by one individual or group for camping, cooking, eating, sleeping, etc." (Banff National Park 1990). A "tent" means "a portable and collapsible shelter made from a) canvas, cloth, synthetic or similar materials and supported by a pole, poles, or ropes, or b) pliable membrane that achieves and maintains its shape and support by internal air pressure". All quoted definitions in this chapter which are yet unreferenced were taken from the National Parks Camping Regulations (1999).

For purposes of this assessment, camping includes water accessed sites and pedestrian use of frontcountry campgrounds and backcountry campsites, as well as set-up of tents and applicable cooking facilities, etc. No discussion is included regarding the use of motor vehicles. Motor vehicle use may be discussed separately in another assessment.

Overnight camping is identified as a separate activity because of the special suite of equipment required. In addition to providing one's own shelter, as there are no cabins provided for visitor use in the Park, cooking, cleaning, and the disposal of solid and liquid wastes must all be done in a rustic wilderness setting. Guided, overnight groups can range in size from 2-10 people.

Overnight camping occurs in each of the three units of the Park. In the Long Beach Unit the only campsites available are those at Greenpoint Campground. Greenpoint Campground offers close to 100 road-accessible "drive-in" campsites and 21 "walk-in" sites.

Figure 26 (a and b). Tent site in the Broken Group Islands. Wolf (*Canus lupus*) on a beach site in the BGI. Note the tent in the background.

In the BGI, there are designated campsites on 7 islands (Figure 26). In the Park Management Plan for PRNPR, it is stated that camping in the BGI will be managed to the extent necessary to provide for a primitive, back-country experience.

Overnight camping is common for kayaking trips in the Broken Group Islands, and for hikers along the West Coast Trail. Along the West Coast Trail there are 14 identified areas for camping, but campers are not limited to these sites. Maximum group size for kayaking groups in the BGI and hikers on the WCT is 10 people, with an exception made for school and non-profit groups reserving through the "West Coast Trail School and Non-profit Group Policy". Groups reserving through that policy start the trail between May 1st and May 19th, and their maximum group size is 18. Camping on the WCT and in the BGI is allowed only during the operational season of the Park (May 1st – September 30th).

2.3.9. Transportation Services

Transportation services encompass those commercial operators who, for a fee, offer either land-based or marine-based transport for passengers to locations within the Park. Methods of transport on land may include vans and busses.

The BGI is accessible only by water. Boat shuttles may be chartered to access the islands, and to access scuba diving locations. Marine-based services operate primarily in the summer and early fall months.

Land based transportation services operate year-round in the Park, but only on paved roads, and primarily in the LBU.

3. ANALYSIS OF ENVIRONMENTAL EFFECTS

Information on park resources and best management practices (legislation and standards) has been obtained from a variety of sources (Table 7). This chapter outlines the results of a review of legislated or recommended best management practices, the scientific literature, community consultation, and advice from experts in the fields of resource management.

Table 7. Information sources, legislation, best management practices and standards.

RESOURCE	INFORMATION SOURCES(S)	BEST MANAGEMENT PRACTICES, LEGISLATION AND STANDARDS
Soils and Terrain	PRNPR Resource Description and Analysis TRIM data Scientific peer reviewed literature	*Canada National Parks Act* Parks Canada Best Management Practices for Trails
Plants, and Vegetation Communities	PRNPR Resource Description and Analysis COSEWIC species list BC Conservation Data Centre's (CDC) Species List Scientific peer reviewed literature Expert advice from Parks Canada ecologists, and other resource managers	*Canadian Species at Risk Act (*SARA) *Canada National Parks Act* PRNPR Management Plan, and Interim Management Guidelines *Fisheries Act* (*esp w.r.t.* eelgrass habitat) PRNPR Superintendent's orders Parks Canada Best Management Practices for Trails
Wildlife	PRNPR Wildlife Inventories COSEWIC species list BC Conservation Data Centre's Species List Scientific peer reviewed literature PRNPR wildlife observations and wildlife-human conflict database Expert advice from Parks Canada ecologists, and other wildlife managers	*Canadian Species at Risk Act (*SARA) *Canada National Parks Act* PRNPR Management Plan, and Interim Management Guidelines *Fisheries Act*: (*esp*. Marine Mammal Regulations, and proposed amendments to the Marine Mammal Regulations.) DFO/FOC Marine Wildlife Viewing Guidelines *Migratory Birds Convention Act* PRNPR Wildlife Viewing Guidelines PRNPR "Bare" Campsite policy PRNPR Superintendent's orders
Water Quality	Scientific peer reviewed literature	*Canada National Parks Act.* *Fisheries Act* PRNPR establishment agreement CCME Environmental Quality Guidelines Criteria: Canadian Water Quality Guidelines for the Protection of Aquatic Life & Guidelines for Canadian Drinking Water Quality.
Cultural Resources	PRNPR Cultural Resources Inventory Ongoing partnership and consultation with First Nations Expert advice from Parks Canada archaeologists	*Canada National Parks Act.* *Parks Canada Guiding Principles and Operational Policies* PRNPR Management Plan, and Interim Management Guidelines PRNPR Superintendent's orders
Visitor Experience and Visitor Use	Pacific Rim National Park Reserve visitor use database, visitor surveys, hiking and camping permit records	*Canada National Parks Act.* *Parks Canada Guiding Principles and Operational Policies*

3.1. ACTIVITY SPECIFIC ANALYSIS

A series of maps were prepared identifying the typical routes or areas where commercial ecotourism activities may take place in PRNPR and a broad presentation of the VEC's that may be affected. Where the activities overlap with the VECs we can say that there is potential for interaction and effects. However, spatial representation mapping has some limitations. Limited amounts of information can be presented on a single map, and certain aspects must be simplified for visual clarity. For example, the maps show "whale presence" in the entire marine area. This is an over-representation of whale occurrence, as they are not likely to be found entering very shallow water. Areas of high density seabird foraging are indicated as purple thatched areas. This is an under-representation of where seabirds may be encountered on the water. Thatched areas represent the high density feeding areas only (recall Figure 17), and seabirds may be found in other areas on the water.

Additionally, the maps have been simplified so that they present only those VECs that have been selected as important in this assessment. They do not present all organisms that may be affected by a particular activity. The maps represent only the summer operational period (May through September).

Most importantly, the maps do not present information on the mechanism nor the significance of the effects. The maps are useful primarily for illustrating the locations of commercial ecotourism activities and pointing to the potential for interactions and needed mitigation. Any discussion of mechanisms, threshold levels, or significance will be found in the text.

3.1.1. Potential Impacts of Activities

Guided Marine Wildlife Viewing

Marine wildlife viewing (MWV) activities take place in several areas inside the boundaries of the National Park. Figures 27, 28 & 29 illustrate the typical routes of whale watching vessels in the marine areas of the Long Beach Unit, the Broken Group Islands Unit, and the West Coast Trail Unit. Marine wildlife viewing is a highly seasonal activity, and the maps illustrate typical travel routes during the peak viewing (July-August) season. Boats may travel to other areas; however, those lesser-travelled routes are not mapped. Additionally, the maps do not represent the numbers of boat travelling a particular route. The effects of multiple boats, and multiple activities on a VEC will be discussed in Section 3.2: Cumulative Effects.

The VECs that may be affected by MWV are presented graphically and include: Gray whales, Steller sea lion (haulouts), Marbled murrelets (high density feeding habitat), other seabirds (breeding colonies, and feeding habitat), Eelgrass beds and water quality (Figures 27-29). Cultural sites are not presented on the maps due to the sensitivity of the information and agreements with the local First Nations. Many of the archaeology sites have great cultural significance to the First Nations and/or are highly sensitive to human disturbance. Visitor experience is discussed at the end of this section.

In the LBU (Figure 27), MWV vessels enter from the northern end of the Park (Tofino). Some vessels come up from Ucluelet to visit Sea Lion Rocks, located midway up Long Beach. During the summer season in the BGI (Figure 28), almost every marine wildlife viewing trip includes a visit to the Wouwer island sea lion haulout. Boats way also travel along various routes in order to locate Gray whales. Gray whales may be found travelling through the BGI, travelling past the BGI, or in prime feeding areas (near kelp forests , behind islands, or along sandy soft bottomed shoreline). There are few MWV operators doing trips along the WCT unit of the Park. However, in this for a trip in this area, the route often includes an off-shore component, wherein the vessel travels well outside of park waters

(Figure 29). Common sites include the sea lion haulouts on the rocky ledges and reefs and gray whale feeding areas near large kelp forests. Vessels may travel by Seabird rocks, an important seabird nesting colony located near the Cape Beale headlands.

MWV & Gray whales

The effects of marine wildlife viewing on marine mammals have been studied for several decades. By the early 1980's, the US Fisheries Service was hosting symposia to discuss whale watching guidelines. Research of this era focused on observing behavioral responses of whales to the presence of whale-watching boats. Such responses include: a) avoidance of boats (Blane and Jaakson, 1994; Watkins, 1986; Beach and Weinrich, 1989) b) attraction to boats (Blane and Jaakson, 1994; Jones and Swartz, 1984; Watkins 1986), c) shortened surfacing (Blane and Jaakson, 1994; Gordon *et al*., 1992), d) longer dives (Blane and Jaakson, 1994), and e) interruption and termination of feeding and travelling behavior (Blane and Jaakson, 1994).

Marine wildlife viewing can affect marine species through several mechanisms which include: human presence, noise (of boat motors), and water pollution from inefficient burning of fuel or from fuel spills. Schevill (1968) suggested that it's the noise of a boat rather than just its presence that causes a reaction in whales. However, there is a great amount of variability of opinion in the literature regarding how sound may affect whales, the threshold of effect, and the long term significance.

The physics of water plays an important role in the explanations of the connection between boats and cetaceans. Although light has difficulty penetrating water to any great depth, sound can travel for many kilometres. Consequently, cetaceans are highly adapted to detect sound. They rely on this sense for navigation, detection of prey and predators, social communication, mating, reproduction, care of calves, and social cohesion within the group (Roussel, 2002). The ocean already carries an ambient, natural level of noise caused by waves, earthquake rumbles, and rainstorm events (even the sounds of ice-burgs calving can contribute to this background noise)(Roussel, 2002). More recently, humans have added significant levels of noise.

Although the mechanisms, tolerance levels, and thresholds of impact are very poorly understood, marine researchers agree that excess noise can affect cetaceans in a number of ways which reduce fitness at the level of individuals, populations and species:

- Physical: non-auditory (damage to body tissue, induction of air bubble growth and tissue bends) and auditory (gross damage to ears, permanent hearing threshold shift (PTS), temporary hearing threshold shift (TTS));
- Perceptual: masking of communication with conspecifics, masking of other biologically important noises, interference with ability to acoustically interpret environment, adaptive shifting of vocalisations (with efficiency and energetic consequences);
- Behavioural: gross interruption of normal behaviour (i.e. behaviour acutely changed for a period of time), behaviour modified (i.e. behaviour which continues but is less effective/ efficient), displacement from area (short or long term);
- Chronic/Stress: decreased ability of individual, increased potential for impacts from negative cumulative effects (e.g. chemical pollutants combined with noise-induced stress), sensitisation to noise (or other stresses) - exacerbating other effects, habituation to noise – may cause animals to remain close to damaging noise sources;
- Indirect effects: reduced availability of prey. Gray whales (baleen whales) filter feeding on organisms in the sediments would not be as affected as Killer whales (toothed whales) feeding on fish. Noise can also alter feeding, foraging, resting, socialising and breeding behaviours, and the detrimental impact is likely to be particularly severe in cases where

cetaceans are temporarily or permanently displaced from areas that are important for feeding or breeding (Simmonds and Dolman, 1999).

Critiques of earlier, observational studies of the effects of whale-watching vessels on whale behavior cite inappropriate, experimental baseline conditions. Criticisms cited that although the studies examined whale behavior in the presence and absence of whale watching, while attempting to account for the amount of vessel activity, they did not sufficiently control for other physiological and environmental variables or prior whale activity (Perry, 1998). It appears to be very difficult to establish a baseline against which effects of disturbance can be compared, and factors like feeding behavior appear to be important factors predicting whale behavior (Bass, 2000). In addition, it is rarely known if a behavioral change is a response to a specific noise, rather than to a visual cue or other type of disturbance (Richardson *et al.*, 1995). Research is ongoing in this field. The International Whaling Commission (I.W.C) is presently gathering available evidence and organizing empirical data to undertake long-term impact evaluations (IWC, 1997; 1997 b, Lien, 2001).

Duffus *et al.* (1998) and Jones (1988) measured only small changes in the activities of gray whales in response to whale watching vessels. In areas of whale watching, some individual gray whales begin to exhibit 'friendly' behavior by approaching vessels, allowing people to touch them (Lien, 2001), swimming around the boat and surfacing (or "spy-hopping") beside the vessel. However, with increases in boat traffic, it has been reported that gray whales begin to avoid boats (Donovan, 1986). Gray whales may react negatively, to the noise of vessels (Lien, 2001). They are known to avoid ensonified areas (Malme *et al.* 1988; Tyack 1988), and to alter communication and surface behaviors in the presence of vessel noises (Dahlheim 1988; Jones 1988).

Different vessels produce differing levels of sound. Young and Miller (1960) compared noise from a 7.5 hp and an 18 hp outboard motor, and found that the larger motor was noisier than the smaller motor at the same speeds. Smaller engines also tend to generate higher frequencies of sound (Erbe 2002). High-frequency noise has less ability to travel distances that low frequency sound at the same volume, therefore adds only little to ambient ocean noise, except in the close vicinity of the source. The objective of a marine wildlife viewing trip is to approach whales. The whales, therefore, spend considerable time in the close presence of the vessels, where the full range of the engine sound is audible.

Evans *et al.* (1992) studied the reaction of bottlenose dolphins to various pleasure boats (a jet ski, a small inflatable boat, a power speed boat, and a commercial fishing vessel). They found that the jet ski (650 cc.) due primarily to its water-jet propulsion system, produced the lowest intensity noise (83 dB at low speed and 90 dB at high speed), followed by the inflatable, (6 hp outboard engine,) the rigid hulled speed boat, (90 hp outboard engine,) and finally the lobster fishing boat (240 hp inboard engine). Evans *et. al.* (1992) concluded from their models that a Jet ski can be heard by a bottlenose dolphin up to 450 m away, an inflatable boat about 1 km away, the speed boat from 800 m (low speed) to 1800 m (high speed), and the fishing boat from 1.1 km (low speed) to 3.1 km (high speed). When they looked at the responses of the dolphins to these vessels, they found that the general reaction was to make longer dives and to move away from the noise source. Interestingly, they found that the dolphins' responses were the greatest to the jet skis. They concluded that this was because the noise produced by these vessels rises above the ambient ocean level only at close range to the dolphins, creating a more sudden and startling noise which is likely to frighten them more than that of the larger boat. Moreover, the cetaceans tended to be more scared when the craft changed direction erratically, especially when it oriented directly toward them.

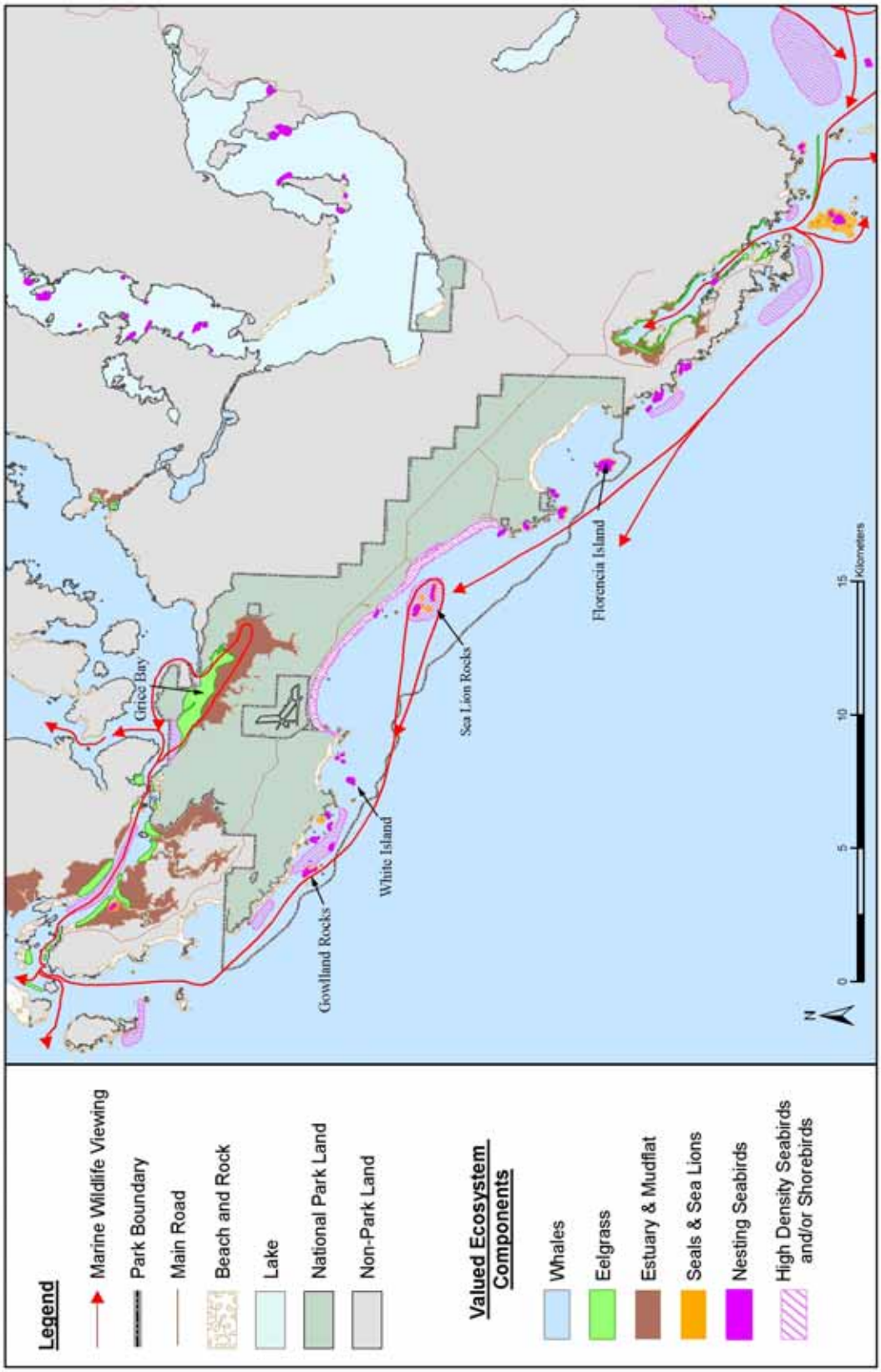


Figure 27. Typical routes of marine wildlife viewing in the ocean areas of the LBU. The red lines represent typical routes that marine wildlife viewing vessels may take during the peak, summer season. Not much boating activity occurs in the winter months. The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts, nor the significance of the interaction. For information on those aspects please refer to the discussion in the text.

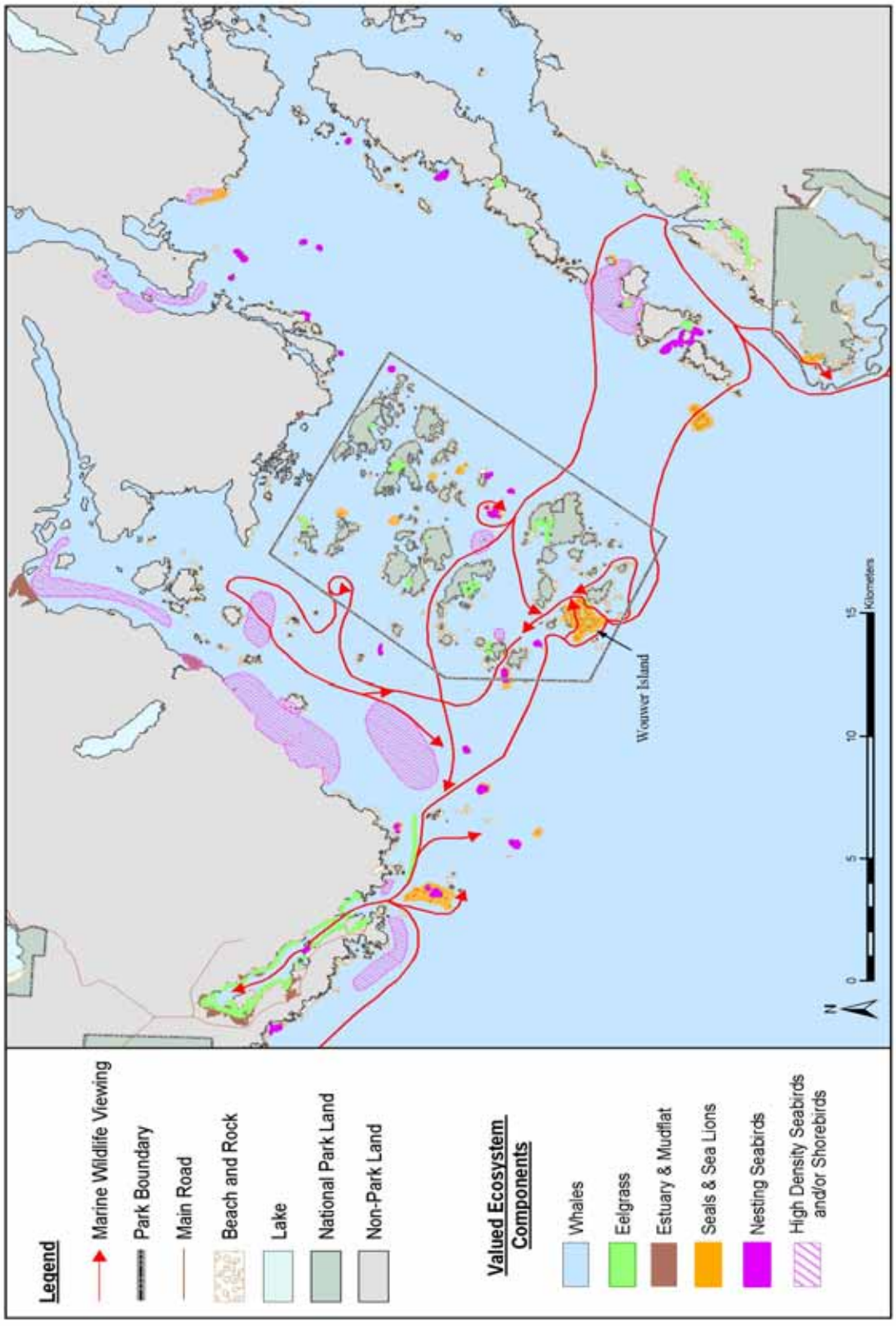


Figure 28. Typical routes of marine wildlife viewing in the ocean areas of the Broken Group Islands, PRNPR. The red lines represent typical routes that marine wildlife viewing vessels may take during the peak, summer season. Not much boating activity occurs in the winter months. The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts, nor the significance of the interaction. For information on those aspects please refer to the discussion in the text.

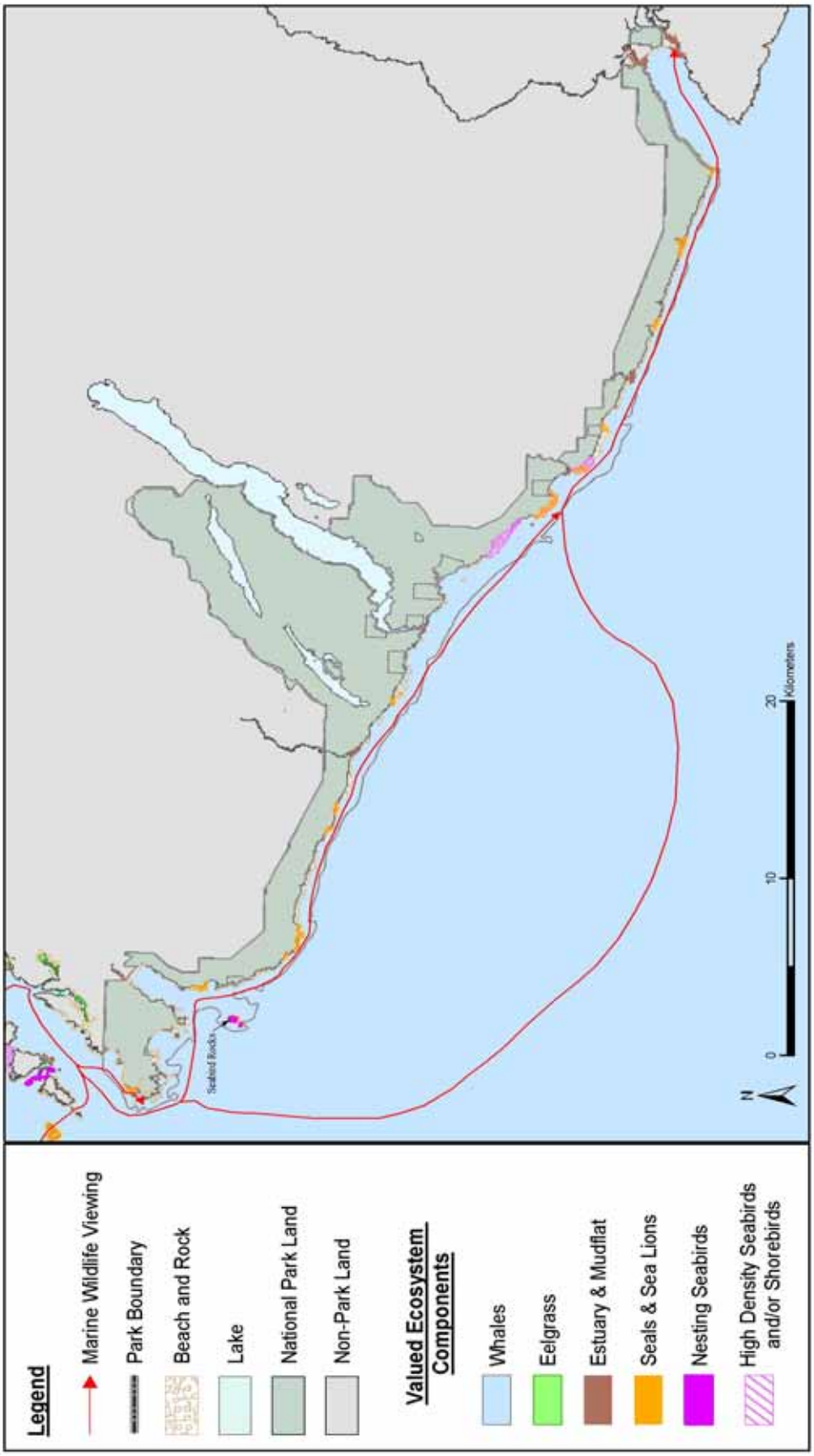


Figure 29. Typical routes of marine wildlife viewing in the marine areas of the West Coast Trail Unit, PRNR. The red lines represent typical routes that marine wildlife viewing vessels may take during the peak, summer season. Not much boating activity occurs in the winter months. The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts, nor the significance of the interaction. For information on those aspects please refer to the discussion in the text.

Those results discussed above were confirmed by Lesage *et al*. (1999) studying responses of belugas to a small motorboat, that showed that the species reacts more to small boats moving erratically than to large vessels moving on a predictable path. They also found that, because of their frequencies, sounds emitted by small boats would be expected to interfere with communication among animals.

Erbe (2002) modeled threshold approach distances to killer whales based on the noise levels produced by MWV vessels (similar to vessels used in MWV activities in this region). Boat source levels ranged from 145 to 169 dB re 1µPa @ 1m, and increased with speed. The noise of fast boats was modelled to be audible to killer whales over 16 km, to mask killer whale calls over 14 km, to elicit a behavioural response over 200 m, and to cause a temporary threshold shift (TTS) a temporary loss of hearing ability (modelled after the responses of terrestrial mammals) of 5 dB after 30-50 min within 450 m. For boats cruising at slow speeds, the predicted ranges were 1 km for audibility and masking, 50 m for behavioral responses and 20 m for TTS. Superposed noise levels of a number of boats circulating around or following the whales were close to the critical level assumed to cause a permanent hearing loss over prolonged exposure (Erbe, 2002). According to this model, a behavioral reaction should be observed over 200 m from fast boats and 50 m from slow boats.

Lien (2001) encourages resource managers to be cautions about drawing conclusions about marine mammal behavior. He states that, although some individuals in some species quickly habituate to human presence, typically, wild animals are unlikely to habituate to close approaches or pursuit or when abrupt or unusual human activities occur. In other cases, some species simply do not tolerate human presence: They avoid the area and move to different locations (IFAW ,1997). Lien (2001) also highlights another common finding from terrestrial mammal studies indicating that reactions to human presence varies with individuals (IFAW, 1997). Not all individuals are alike, and even the same individual does not always behave in same way. Such variance in individual reactions can be due to reproductive state, age, the animals' nutritional status, its previous experiences with human activities or previous or current activities. Some animals can become aggressive,;others flee or change their activities.

Observing marine wildlife viewing distance regulations and mitigations will significantly reduce the effects of boating activities on Gray whales. After mitigations the effects should be negligible.

MVV & Steller sea lions (haulouts)

Sea lions can exhibit similar variability of responses to human presence. This plasticity in the stress response behaviour to the approach of marine traffic has been observed in the BGI (Szaniszlo, *pers comm*. 2004). Sea lions have been observed to adapt to the approach of certain vessels, exhibiting little stress response when they recognize a familiar boat. However, the approach of an unknown vessel can startle the herd.

The reaction of sea lions to boats that come too close is usually to leave the haul-out for the safety of the water, an activity that is energetically costly and which can result in injury to the animal when it is done in haste (Szaniszlo, *pers. Comm.,*. 2004). At rookeries and some haulouts, stampeding could result in young sea lions being trampled or pushed into the water, both of which may be fatal. Stampeding behavior in the sea lions at the Wouwer haulout varies with species, sex and age class. Szaniszlo (2004) found that, in response to a disturbance, sub-adult male and female Steller sea lions stampeded first, followed by California sea lions, and lastly the large Steller bulls.

Viewing setbacks of 100m have been suggested as adequate. In the BGI, the sea lions at the Wouwer haulout were found to elicit little disturbance response to familiar boats that approached to 50m (Szaniszlo *pers comm*. 2005). From research observations, Szaniszlo (*Thesis in progress*, 2005) concluded that a viewing distance of 50 is likely appropriate for Wouwer, but cautions that 50m is not likely enough for other haulouts, for example those at Carmannah point (WCT) and Sea Lion Rocks (LBU). Szaniszlo (*pers. comm*. 2005) suggests that the recommended 100m viewing guideline apply at these other locations.

Sea lions use their whiskers to detect the movement of prey in the water. Thus, their ability to detect prey is unlikely to be negatively affected by the noise of a motorboat. Observing proper distance set-backs of 50-100 m can limit this negative impact resulting in negligible environmental effects from commercial marine wildlife viewing.

MWV & Marbled murrelets and other sea birds

The paths of MWV boats on the water may be through high density feeding areas (Figures 27, 28& 29). MWV can affect Marbled murrelets and other sea birds by causing energetically costly stress and flight responses, by causing them to drop fish that they have caught, or by direct injury through collision. Collisions with sea birds are a rare occurrence, but do happen. More often, the bird is able to move out of the way of a traveling boat.

The effects of human disturbance on nesting colonies of waterbirds are well described (Carney and Sydeman, 1999). In response to a disturbance, adult seabirds may show an increase in heart rate and breathing rates (Culik *et al.*, 1990; Wilson *et al.*, 1991), may reduce their attendance at nest sites (Olsson and Gabrielsen, 1990; Wilson *et al*., 1991,) or completely abandon nests and chicks (Boellstorff *et al*., 1988, Evans and Kamp, 1991).

The presence of boats affects sea birds feeding on the water or resting on nearby islets, resulting in lost foraging time or disrupted breeding activities and energetically costly avoidance behaviour. Flight from boats may also result in an increased vulnerability to predators and competitors (Roe *et al.* 1997). Surface nesting birds are particularly affected by this type of disturbance, as their eggs or young become vulnerable to predation when the adults leave the nest. Disturbance of surface nesting seabirds could also be potentially significant, as the entire year's nesting effort could be wiped out by one careless boater.

Kuletz (1996) found that the number of marbled murrelets at sea was negatively correlated with the number of boats in Kachemak Bay Alaska, and that with both boats and low flying aircraft in Prince William Sound, Alaska. Speckman (1996) described encounters between their research vessel and marbled murrelets on the water, and found that the evasive behaviors of the birds ranged from flying away to paddling away from the boat. At dusk, murrlets pairs switch nest sitting shifts. The bird coming from the water will bring food for the chick in the nest. Fish holding by murrelets is used by biologists to demarcate the time of the chick-rearing period (Kuletz and Kendall, 1998, Speckman *et al*., 2003). Adult murrelets usually deliver prey to chicks before dawn or after dusk (Naslund and O'Donnel, 1995), and adults sitting on the water with prey in their bills are typically waiting for sunset to carry those prey to chicks. Speckman (1996) observed that boats can cause an interruption of fish holding, and thus, delivery to the chicks. Loss of prey from boat disturbance can represent a substantial energetic cost to adults if they have to repeat a trip to the foraging areas.

Marine wildlife viewing trips very rarely begin at dawn. Most commercial marine wildlife viewing trips leave at 9:00 am or 10:00 am. Similarly, late afternoon or early evening trips may result in the boat returning to port at dusk. Boat operators should avoid startling birds on the

water, especially those holding fish (at dusk). This could minimize or mitigate the potential negative effects of boat disturbance on murrelets rearing chicks.

Avoiding rafts of sea birds in general, not startling nesting birds, and observing the "No go" zones around important seabird breeding sites will serve to mitigate additional negative impacts.

MWV & Water Quality

Fuels such as gasoline and diesel can be toxic to marine animals. Fish are extremely sensitive to even a small amount of oil products (Georgia Straight Alliance, 2004; US EPA, 2004). Even small amounts can cause a severe diminishment of water quality (One litre of fuel can contaminate 1 million litres of water, US EPA, 2004).

There are a number of potential situations that could result in fuel being released into the ocean. Spills during the re-fuelling process, or during the transport or storage of fuel, could result in the release of fuel into the water. Small fuel slicks left on the water after pumping of oily bilge can cause harm to sea birds by coating feathers resulting in a loss of thermal protection and buoyancy.

In Pacific Rim National Park Reserve, there are no public re-fuelling facilities, and fuel caches are not allowed. Most commercial (if not all) MWV vessels have sufficient fuel capacity that they do not need to refuel during a trip. On rare occasions, vessel to vessel refuelling, and refuelling of portable tanks may occur, and small spills may happen. Even small amounts of fuel can harm marine plants and animals, and cumulatively they may have a significant effect. The pumping of bilges can also contribute to the dumping of fuel, oil and other toxins into a water body. This source of pollution could become significant at popular anchorages, and where water movement is restricted. If bilge water discolours the surface of the water it should not be pumped over board. Bilge cleaners, even biodegradable ones, are not recommended, as they simply spread the pollution over a greater volume of water (Burles and Oulette, 2000). A more serious problem could result if a vessel runs aground and spills the contents of her fuel tanks. Ensuring that all vessel operators are properly licenced and are knowledgeable of Pacific Rim National Park Reserve waters will help reduce the risk of an accident occurring. The National Park has emergency spill response kits (including absorbent pads, and floating booms) on hand for all three units of the Park.

Boat motors, themselves, can also be a significant source of hydrocarbon pollution. Motors that are not running efficiently or are using incorrect or contaminated fuel may result in incomplete combustion, resulting in some unburned fuel being passed out the exhaust into the water. Two-stroke engines (typically older engines and those found in personal water craft) release directly to the aquatic environment 25-35% of their fuel unburned when operating (National Parks Conservation Association, 1999; Georgia Straight Alliance 2004; US EPA 2004). One, single 2-stroke engine will foul 4 acres of water surface in an hour (US EPA 2004). Each year in North America, marine 2-stroke motors spill 15 times more oil and fuel into waterways than did the Exxon Valdez. Properly tuned four-stroke outboards, on the other hand, do not release any fuel into the water, and are more fuel efficient. Requiring that commercial business operators use only four-stoke engines would mitigate this source of pollution in the National Park. (Note: The majority of the commercial marine wildlife viewing operators in this region have already made this switch and use only four-stroke engines.)

Operators of commercial marine wildlife viewing vessels are expected to meet Canadian Coast Guard pleasure craft standards, observe CCG collision regulations, be knowledgeable about the hazards in the marine area in which they work, and operate their vessel in a safe manner.

MWV & Cultural Resources

Since commercial marine wildlife viewing takes place from boats, people engaging in this activity tend not to venture on land during the course of the trip; therefore, few interactions with terrestrial predators would be expected, except where terrestrial predators are observed feeding in the intertidal areas. Also, there is little negative effect anticipated to cultural resources, except where excessive boat wakes may be causing erosion to otherwise protected shoreline midden sites.

Guided Kayaking Tours

Typical kayaking routes in the BGI are presented in Figure 30 as yellow dotted lines. The vast majority of all commercial kayaking trips in PRNPR take place in the BGI.

Guided Kayaking and Wildlife

Kayaking is a relatively low-impact, outdoor activity. Kayakers are relatively quiet on the water; therefore, there is much less potential for disturbance of wildlife due to sound. However, human presence can have a negative effect on wildlife especially if the wildlife is startled.

Sea lions at a haulout may be startled and may stampede if a kayaker approaches too closely (Szaniszlo *pers comm.* 2004). This may result in injury to the sea lions, but could also be particularly dangerous for the kayakers.

If kayakers approach too closely to a sea bird rookery, the nesting birds may be disturbed flee from the nest, exposing the eggs to predation or temperature fluctuations that may negatively affect the embryo. Observing safe approach distances to sea lion haulouts and seabird nesting islands will minimize and mitigate these negative effects.

Guided Kayaking and Marbled Murrelets and other Seabirds

When paddling out to the BGI from Toquart Bay, kayak groups may pass through high-density sea bird feeding areas. The levels of disturbance caused by kayaks is not expected to be as great as that caused by a motor boat. Kayaks tend to be slower moving, and the birds may not be as startled if they can see the group of kayakers approaching in the distance. However, there may still be a small non-significant energetic cost if the birds have to move out of the area or if they are startled into dropping fish.

No dogs are permitted on the islands in the Broken Group. This is for the protection of wildlife. Dogs pose a significant risk to wildlife: They may chase migratory birds and other small animals. In addition, they may attract large predators.

Guided Kayaking and Cultural Resources

For safety reasons and for the protection of cultural resources, kayakers are not permitted to kayak into sea caves. Kayakers are expected to meet Canadian Coast Guard pleasure craft standards, and operate in accordance with the collision regulations. The effects of camping are discussed in a following section.

Guided Surfing & Guided Surf Kayaking

Guided surfing and surf kayaking is allowed to take place in only a few areas in the Park. Those are indicated by blue arrows on Figure 31. Surfing and surf kayaking tend also be very low-impact sports. Surf operators are not permitted to take clients to beaches that are not serviced by maintained access trails (for example radar beaches), thus limiting the negative impacts to the forest and bog ecosystems. Surfers may encounter wildlife while in the water. Sea lions may, on rare occasions, approach the groups, and can be quite aggressive.

Surfing, Surf Kayaking and Migratory Shorebirds

Migratory shore birds are indirectly affected by this activity in the National Park. PRNPR Superintendent's orders state that no dogs are allowed off leash in the Park. The Park has recorded many occurrences where surfers leave their dogs unattended to roam the beaches while they are surfing. Those dogs may chase shorebirds or become aggressive with other dogs on the beach, on occasion displaying threatening behaviour to children and adults, or biting people. Surf operators are required to let their clients know about the National Park regulations.

Guided Walks and Hikes

The areas for guided walks in the LBU are shown as red areas on Figure 32. Those consist of the maintained trails and the beaches in the Long Beach Unit. Figure 33 shows the location of the West Coast hiking trail, the location for guided hiking.

Guided walks and Hikes & Soils and Vegetation

A substantial amount of research is available on the impacts of recreational activities on vegetation in the Pacific Northwest (Cole *et al.*,1987; Cole, 1991; Cole, 1989; Cole *et al.*, 1995). However, not much has been conducted in areas of hyper wet maritime eco-region.

Hiking can have damaging effects on the wet organic and erosion prone soils in this region. Therefore, PRNPR has invested in maintaining boardwalks and gravelled trail systems to protect the ecosystems. Year-round in the LBU, trail crews maintain the trail infrastructure to ensure safety of visitors and limit the negative environmental impacts of hikers. Commercial operators guiding visitors on "interpretive walks" comprise only a small fraction of the numbers of hikers that venture down the trails in the LBU.

Along the West Coast Trail, the conditions for hiking are more difficult. The trail would likely be able to recover from the effects of one group of hikers. However due to the volume of hikers, the Park employs a trail crew during the operational season to patrol and repair the trail boardwalk and infrastructure (bridges, etc). These boardwalk and infrastructure reduce the impacts of hiking and make the river crossings safer for hikers. Trail erosion can allow the colonization of exotic species of vegetation. Dune areas are rare and sensitive ecosystems, and even a single hiker, if not careful, could cause damage that might take years to restore. Exercising care not to cause damage to plants in the dunes can mitigate negative effects.

Guided Walks and Hikes & Wildlife

Hikers must be cognisant of predator encounters, and observe the wildlife approach distances. Hikers should never feed wildlife.

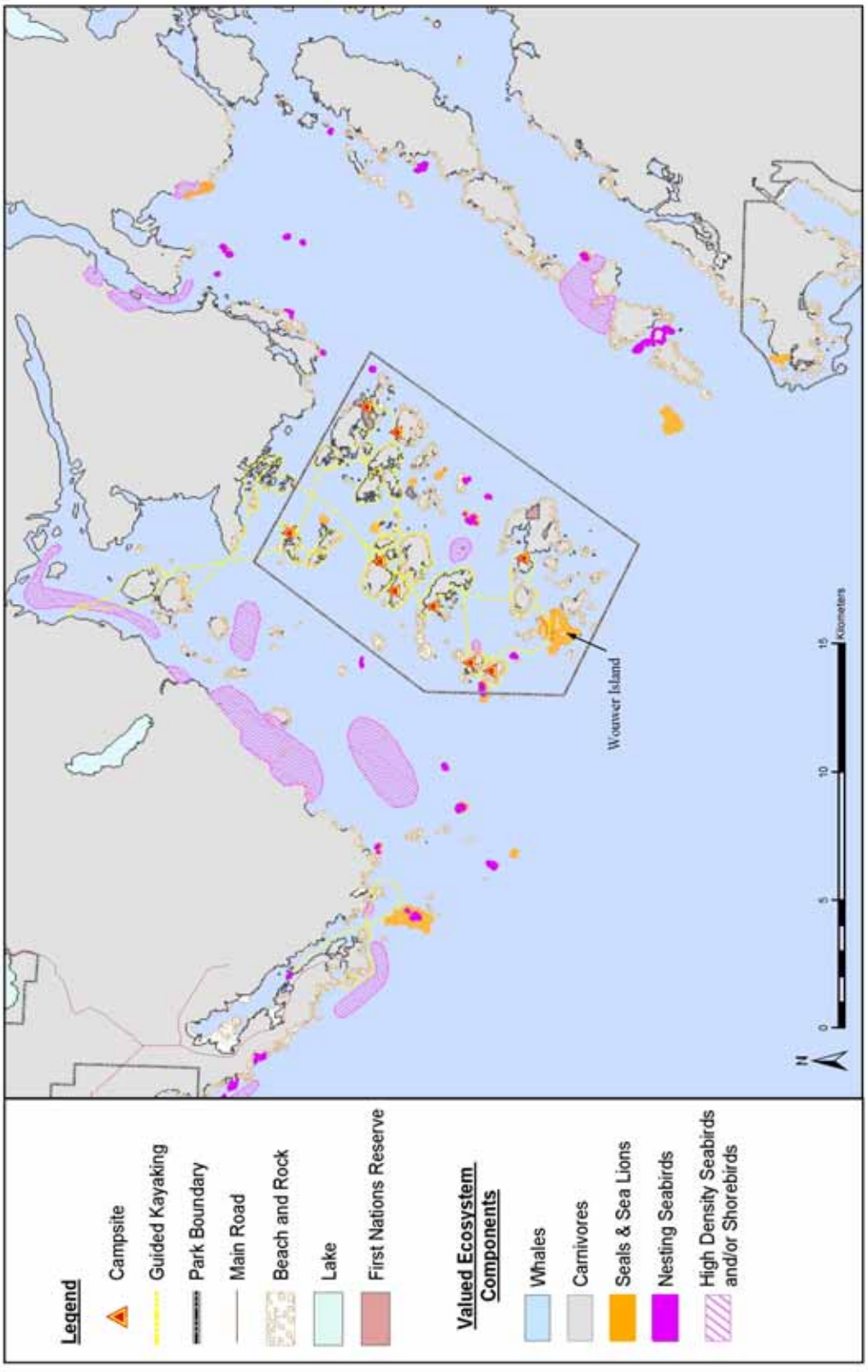


Figure 30. Typical routes of commercial, guided, kayaking groups in the Broken Group Island Unit, PRNPR. The yellow dotted lines represent typical routes that kayakers may paddle when entering and touring around the BGI during the peak summer season. Not much kayaking activity occurs in the winter months (although there may be very low levels). The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on those aspects please refer to the discussion in the text.

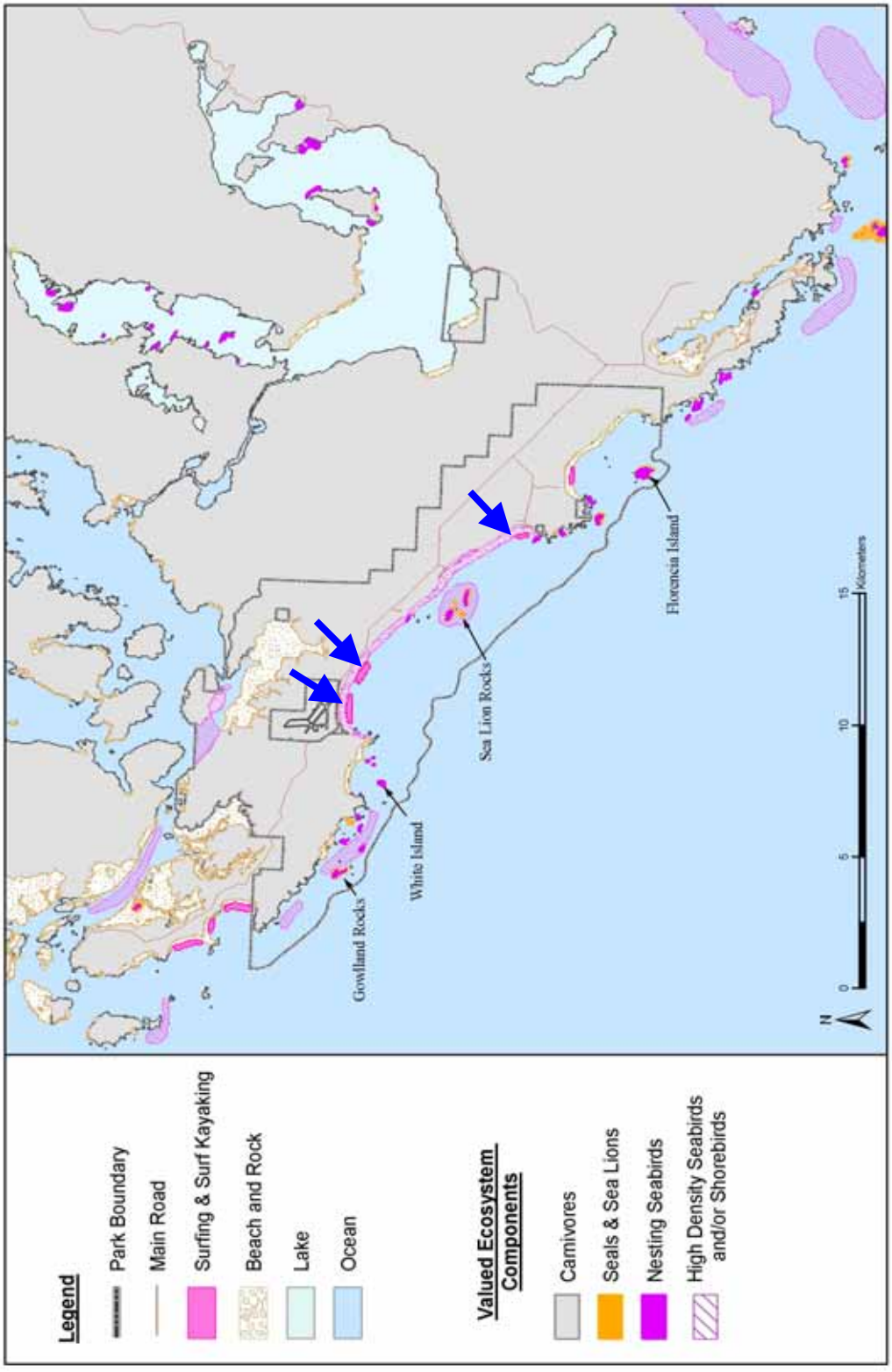


Figure 31. Locations of commercial surf instruction and surf kayaking (indicated by blue arrows) in the Long Beach Unit, PRNPR. The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on those aspects please refer to the discussion in the text.

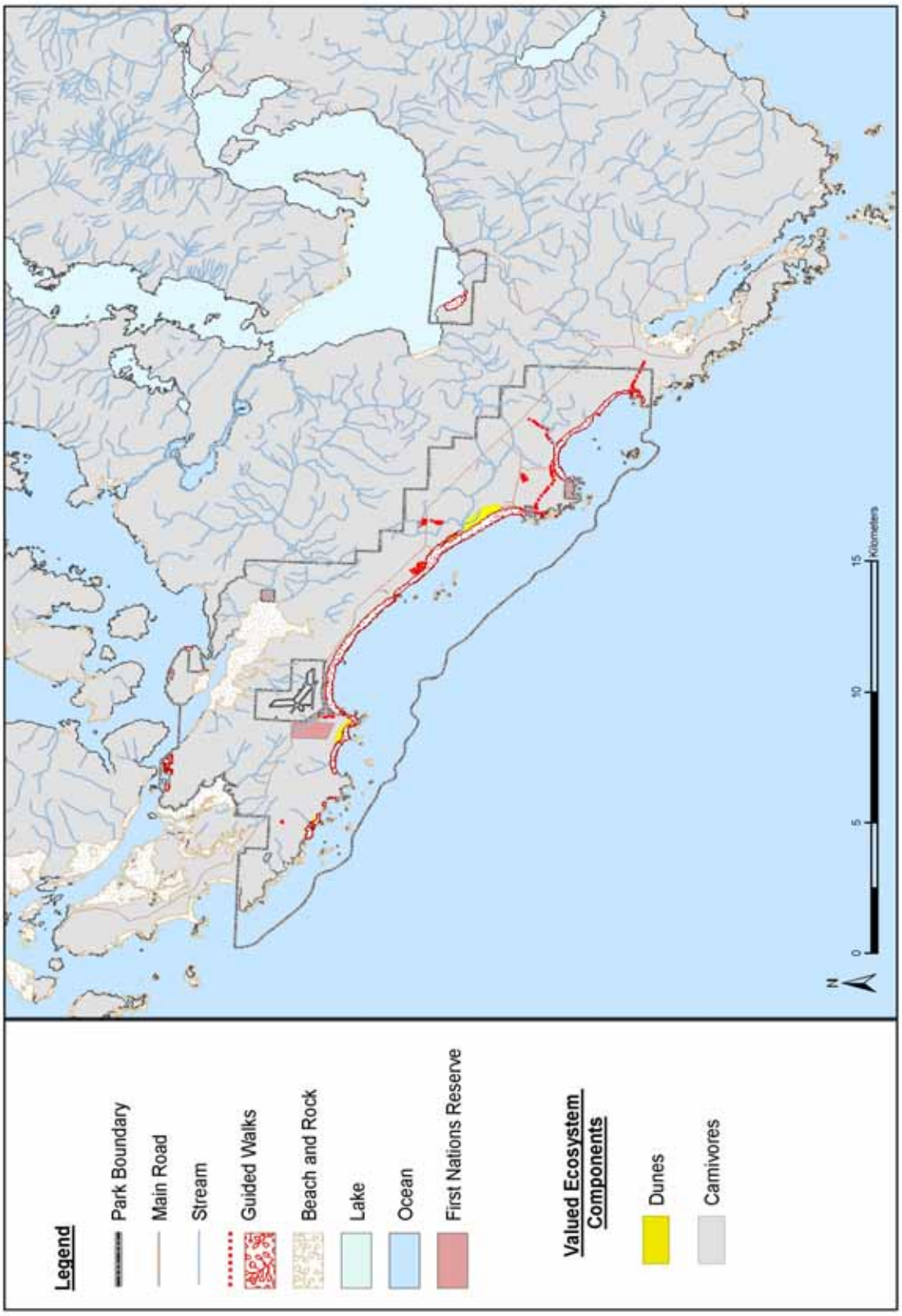


Figure 32. Locations of commercial guided walks (indicated by red lines) in the in the Long Beach Unit, PRNPR . The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on those aspects please refer to the discussion in the text.

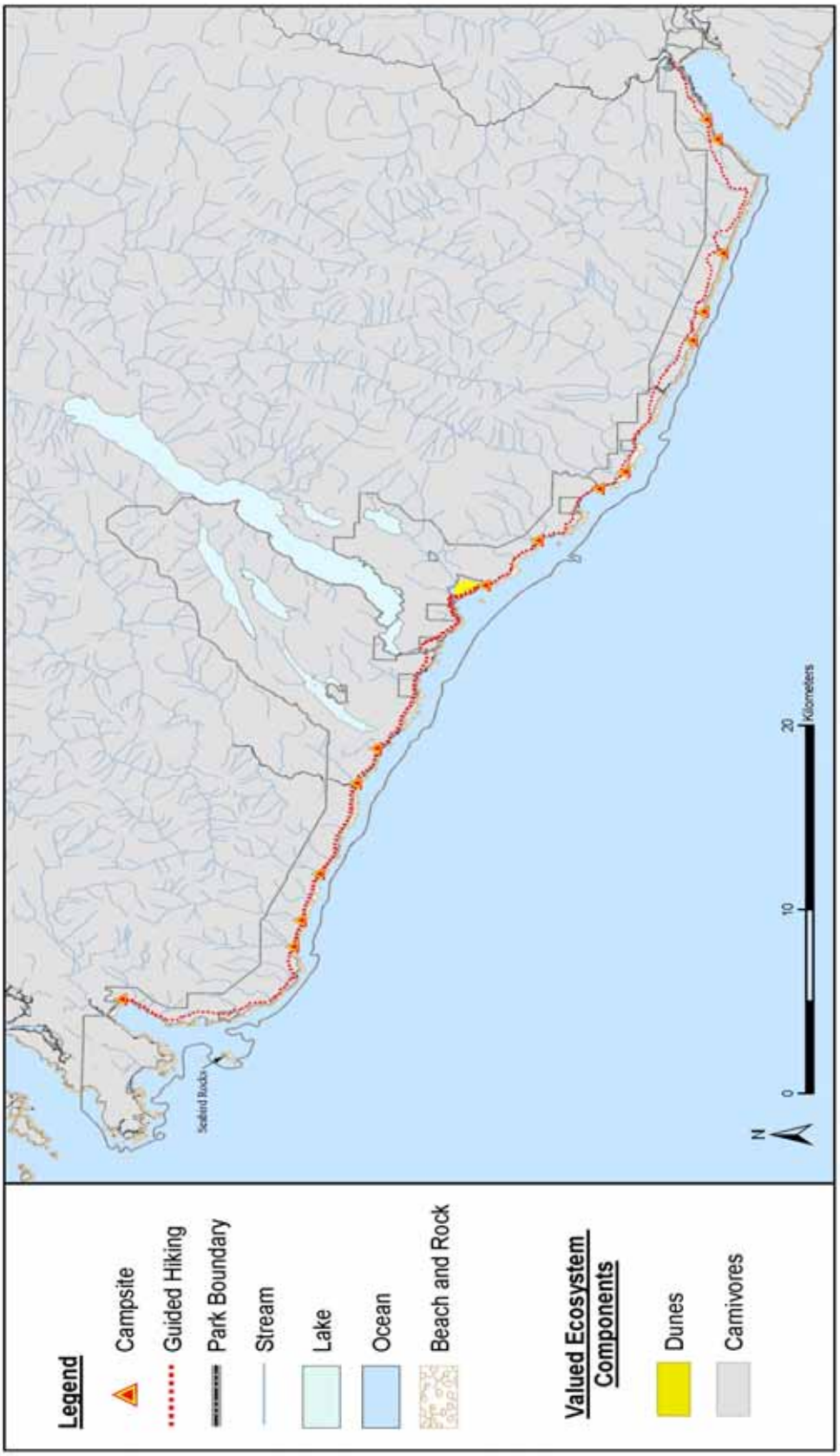


Figure 33. Locations of commercial guided hikes (indicated by red dotted line) along the West Coast Trail Unit, PRNPR . The map also illustrates VECs that may be affected by those activities. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on those aspects please refer to the discussion in the text

Guided Walks and Hikes & Water Quality

Stream crossing structures (bridges, ropes and pulley systems) allow visitors to safely cross dangerous watercourses. Those structures are built so that they address the safety needs of visitors and meet DFO regulations for stream crossings for the protection of salmon habitat. If not built properly, those structures could cause erosion and sedimentation resulting in damage to salmon bearing creeks.

To limit pollution to waterways and drinking water sources, hikers should use the toilet and washroom facilities provide by the Park. In all three units, the Park maintains washroom facilities, pit privies and solar composting toilets.

Guided SCUBA Diving (No map)

The effects of divers on coral reefs in tropical areas is well established (Schaeffer and Foster, 1998). Less is known about the effects on northern rocky reefs and kelp forests. Schaeffer and Foster (1998)studied divers in giant kelp forest in Monterey Bay , California. They found that, during a half hour dive, divers contacted the bottom 43 times, touched four animals, and detached two algal blades. They estimate that over 60,000 divers use local kelp forests every year and that the cumulative effects in their area are significant.

The number of divers using PRNPR is far lower, likely less than 1000 per year. It is likely with such very low levels of use in the National Park, that marine ecosystems can recover from the negative impacts of the activity.

Guided SCUBA Diving and Cultural Resources

However, cultural sites once damaged are irrecoverable. Divers, if exploring shipwreck sites, must not damage or collect and artefacts. It is illegal, under the *Canada National Parks Act*, to disturb or remove cultural objects from the Park. The BC *Heritage Conservation Act* – (1996)a provincial statute states that persons cannot damage or alter a heritage wreck or remove any heritage object from a heritage wreck.

Overnight Use (Camping)

Campsites within the National Park are presented on the preceding maps (red and orange triangles). There is only one, large, front-country campground in the Long Beach Unit and no backcountry campsites. Conversely, there are 8 backcountry sites located in the BGI and ~14 along the WCT and no frontcountry campsites in either the BGI or the WCT units.

Environmental impact due to camping and overnight use are well documented in the literature. (Cole *et al.*,1987; Cole 1991; Cole, 1989; Cole *et al.*, 1995). A substantial amount of research is available on the impacts of recreational activities on vegetation in the dry areas of the Pacific Northwest (Cole *et al.*,1987; Cole 1991; Cole, 1989; Cole *et al.*, 1995). However, not much has been conducted in areas of hyper wet maritime eco-region.

Overnight Use & Soils and Vegetation

Camping can affect soils by compaction due to human trampling, heavy use, or by physical clearing to level an area for a tent site. Vegetation can be damaged by trampling (Cole *et al.*, 1987, Cole, 1995). Trees can be damaged by firewood collection, people putting nails in the trunks (to which to tie clothes lines or secure tarps), or by people damaging the trunks with axes. Proper low-

impact camping guidelines should be followed (Appendix D). Campsite mitigations are ongoing in the BGI. Group size limits assist in preventing overcrowding and campsite expansion. Low fencing has been installed in areas where trail braiding and campsite expansions were taking place. The results to date show the vegetation is regenerating and that the damaged areas are recovering.

Overnight Use and Wildlife

Bears, wolves, and cougars can exhibit a variability of responses to human presence. Typically, predators that have lost their fear of humans pose greater risk to them. It is critically important in areas of high tourist activity to teach people the appropriate behavior around wild animals. Allowing animals access to food is the first step in a well documented series of steps leading to animal habituation and wildlife-human conflict (PRNRP, 2004). The conflict may result in human injury, and almost always ends with the destruction of the animal. In the wilderness, campers must be very careful not to initiate the process (one camper can cause serious future problems). Keeping a clean campsite, and never feeding wild animals is important to the long term sustainability of predator populations.

Overnight Use and Water Quality

Water quality can be affected by the use of soaps for washing and through faecal contamination. To limit pollution to waterways and drinking water sources, hikers should use the toilet and washroom facilities provide by the Park. In all three units, the Park maintains washroom facilities, pit privies and solar composting toilets.

Overnight Use and Cultural Resources

Cultural sites can be damaged if people clear intertidal areas of rocks to make approach ways into shallow beaches. In some areas of the BGI, intertidal areas contain the remnants of aboriginal fish traps and fish weirs. Cultural sites can also be damaged by people digging in middens to level the ground for tent locations or is people enter sea caves and disturb cultural artefacts.

Transportation Services

Impacts similar in nature to those determined for marine wildlife watching vessels are expected to apply to transportation services (refer to MWV section above), with the exception that transportation services operators tend not to target and follow marine mammals. Therefore, negative effects on marine mammals may be reduced. Attention to approach distances, and “no go zones” for marine mammals and seabirds should still apply.

3.1.2. Activity Specific Mitigations

Tables 8, 9 ,10 , 11 & 12 list full sets of mitigations (or "operator standards") to be applied by guides for marine wildlife viewing, kayaking and surfing when conducting guiding activities in the Park. The mitigation measures in the following sections apply to all guiding operations included in the scope of the model class screening. The term "operator" and "operation" refer to the company offering a guiding service. The term "guided" refers to the individuals actually in the Park leading visitors on a commercial outing.

In addition to the measures outlined below, business operations and guides are expected to comply with any local park regulations, policies, guidelines, travel restrictions, area closures, established reservation systems or other directives issued by Parks Canada for the purpose of mitigating environmental effects or ensuring public safety. Posted, voluntary restrictions on trails should be considered as mandatory restrictions by commercial operators and remain in effect until acceptable trail conditions exist and closures/restrictions are lifted; unless, through consultation with Parks Canada, special permission is granted. Business operators and guides are expected to follow other laws as applicable (e.g. boating safety regulations).

Canada Shipping Act (CSA) governs the operation of all vessels in Canadian Waters, large or small. The operator of a pleasure craft is responsible for the lives of those on board. He/She is also responsible for any damage the boat causes through negligent operation. Under the Canada Shipping Act regulations, all pleasure craft operators must meet specific requirements regarding licensing and registration, operator competency, safety equipment, and boating operations and practices. These regulations include: the Boating Restriction Regulations, the Collision Regulations, the Competency of Operators of Pleasure Craft Regulations, the Pleasure Craft Sewage Pollution Prevention Regulations and the Small Vessel Regulations.

Activity Specific mitigations for Vegetation and Soils

Table 8. Vegetation and Soils: Activity Specific Effects and Mitigations

Activity	Activity Specific Mitigation
Marine Wildlife Viewing	• In areas where sensitive soils may be disturbed, avoid producing a wake that disturbs the shoreline and cause erosion. Approach inshore areas at slow speeds to minimize disturbances to banks, shorelines and shallow water habitat. • Avoid damaging eelgrass beds with boat propellers or wakes. • To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect boat trailer as well, removing all dangling or attached pieces of vegetation.
Kayaking	None required ** *If groups venture onto land for a day hike, refer to Guided Walks and Hiking mitigations*
Surfing	None required
Hiking	• Instruct clients on the sensitivity of rainforest soils, and instruct them to remain on the boardwalk and/or main trail routes.
	Mitigations currently in place: • The Park stabilizes trails existing near sensitive cultural soil deposits (or may consider relocating the trail if the risk of damage to the cultural resource is to great). • During the entire operational season, in all three units, the park monitors the status of trails and areas prone to erosion or flooding (flooding may trigger trail widening and trail braiding) and repairs the trail as issues arise.

Camping	• Make use of existing, designated campgrounds/campsites and tent pads where possible, appropriate and available • Select campsites in durable locations where signs of occupation will remain minimal (especially for base camps). Avoid setting up tents and tarps over vegetated areas. • Do not remove any rocks from any features that look- even remotely – like an archaeological site; for example, intertidal canoe launches. • If rocks are used to secure tents, return them to their original position and location • Concentrate tents and camp kitchens in areas that are established for those purposes or that are already impacted. • Avoid making new trails or shortcuts through vegetated un-impacted areas. • Renaturalize campsites before leaving (remove fire rings and charcoal etc.). Ensure that the site is as clean or cleaner that it was found. • Monitor the impacts around campsites, and move or rearrange camp as necessary to avoid permanent damage to vegetation or soils. <u>Mitigations currently in place:</u> • The Park has designated campsites in all three areas of the park. • The Park maintains campsites throughout the operational season. • Park staff have implemented some trail closures and campsite fencing to limit the spread of vegetation damage.
Transportation Services	• In areas where sensitive soils may be disturbed, avoid producing a wake that disturbs the shoreline and cause erosion. Approach inshore areas at slow speeds to minimize disturbances to banks, shorelines and shallow water habitat. Avoid damaging eelgrass beds with boat propellers or wakes. • To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well, removing all dangling or attached pieces of vegetation.

Activity Specific Wild life Mitigations

In 1995, PRNPR adopted a set of voluntary guidelines for interacting with marine wildlife advised by the standards developed by DFO. In 2000, the National Park co-sponsored a joint regional workshop with DFO and BC Parks, which was well attended by local business operators, First Nations representatives and community members to discuss standard marine wildlife viewing guidelines and compliance and enforcement issues.

In 2003 and 2004 Fisheries & Oceans Canada (DFO) conducted extensive, Canada wide, consultations, asking Canadians what kind of mandatory legal protections were necessary for marine mammals. (A summary of that process can be found at http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/marinemammals/documents/bulletin-dec02_e.htm)

A year earlier, PRNPR began its own consultation process to establish standards for ecotourism businesses operating within the National park. A component of those consultations dealt with marine mammal viewing guidelines.

As expected, the smaller scale local consultation process for PRNPR wrapped up earlier that the nation wide consultations conducted by DFO. Marine mammal researchers from DFO commented on the proposed PRNPR business licence standards to ensure consistency. For the most part, the viewing guidelines adopted by PRNPR are the same as those set by DFO.

Table 9. Wildlife: Activity Specific Effects and Mitigations

Activity	Activity Specific Mitigation
Marine Wildlife Viewing	* See detailed mitigation list below
Kayaking	BGI already a no take zone for finfish. No additional mitigations required.
Surfing	• PRNPR Superintendent's orders state that no dogs are allowed off leash and unattended in Park. Operators will communicate this message to their clients. No additional mitigations required.
Surf Kayaking	*Indirect effects of the activity: same as for surfing – see above.*
Hiking	• Follow "Keeping the Wild in Wildlife" guidelines • Enjoy, but do not disturb, life in tidepools. Be careful walking in the intertidal zone not to cause damage to barnacles, anemone, etc.
Overnight Use (Camping)	• Operators and guides should make use of existing, designated campgrounds where possible, appropriate and available. • Concentrate tents and camp kitchens in areas that are established for these purposes or that are already impacted. Avoid making shortcuts between camps or kitchen areas. • Select campsites on durable surfaces. Disperse tents, avoid repetitive traffic routes, and concentrate kitchen and tarp sites where possible on rock, sand or gravel or naturally unvegetated sites. • Do not "clean" sites of organic litter. Renaturalize campsites and rest stops when leaving, covering scuff marks, replacing sticks or branches, raking matted grasses, etc. • Guides should monitor the impacts around campsites and move or rearrange camp as necessary to avoid permanent damage to vegetation or soils. • Follow low impact camping guidelines, "Keeping the Wild in Wildlife" guidelines and the "Bare campsite" policy.
Transportation Services	• Adhere to site specific guidelines for wildlife, and other applicable wildlife encounter directives, including approach distances for MWV. • Follow "Keeping the Wild in Wildlife" guidelines

Table 10. Additional Wildlife: Mitigations

WHALE WATCHING	**APPROACH GUIDELINES** • Approach whales from the side or rear; do not approach whales head-on • Establish layout and movement of vessels before approaching whales • Use radio communication with others on-scene to assess viewing situation • Move closer gradually • Slow down to 7-8 knots when 800 m away • Reduce speed to "*no wake speed*" at 250m away • Approach travelling whales from behind or from the side with speed and direction consistent with the behaviour of the whales • If whales appear to be avoiding the vessel, increase distance between the vessel and whale • Do not chase whales • Vessels should be positioned only on one side of the whales • Whales should not be circled • Do not position vessels ahead of whales and wait for the whales to pass • Avoid crossing ahead of travelling whales • If crossing ahead of whales is unavoidable, there should be 800 m clearance between the boat and the whales **VIEWING GUIDELINES** • Do not approach closer than 50 m, this is a "*no go zone*" • Vessels should work with other whale watching vessels in rotation • When the "*close viewing zone*" (50-100 m) is occupied, other vessels should wait beyond 100 m • Use radio communications to co-ordinate rotation into and out of the "*close viewing zone*" • No more than 3 vessels "*under 5 tons*" or 1 vessel "*over 5 tons*" inside the "*close viewing zone*" • Time in the "*close viewing zone*" (50–100 m) should be limited to 10-15 minutes • All vessels should be on one side of the whale(s) • Do not get between a mother and calf • No circling whales • Leaving the engine running is up to the discretion of the driver • To avoid startling whales, paddlers should make some sort of regular, repetitive, low volume noise (like tapping the floor of the vessel) when inside the "*close viewing zone*" • Avoid sudden alteration of vessel speed • Avoid sudden alteration of vessel direction • Avoid sudden alteration of vessel angle • If a whale approaches the vessel, stop until it moves away at least 50-100 m • Fixed-wing aircraft must maintain a minimum height if 1000 feet • Helicopters should maintain a minimum of 1000 feet **KILLER WHALE GUIDELINES** • Response and needs may be different for transient and resident killer whales • There is a greater potential to impact transients with noise: keep noise low

PINNIPED VIEWING (SEALS AND SEA LIONS)

APPROACH GUIDELINES

- Vessel behaviour should be based on the most sensitive or easily disturbed species on site (which may not be the species that is sought for viewing)
- Approach at an indirect angle that provides the maximum visibility for the animals or birds
- Move closer gradually
- Monitor behaviour on approach. Watch for signs of agitation and increase your angle *away* from the animals or birds if they become visibly agitated.
- Slow down to 5 knots (*no wake speed*) at 250 m away
- Do not approach head-on
- Avoid loud noises, and avoid rapid movements
- Avoid sneaking up to animals
- Kayakers should avoid hugging the shore
- Use radio communication with others on-scene to assess the situation
- Avoid circling islands or travelling close to shore at close distances
- Use binoculars instead of your vessel to bring animals into closer view
- Aircraft must maintain a minimum height of 1000 feet
- When viewing pinnipeds, aircraft should be attentive to the response of birds, which may occupy the same site: adjust height and/or approach to avoid flushing birds
- Helicopters are not appropriate for viewing animals or sea birds
- Personal watercraft are not appropriate for viewing animals or sea birds
- Be more cautious at the beginning of the season. Animals may require more space early in the season. Later in the season, animals may become more accustomed to boats, allowing closer viewing
- Birthing areas are "*no go zones*": Remain at least 250 m offshore
- Avoid approaching pinnipeds on cliff areas or areas with steep drops where animals may injure themselves if they flee the area

VIEWING GUIDELINES

- Do not approach closer than 50 m, the "*no go zone"*
- Be aware that the 50 m "*no go zone*" is a minimum distance: a greater distance may be required earlier in the season and/or year round at certain sites
- If stopping to view pinnipeds, avoid rapid movements: Stop and depart slowly, and keep a steady speed when viewing.
- Leaving engine running is up to the discretion of the driver
- Do not go ashore
- Vessels should view animals and shorebirds in rotation with other vessels
- Use radio communication to co-ordinate rotation into and out of *the "close viewing zone*" (50-100 m)
- No more than 3 vessels "*under 5 tons*" or 1 vessel "*over 5 tons*" inside *the "close viewing zone*" (50-100 m)
- 10 minutes maximum in the "*close viewing zone*" (50-100 m)
- If an animal approaches the vessel, it is appropriate to observe it at whatever distance the animal chooses
- Move slowly away from the animals or birds when leaving the area
- Do not feed the animals or birds

DEPARTURE GUIDELINES

- Depart slowly from the "*no wake zone*" (250 m) and then increase speed gradually

RESEARCH GUIDELINES

- With a Parks Canada Research permit, researchers may collect data inside the 50 m "*no go zone*"
- Researchers must display a research flag or research markings on their vessel to indicate they are engaged in research
- Researchers must be contactable by VHF radio

Table 10. *Additional Wildlife: Mitigations (Cont)*

SEABIRD, SEA DUCK AND SHORELINE VIEWING	**APPROACH GUIDELINES** • Vessel behaviour should be based on the most sensitive or easily disturbed species on site (which may not be the species that is sought for viewing) • Approach at an indirect angle that provides the maximum visibility for the animals or birds • Move closer gradually • Monitor behaviour on approach. Watch for signs of agitation and increase your angle *away* from the animals or birds if they become visibly agitated • Slow down to 5 knots (*no wake speed*) at 250 m away • Do not approach head on • Avoid loud noises • Avoid rapid movements • Avoid sneaking up to animals • Kayakers should avoid hugging the shore • Use radio communication with others on-scene to assess the situation • Use binoculars instead of your vessel to bring animals into closer view • Aircraft must maintain a minimum height of 1000 feet • Helicopters are not appropriate for viewing animals or sea birds • Personal watercraft are not appropriate for viewing animals or sea birds • Personal watercraft should maintain a minimum distance of 500 m from flocks, colonies, haul out sites, nesting sites or shorelines • Give birds on the water a wide birth • Birds in large flocks are easily flushed: give them more space • Nesting sites and colonies are sensitive sites: approach with extra diligence • Sea caves and other areas with cliff-nesting cormorants and murres *are "no go zones*": remain 50 m away **VIEWING GUIDELINES** • Do not approach closer than 50 m • Be aware that this 50 m "*no go zone*" is a minimum distance: a greater distance may be required earlier in the season and/or year round at certain sites • Leaving the engine running is up to the discretion of the driver • Do not go ashore • Vessels should view animals and shorebirds in rotation with other vessels • Use radio communication to co-ordinate rotation into and out of *the "close viewing zone*" (50-100 m) • 10 minutes maximum in the "*close viewing zone*" (50-100 m) • Move slowly away from the animals or birds when leaving the area • If an animal approaches the vessel, it is appropriate to observe it at whatever distance the animal chooses • Do not feed the animals or birds • Give large flocks in estuaries more space as they are easily flushed **DEPARTURE GUIDELINES** • Depart slowly from the "*no wake zone*" (250 m), and then increase speed gradually **RESEARCH GUIDELINES** • With a Parks Canada research permit, researchers may be allowed to collect data inside the 50 m "*no go zone*" • Researchers must display a research flag or research markings on their vessel to indicate they are engaged in research • Researchers must be contactable by VHF radio

Table 10. *Additional Wildlife: Mitigations (cont)*

TERRESTRIAL WILDLIFE, AND GENERAL GUIDELINES	**GENERAL WILDLIFE GUIDELINES** • As part of a pre-trip briefing, operators and guides shall ensure that all clients are aware of wildlife sensitivities and potential hazards, understand wildlife viewing and safety procedures and are aware of National Parks regulations on feeding, enticing or disturbing wildlife. • Wildlife viewing and safety procedures should be based upon the guidelines presented in Parks Canada brochure "Keep the Wild in Wildlife". The brochure describes appropriate behaviour when encountering habituated wildlife, safe distances for viewing and photographing wildlife, avoiding encounters and limiting attractants while travelling in the backcountry, and specific precautions for bears, elk and cougars. This brochure can be found on the Banff National Park of Canada internet site (http://www.worldweb.com/parkscanada-banff/visinfo.html) (PRNPR specific information will soon appear at http://www.pc.gc.ca/pn-np/bc/pacificrim/visit/visit7c_e.asp). Other safety information regarding wildlife in the national parks is available on the internet at http://www.worldweb.com/parkscanada-banff/pubsafe.html. Where practical, operators should recommend these websites to clients during the time of booking. • Guides shall manage groups during wildlife viewing opportunities so that the animal's normal behaviour is not disturbed by not approaching wildlife, keeping lines of escape open for the animal and clients, and keeping groups close together. Use binoculars in situations where it is desirable to enhance viewing opportunities. • Guides shall maintain a distance of at least 100 metres from bears • Guides shall maintain a distance of at least 300 metres from known wildlife den sites and minimise close contact with nesting birds or young animals. • Guides shall leave the area immediately in the event that dens, nests or young animals are accidentally encountered. • Operators should discourage clients from bringing dogs on guided frontcountry excursions. In the event that it is necessary to bring a dog, they are to be kept on leash at all times and must not be left unattended. Dogs are forbidden in the backcountry. • Guides and operators are asked to report wildlife sightings, unusual wildlife behaviour, encounters with wildlife, injured animals and carcasses to Parks Canada. Marked animals (radio collars, ear tags, leg bands on birds, neck bands on swans) and injured animals should also be reported. • Operators and guides and operators shall implement alternate trip or route plans as required in order to avoid close encounters with wildlife. • Operators and guides shall ensure that food and food smells are managed to avoid enticing wildlife. • All garbage and food waste must be packed out. Garbage or food waste shall not be burned, buried or otherwise disposed of in the backcountry. • All food, including pet food, should be stored in special caches provided, or hung between two trees at least 4 metres above the ground. • All dishes and food utensils shall be washed and stored immediately after use. Strain food particles from dish-water and stored with garbage. • Guides shall ensure that groups keep trailhead areas and facilities clean to minimise the high percentage of animal mortality that occurs near human infrastructure (Parks Canada, 2002a)

Activity Specific Mitigations for Water Quality

Table 11. Water Quality: Activity Specific Effects and Mitigations.

Activity	Activity Specific Mitigation
Marine wildlife viewing	• Encourage operators to use only 4-stroke engines • Observe "green boating guidelines" around fuel handling and refuelling, and disposing of bilge
Kayaking	-
Surfing	-
Surf Kayaking	-
Hiking	• Use only designated washroom facilities, pit-privies or solar/composting toilets when in wilderness areas.
Camping	• Observe low impact camping guidelines. • Use only designated solar/composting toilets when in wilderness areas. • Use biodegradable soaps for dishes and cleaning. Dispose of soapy wash water on land, away from water courses.
Scuba Diving	-
Transportation Services	• Encourage boat operators to use only 4-stroke engines • Observe "green boating guidelines" around fuel handling and refuelling, and disposing of bilge.

Activity Specific Mitigations for Cultural Resources

Table 12. Cultural Resources: Activity Specific Effects and Mitigations

Activity	Activity Specific Mitigation
Marine Wildlife Viewing	-
Kayaking	• No entering sea caves (PRNPR Superintendents orders) • No removal of cultural objects (*Canada National Parks Act*) • Educate clients about the value of cultural resources when at a cultural site • Ensure that clients do not disturb any items from cultural sites in any way. • Ensure that clients do not deface or write on rocks, outcrops, trees, logs, or Park infrastructure. • Limit foot traffic to hardened trails in the area if cultural sites are exposed as a result of trail braiding or the development of informal trails. • Report the discovery of any artefact or cultural site to Parks Canada – do not remove or otherwise disturb the site.
Surfing	
Surf Kayaking	
Hiking	*Same as Kayaking (see above)*
Camping	*Same as Kayaking (see above)*
Transportation Services	-

Visitor Experience and Activity Specific Mitigations -

As described in *Section 1.1.3*.of this screening document, Parks Canada has a mandate to facilitate the education and enjoyment of the national parks by the public. To address this mandate, Parks Canada will assess direct impacts to visitor experience in addition to indirect impacts caused as a result of changes in the environment.

To date, several visitor surveys have been completed at PRNPR. A highway exit survey was completed in 1997. Surveys of visitors using the BGI were conducted in 1989 (Environment Canada, 1989) and 2000 (Randall, 2000).

Visitor numbers are collected in all three units of the Park, as are numbers on beach use at Long Beach, first aid and emergency evacuations from the WCT, BGI and LBU, and other occurrences (including wildlife human conflict) in all three units of the Park. Those numbers advise managers on annual trends in visitor use and on potential health and safety risks.

Commercial ecotourism and guiding services provide a number of benefits to park visitors, park staff and the park environment. The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably, visit and appreciate more remote areas of the parks. Guides often inform clients about the region's physical and cultural characteristics, as well as educating them on issues related to ecological integrity, good environmental practices, and park management. Many guiding operations have a strong focus on outdoor skills development and safety, leading to an increase in the number of experienced and skilled backcountry users. This, in turn, may result in fewer incidents that require park rescue services. Finally, the presence of skilled, professional guides provides an additional measure of safety for wilderness visitors, even for independent users. Guides have taken part in rescues managed by the Warden Service, have performed rescues independent from parks staff (usually for non-guided parties), and have voluntarily taken on the responsibility to guide independent visitors through difficult weather and ocean conditions.

Large, commercially guided groups may have a negative effect on the perception of the environment and on the visitor experience of other park users. Crowding and noise may affect the aesthetic experience and feelings of solitude and remoteness that many backcountry users of PRNPR seek.

Some kayaking visitors to the Park reported that numerous encounters with power boats diminished their “wilderness experience”. Others reported that the numbers that they encountered during their visit to the National Park did not diminish their experience (Randall, 2001). Conversely, power boaters complain that kayakers who are unaware of the navigation channel designations and of collision regulations for boating pose a safety hazard.

Mitigations to address visitor experience include:

- Comply with group size restrictions as per business licence stipulations as well as, zoning and area management restrictions.
- Act in a courteous manner towards user groups at campsites, surfing areas or on the trails. Concede the right of way to smaller groups. Guided groups do not have precedence over other groups.
- Where environmental impacts can be mitigated, seek group consolidation , solitude and separation from other park users or groups.
- Travel as a group within calling distance from the back to the front of the group. Keep noise to a minimum.
- Pick up garbage and take reasonable measures to restore impacted sites that are encountered during the course of an excursion.

- When requested, or when perceived need arises, pass environmental management or interpretive information to non-guided groups.
- The use of motorized vehicles, especially in park wilderness areas, has the potential to negatively affect the experience of other visitors. Avoid unnecessary or inappropriate use of motorized vessels in areas frequented by visitors using non-motorized craft. Avoid leaving wakes at campsites in the BGI.

3.1.3. Effects of the Environment on all Guided Activities

Medical injuries and illness, aggressive wildlife encounters in both the terrestrial and marine environment, group separation, people getting lost, and weather related emergencies are public safety issues caused in part by environmental factors that may arise related to guiding activity. Rugged terrain, difficult weather and ocean conditions and remote locations may compound the severity of public safety incidents and the difficulty of search and rescue efforts.

Guide training standards and certification requirements, including first aid certification are attached as conditions of the business licences. Guide to client ratios and other public safety requirements are also included as business licence stipulations. Parks Canada has staff dedicated to the identification and management of public safety issues. No additional mitigation is identified or required as part of this environmental assessment to address public safety concerns. However, guides and operators are responsible to ensure that they operate in accordance with the standards and certification requirements identified in their business licence. Guides and operators are also responsible to ensure that guided groups have the appropriate safety equipment for the activity in question.

Figure 34. A hiker being evacuated from the West Coast Trail after suffering a leg injury. Close to 100 people are evacuated every year from the West Coast Trail.

3.1.4. Effects of Malfunctions or Accidents

Direct injury to wildlife, damage to vegetation or destruction of cultural resources may occur accidentally as a result of human use, especially in off trail situations. Potential, direct injury to wildlife is a possibility (e.g. collision with whales or seabirds). Inadvertent damage to sensitive vegetation, such as rare plants, is also unlikely but still possible. Cultural resources (e.g. First Nation canoe runs, or the remnants of ancient fish traps) could be disturbed without visitors knowing the cultural significance of such objects.

Operators using gas motors may spill gas when refuelling or in the case of an accident. Refuelling vessels usually takes place at fuel and launch docks located outside of the Park. Given

the standard, activity-specific mitigations, it is expected that those types of occurrences would be infrequent and very limited in scale. No additional mitigation is identified or required as part of this environmental assessment to address the potential impacts of direct injury to sensitive vegetation or wildlife.

3.1.5. Effects of Changes to the Environment on Socio/Economic Conditions

Commercially guided ecotourism activities contribute to the economy through direct or indirect employment, accommodation for employees, and local purchases of supplies, equipment or services. For marine wildlife viewing, the majority of businesses in the LBU and the BGI are owned and operated locally. Both Tofino and Ucluelet have local, commercial kayaking businesses running from those towns, although the many other guided kayaking trips in the BGI are by companies from outside of the immediate region. Locally owned and operated companies also offer guided walks, surf instruction and transportation services.

Negative impacts to the natural environment as a result of guiding activities could affect the long-term sustainability of ecotourism businesses. Duffus (1996) points out the connection between the distance that whale watchers must travel in Clayoquot Sound and the economic feasibility of the MWV businesses. With increasing travel distances accrue proportional increases in fuel costs, and possibly, decreases in customer satisfaction if rough ocean conditions prevail. Changes in prey availability, or other disturbance factors may cause whales to alter feeding locations year to year. The effects of whale watching and other boat traffic on whale feeding locations is unknown.

Effects of pollution on whale feeding locations is also unknown. However large scale catastrophic events like an oil spill will have severely negative effects on wildlife and the marine environment; and thus, on local ecotourism businesses.

With the activity specific mitigations implemented, we expect that negative environmental effects from ecotourism operators will be minor. It is unlikely that the effects will negatively affect the demand for guiding services, the type or scope of other visitor services, the level of visitation by independent users, or the livelihood of people in or around the Park. No additional environmental mitigation is identified or required as part of this environmental assessment to address the potential impacts of changes to the environment on socio-economic conditions in or around the Park.

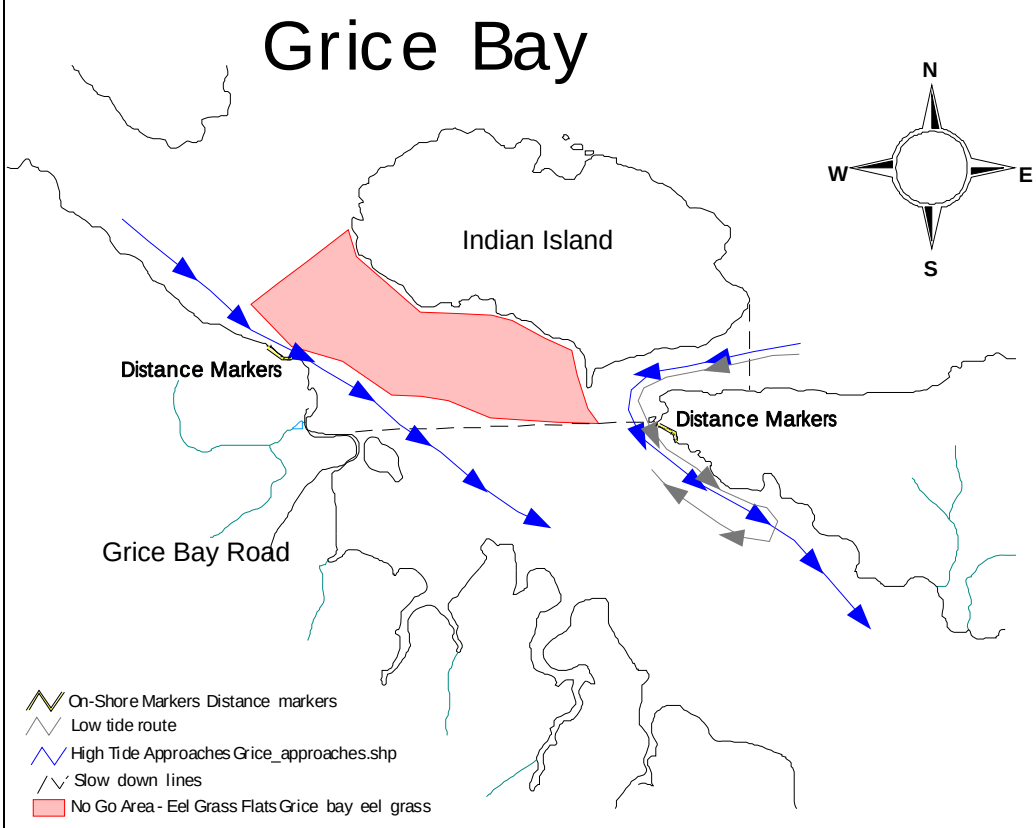
3.2 SITE SPECIFIC ANALYSIS AND MITIGATIONS

Sensitive sites are evaluated in this section to identify unique environmental characteristics and issues that may not be adequately addressed through the implementation of standard activity-specific mitigation. Site-specific mitigation measures were identified to mitigate for sensitive environmental features described at each site and were developed into “best management practices” (BMPs) to be used by guides when conducting commercial operations.

Sensitive sites and site specific mitigations were identified and described in Section 2 by referring to the PRNPR zoning and interim Management Guidelines (IMGs), ecological land classification information, and through consultation with Parks Canada staff. Mitigating measures for all sensitive sites are included as standard terms and conditions attached to every business licence (Table 13). Site-specific mitigations were not identified for every sensitive site. For some sites, direction provided in Park management plans was considered adequate to mitigate the potential environmental impacts of commercial guiding activities and no additional mitigation was considered necessary. For other sensitive areas, no site-specific mitigating measures were identified

as part of the MCSR, but the site was identified for further evaluation of additional and cumulative environmental effects through the CSPR process.

Table 13. The following areas require "site specific" mitigation measures:

LOCATION	**SPECIAL SITE SPECIFIC MITIGATIONS**
Sea Bird Rocks (WCT)	Approach and view from the beach side only Stay 100 m offshore
Sea Caves (all 3 units)	"*no-go zones*". Stay 50 m offshore
Grice Bay (LBU)	 Figure 20. Travel Routes in and around Grice Bay (PRNPR) for boat operators, applied in order to minimize negative ecological effects on the marine ecosystems in this environmentally sensitive area (ESA). • During high tide (>6 feet), whale watching vessels should only enter and exit Grice Bay by means of the specified high tide route (see map) • During low tide (<6 feet), whale watching vessels should only enter and exit Grice Bay by means of the specified low tide route (see map) • Slow down to 7-8 knots at 800 m or upon entering designated slow areas • Boats should travel single file in a slow one-way loop, staying in the deep water channel • Boats should keep on the deep side of whales • During high tide, general gray whale viewing guidelines apply ***DEPARTURE GUIDELINES*** • Depart slowly until beyond "*no wake zone*" (250 m) and then increase speed gradually **RESEARCH GUIDELINES:** • With a valid Parks Canada research permit, researchers may be allowed to approach whales at a distance less than 50 m

	• Researchers must display a "research flag" or "research markings" on their vessel indicating they are engaged in research • Researchers must be contactable by VHF radio
LOCATION	**SPECIAL SITE SPECIFIC MITIGATIONS**
Gowlland Rocks (LBU)	Approach and view from the beach side only The entire seaward shore is buffered by a 200 m "*no-go zone*" Harbour Seal Lagoon on the east side is a "*no-go zone*" (200 m buffer)
White Island (LBU)	Seabird nesting area and study site. Entire area is buffered by a 200 m "*no-go zone*"
Sea Lion Rocks (LBU)	The entire seaward shore is buffered by a 100 m "*no-go zone*"
Wouwer Island (BGI)	Sea lion haulout, stay 50 m offshore inner Wouwer.

3.3. RESIDUAL EFFECTS AND SIGNIFICANCE: (ACTIVITY SPECIFIC AND SITE SPECIFIC)

This section of the MCSR evaluates the negative environmental effects of a single project under the MCSR for the significance of environmental effects. As described in 1.7.4, ecological effects are considered significant if they threaten the continued existence of native species or biological communities. Effects to cultural resources are considered significant if the integrity or use of the resource is compromised by project activities. Effects upon visitor experience are considered significant if overall visitor satisfaction would be decreased as a result of project activities.

Positive residual effects from commercial guided activities include the education and increased respect for environmental and cultural resources that clients gain from their guide. As a result of guide influence, clients are more likely to follow practices designed to mitigate negative environmental effects. Clients may also experience new activities in new locations that they would not experience on their own. The influence of professional guides is, in many cases, expected to result in improved resource protection and enhanced visitor safety and experience.

The criteria of magnitude, geographic extent, duration, frequency, and reversibility will be used to evaluate the significance of potential negative environmental impacts on the selected VECs (Refer to Table 1 for definitions). The results are summarized in Table 14. This section of the MCSR evaluates the significance of impacts that are likely to occur as a result of a single commercial operation. The cumulative impacts of multiple commercial operations is evaluated separately through the CSPR and Business licensing review process (see Section 3.5.).

Activity and Site Specific Residual Effects on Soils and Vegetation

The impacts of individual commercial guiding operations to vegetation and soils are expected to be quite localized around areas of high use, and to result in impacts that may be considered to be reversible over time with vegetation re-growth. Impacts may occur relatively frequently for companies offering regular trips to the same locations. However, as the impacts of individual commercial guiding operations to vegetation and soils are quite limited in geographic extent, they are not likely to threaten the existence of native vegetation populations. As a result, they are not likely to result in significant impacts to native vegetation.

The potential introduction and spread of new non–native plant species as a result of commercial guiding activities is considered unlikely after implementation of the standard mitigation measures. Reversing the effects related to the introduction of an invasive species may require active management, over a significant period of time, and may never be completely successful. Given the implementation of the standard mitigation and invasive species control measures already put in place by Parks Canada, individual commercial guiding activities are unlikely to result in an introduction, or a further spread, of invasive species that would threaten the existence of native plant communities.

Activity and Site Specific Residual Effects on Wildlife

The direct impacts of individual commercial guiding operations to Gray whales, sea lions, sea birds and sea ducks in the summer months will be of greater frequency than in the fall or winter months. With mitigations adhered to, the activities of individual commercial guiding operations are not likely to threaten the continued existence of sea birds, sea ducks in any location in the Park.

Table 14. Environmental Effects of Commercial Ecotourism Activities on Selected VECs in Pacific Rim National Park Reserve, before and after mitigations.

VEC's	Soils: Organic soil deposits, erosion prone areas	Vegetation: Sea Side Centipede Lichen	Vegetation: Introduced exotic species.	Vegetation: Coniferous forest old- and old interior conditions, riparian forest	Vegetation: Wetlands, Cedar swamp & bog , Sand Dunes, Spruce Fringe forests	Vegetation: Marine plant and algae communities, Eel grass beds	Wildlife: Large predators, Black bear, wolf, cougar	Wildlife: Gray whales	Wildlife: Steller Sea lion (Haulouts)	Wildlife: Killer whales	Wildlife: Marbled murrelets (marine foraging sites)	Wildlife: Seabirds(Foraging & nesting sites): Black Oyster Catchers, Tufted Puffin, Surf Scoter, Brandt's Cormorant, Cassin's Auklet	Wildlife: Salmon (spawning and rearing habitat)	Water Quality: Clean drinking water and appropriate treatment of human waste. Reduce hydrocarbon pollution in marine waters	Cultural Resources: Cultural sites (FN and non-FN sites)	Visitor Experience: Positive and appropriate visitor experiences
Activities	Effects Before Mitigations															
Guided Hikes and Walks																
Overnight Use																
Marine Wildlife Viewing																
Transportation Services (Marine)																
SCUBA Diving																
Kayaking																
Surfing																
Surf kayaking																
Residual Effects After Mitigations																
Guided Hikes and Walks																
Overnight Use																
Marine Wildlife Viewing																
Transportation Services (Marine)																
SCUBA Diving																
Kayaking																
Surfing																
Surf Kayaking																

= No detectable effect on target VEC
= Effect Negligible
= Effect Minor
= Effect Considerable (Significant Effect)

The impacts of individual commercial guiding operations upon wolves, cougars and bears is expected to be limited in geographic extent, duration, and frequency. With mitigations, (proper handling of food and waste, etc.,) human/wildlife encounters are likely to result in negligible effects. The activities of individual commercial guiding operations are not likely to threaten the continued existence of bears, cougars or wolves in any location in the Park. The environmental impact of one company would be negligible.

Activity and Site Specific Residual Effects on Water Quality

Given the implementation of standard mitigation measures, (by the Park and the operators,) it is not expected that the impacts of individual commercial guiding operations will have any significant residual effects on water quality. Negligible effects areexpected.

Activity and Site Specific Residual Effects on Cultural Resources

Given the implementation of standard mitigation measures for cultural resources, it is not expected that the impacts of individual commercial guiding operations will result in significant, residual effects on the integrity or context of cultural resources or sites.

Activity and Site Specific Residual Effects on Visitor Experience

Given the implementation of standard mitigation measures, the negative impacts of individual commercial guiding operations are not likely to cause significant, adverse impacts upon levels of visitor satisfaction. Interactions between commercial groups and any given, independent user are expected to be short in duration, infrequent and relatively minor in nature.

Figure 35. A PRNPR BGI Warden (centre) speaks with visitors in the Broken Group Islands. Park Wardens are stationed in the BGI during the entire operational season to provide information to visitors, to ensure public health and safety, and to uphold the *Canada National Parks Act.*

3.4 CUMULATIVE ENVIRONMENTAL EFFECTS

Section 3.4.1 gives an introduction to cumulative effects analysis, Section 3.4.2 describes the cumulative effects of multiple commercial ecotourism activities, other non-commercial users conducting similar activities, and other stressors cumulatively affecting the VECs. The results are discussed in the text and summarized in Table 15.

Sections 3.4.3 and 3.4.4 discuss how the process of assessing cumulative effects will be incorporated into the business licences review process and will ultimately be integrated into the management plan review and state of the park reporting for PRNPR.

3.4.1. Cumulative Effects

Cumulative effects are changes in the environment that are caused by an action in combination with other past present and future human actions (CEAA, 2005). According to the Canadian Environmental Assessment Agency, a cumulative effects assessment (CEA) is expected to:

- assess effects over a large (i.e. regional) area that may cross jurisdictional boundaries (including effects due to natural perturbations affecting environmental components and human actions);
- assess effects during a longer period of time into the past and future;
- consider effects on Valued Ecosystem Components (VECs) due to interactions with other actions, and not just the effects of the single action under review;
- include other past, present and future (e.g. reasonably foreseeable) actions; and
- evaluate significance in consideration of other than just local, direct effects.

Cumulative impacts can be a concern for the following reasons:

- the combined impact of multiple actions on an ecosystem can be greater than the sum of the individual impacts of each action;
- activities can occur close together in time and/or space, so that effects overlap and/or recovery is more difficult; ·
- the incremental effect of multiple actions can detrimentally affect the ecosystem (also called the "nibbling effect"); and, ·
- ecosystem responses can include time lags, space lags, thresholds of ecosystem tolerance and indirect effects which make predictions difficult. (Parks Canada 2004).

3.4.2. Cumulative Effects in PRNPR

We anticipate that the number of business licenses to be reviewed this year will exceed the 45 received last year. Loose predictions of commercial use can be made based on the previous years data and the trends witnessed over time. The numbers of marine wildlife viewing businesses may remain stable at 6, the numbers of kayaking business licences issued may increase (up from the current 16) as more companies are informed about the new Park requirements for business licences. The numbers of business licences issued for surf instruction (3 in 2004), surf kayaking (1 in 2004), and guided walks and hikes (19 in 2004) may also rise. Again, this would be due to better informed business operators who may currently be operating without a license, an increased interest in these sports, and an increased capacity to provide these services in the communities.

Typical areas and routes of commercial ecotourism activities are mapped together for each unit of the National Park (Figures 36, 37, & 38). The maps illustrate that ecotourism-related activities in PRNPR occur mainly in the coastal and marine areas.

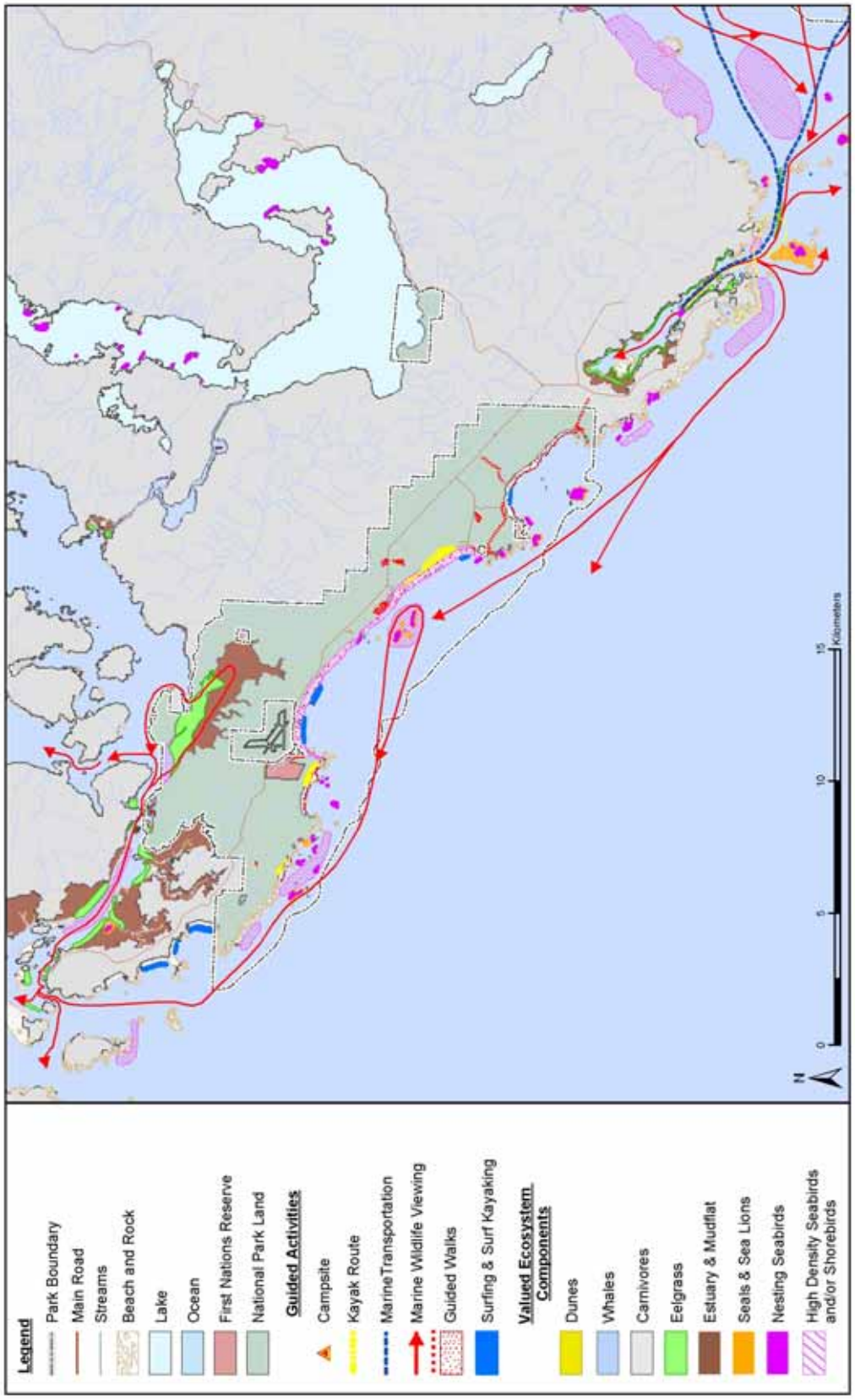


Figure 36. Areas of activity: ecotourism businesses in the Long Beach Unit, PRNPR. Typical routes for boat travel, kayaking, surfing, surf kayaking, overnight use, and marine transportation services. This image represents areas of typical usage in the peak season (July-August). VECs are also indicated by shaded and colored areas. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on these aspects, please refer to the discussion in the text. Note that estuaries are also considered areas of high seabird and migratory bird density.

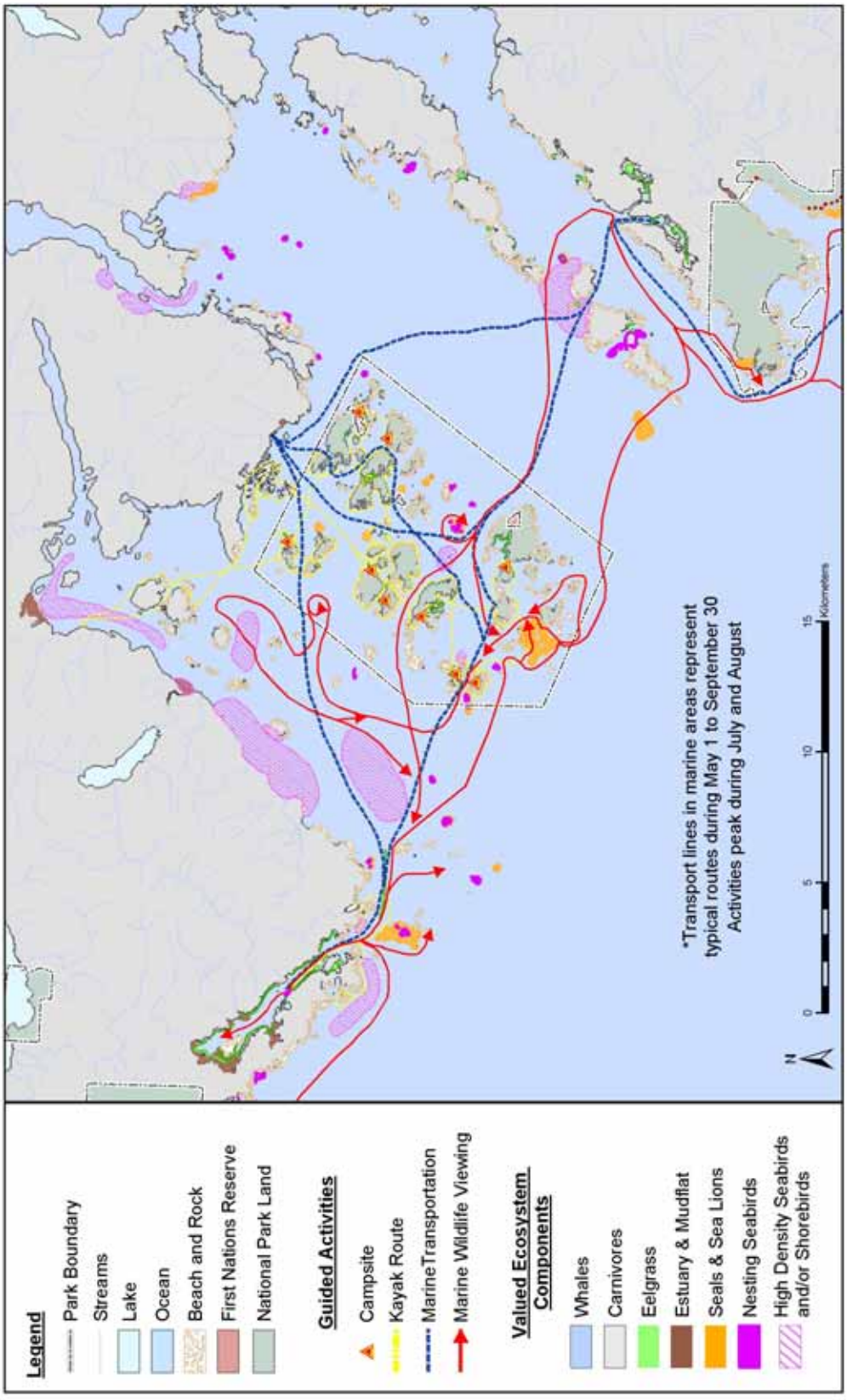


Figure 37. Areas and routes of guided ecotourism activity in the Broken Group Islands, PRNPR. Typical routes for boat travel, kayaking, surfing, surf kayaking, overnight use, and marine transportation services. This image represents areas of typical usage in the peak season (July-August). VECs are also indicated by shaded and colored areas. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on these aspects, please refer to the discussion in the text.

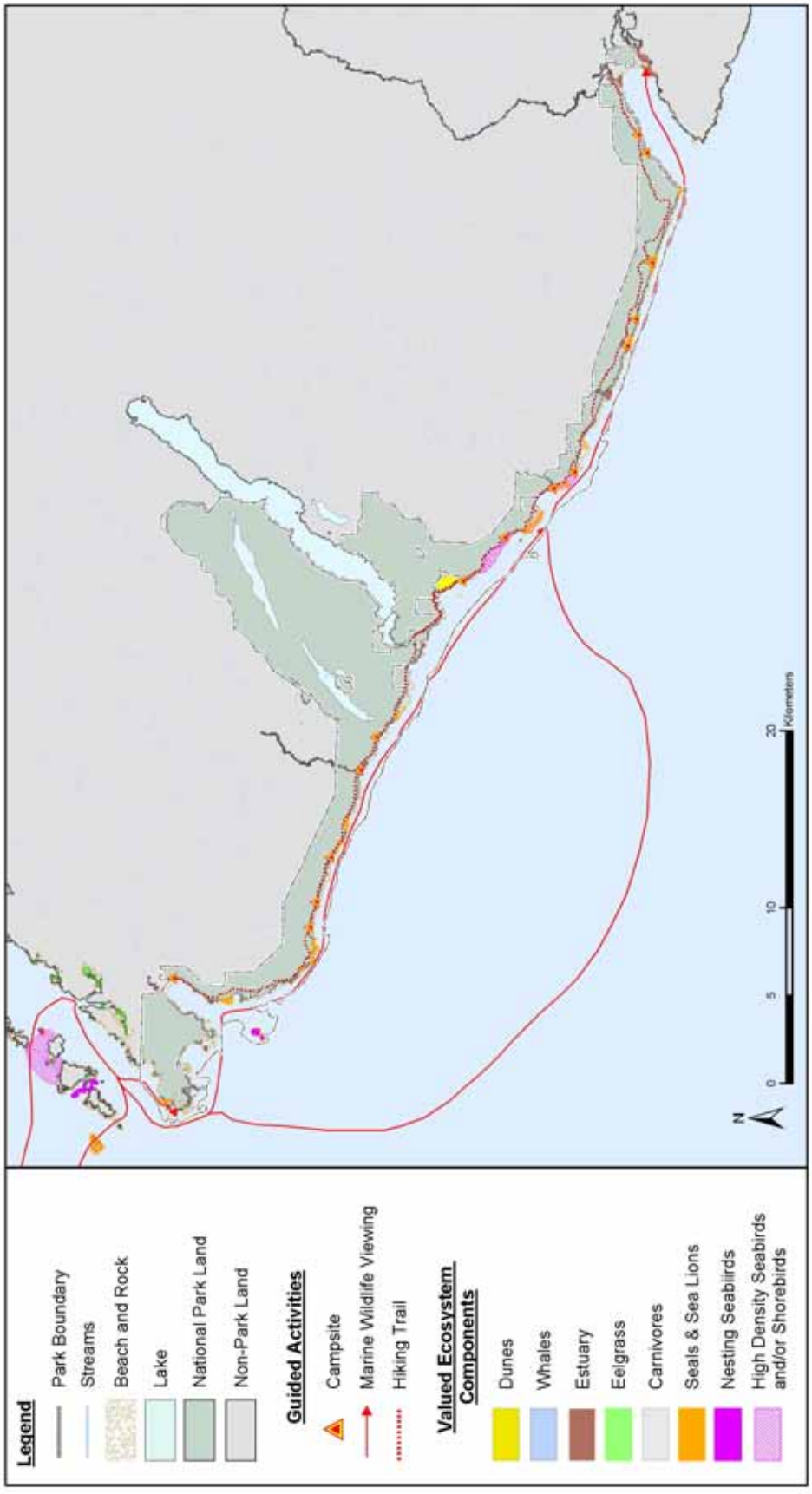


Figure 38. Areas and routes of guided ecotourism activity in the West Coast Trail Unit, PRNPR. Typical routes for boat travel, kayaking, surfing, surf kayaking, overnight use, and marine transportation services. This image represents areas of typical usage in the peak season (July-August). VECs are also indicated by shaded and colored areas. The map does not portray the effects of the interactions, the threshold levels of impacts nor the significance of the interaction. For information on these aspects, please refer to the discussion in the text.

The region in which the Park is located is important ecologically, culturally, and economically. The three separate park units are situated between several coastal communities. People from these communities must either travel through the Park or around it to get to neighbouring towns. Many people also derive their livelihoods from the region's natural resources. The resources fall under many jurisdictions. The National Park is but one of many partners in the region.

The PRNPR EIS and Interim Management Plan lists the following top six stressors that may be cumulatively affecting the ecological integrity of PRNPR:

1. Human Disturbance
2. Forestry
3. Urbanization
4. Commercial Fishing (not including Commercial Sport Fishing)
5. Sport Fishing (including Commercial Sport Fishing)
6. Petrochemical Pollution

(*Descriptions of each are included as Appendix C.*)

Cumulative Effects on Vegetation and Soils:

The cumulative effects of multiple commercial guided walks and hikes are minimized by PRNPR trail management practices. The construction of trail systems, boardwalk, and stream crossing structures have proven effective mitigations for soil erosion and vegetation damage. However there is still, every year, a minor amount of erosion and damage to vegetation that occurs either from campsite use or from off-trail hiking. Some of the damage can be repaired simply by allowing the sites to recover over the winter. Other locations require intervention and some active management (for example the placement of new sections of boardwalk).

Repeated use of a given hiking trail or campsite site will likely result in an increase in the magnitude of environmental effect, and loss of vegetation cover and soil erosion may occur at heavily used sites. The daily quotas on the WCT address the issue of campsite expansion. By allowing an appropriate number of people onto the trail each day, campsites can be used at capacity levels while minimizing the negative effects that occur when too many people attempt to camp at one location. Visitor experience is also enhanced.

The potential for the introduction of exotic species increases as disturbance and human use of an area increases (particularly along trails and near campsites). Several unpublished research reports prepared by students at the Bamfield Marine Sciences Center (BMSC) and the former Bamfield School for Field Studies (CFS) have indicated that there is a greater incidence of introduced and invasive plant species along the West Coast Trail than in adjacent non-disturbed areas. Many of those invasive plants listed are colonizing species and are shade intolerant; therefore, unlikely to spread into the adjacent forests. However, small amounts of active management may be required in the future.

In July and August, the total numbers of campers in the BGI averages about 110 people (with maximum peak days reaching over 200 people). In June and September, the average numbers of campers in the BGI on any given night is ~60-80 people. May user numbers are even lower, averaging ~ 20-40 people. Up to ~60% of these users may be on commercially run trips. There are no quotas for visitor use in the BGI; however, group sizes are limited to 10 people. The limitation serves to reduce campsite crowding, campsite expansion and user conflicts.

Prior to the establishment of the National Park, there was little enforcement of low impact camping in the BGI or along the WCT. Since establishment of the National Park, Parks Canada

staff now ensure that camping occurs at dedicated locations only, that campsite expansion is curtailed, that litter and human waste is properly disposed of so that water quality is not damaged, and that no damage to cultural sites is occurring. Senior Park Wardens have noted a marked increase in re-vegetation on some of the islands since the introduction of dedicated campsites, and a decrease in trail braiding and vegetation trampling when the Park began to use using small amounts of fencing to limit the visitor access to off trail paths and wildlife trails.

Impacts from camping and hiking happen on a daily to weekly basis in the summer, yet the geographic extent of hiking and camping impacts is limited. Therefore, the effects could be considered minor. The negative, cumulative impacts from many operators and recreational hikers are unlikely to result in significant, environmental effects that threaten the existence of species or biological communities at an ecosystem scale, except in the cases of rare plants in sensitive ecosystems (bog and dune ecosystems). Mitigations to ensure that commercial operators do not venture off established trails in sensitive ecosystems will mitigate that effect.

Every year, the National Park invests significantly in ensuring that trails are built and properly maintained in sensitive ecosystems in order to mitigate negative impacts to those ecosystems. Trails in the LBU are built to accommodate many thousands of visitors year round. Closing the West Coast Trail for the winter season allows the trail and campsites to recover sufficiently from soil and vegetation disturbances without active management, and with no significant residual cumulative effects to soils and vegetation.

Additional cumulative effects to vegetation may come from urbanization and development, and forestry that act on a regional scale and thereby affect vegetation and soils on a regional scale. Urbanization and development (including the expansion of infrastructure, utility corridors, roadways etc) may expand into areas of high diversity or result in the introduction of exotic vegetation species. Urban development is expanding to the northern and southern borders of the LBU, and in the central areas of the LBU near the Tofino airport (Figure 40). The areas impacted by that expansion do not overlap with hiking or camping activities; and, while it is unlikely that urbanization and development will result in the extinction of native plant species in the region, the expansion up to the boundaries of the National Park may affect some plant populations within the Park due to edge effects (as by loss of old growth interior conditions) or contribute to the introduction of exotic species. Those additional impacts to vegetation and soils are considered negligible to minor.

Additional Cumulative Effects and Wildlife: Whales, Sea lions, Predators, Marbled Murrelets, and other Seabirds

Data on yearly total numbers of recreational boats using the LBU, the BGI, and the WCTare not available. At the Wouwer sea lion haulout, during the peak season, the numbers of motor boats engaging in marine wildlife viewing ranged from 2 to 22 per day. Commercial users were responsible for ~ 85% of this activity (Szaniszlo *pers. comm.* 2005). In addition, an average of 6 kayak groups visited the haulout per day. Sea lions may be disturbed by boating activity, and may abandon a haulout if the disturbance reaches un-acceptable levels. Szaniszlo concluded that the current viewing distances adopted by commercial operators should adequately protect the Wouwer sealion haulout.

Erbe (2001) discusses how that boat noises area additive, and suggests limitations for the numbers of vessels allowed close to a cetacean. PRNPR and DFO have adopted the mitigation that only 3 vessels should be allowed at any one time in the near viewing zone (100m-200m) around whales. With respect to environmental impacts and cumulative effects, commercial ecotourism operators often tend to be the most educated about rules and regulations. Private boat owners may be less aware of the whale-watching code of ethics, and often do not know how to watch whales properly (Erbe, 2001). The management goal for the Department of Fisheries and

Oceans is to ensure that socioeconomic, scientific and educational benefits of whale watching are sustainable and conducted without disrupting the life processes of the animals. The amendments to the marine wildlife regulations under the *Fisheries Act* will apply to everyone, commercial and non-commercial boaters alike.

There is no consensus in the scientific literature as to how long term exposure to MWV will affect Gray whales, and sea lions. The cumulative effects of multiple operators and multiple trips may be mitigated by ensuring that approach distances and approach guidelines are observed (Szaniszlo *pers comm*. 2005). Compliance levels with the new marine wildlife viewing guidelines are unknown especially with respect to recreational users.

Other cumulative effects on sea lions and whales include large scale global changes in ocean conditions and productivity (Trites 2000). Currently, the effects from local commercial and sport fishing are considered to be negligible or non-measurable.

With an increase in boat traffic, sea birds may be disturbed more often and increasingly pushed away from prime feeding habitat (high density bird areas). PRNPR is currently producing a report summarizing data from at-sea surveys of sea bird densities in the BGI and along the WCT. Seabird densities are significant in Barkley Sound, and the preliminary data indicate even higher numbers in the coastal waters along the WCT. This WCT high density foraging habitat should be considered when assessing the cumulative impacts in the CSPR.

The long term effects of boating activity on sea birds in the region is unknown. With increasing regional recreational infrastructure, (docks, marinas, etc.,) and the potential for increases in the numbers of recreational boaters, the frequency of at-sea disturbance may increase. The negative effects from those activities may be mitigated somewhat by better educating of recreational boaters about wildlife and boating etiquette. Monitoring of the effectiveness of and compliance with seabird mitigations, and gaining a better understanding of the influences of increases in boating activity are advised.

A significant cumulative influence on Marbled murrelet populations in the Province is reported to be the loss of nesting habitat. Marbled murrelets have specific nesting requirements that cannot be met in second growth (*i.e.* previously harvested areas) nor in scrub forest. Marbled murrelets require large trees (*i.e.* old conifers), with established moss mats (for nesting platforms, also found in old age class forests), located in a forest with some gaps in the canopy (providing access to the nest). The tree must also have some overhead cover for protection from predators. Suitable marbled murrelet habitat has declined in the region. Figures 40, 41, and 42 illustrate the current forest cover in areas adjacent to the three units of the National Park. The yellow indicates forests that are not suitable for marbled murrelet nesting either because the trees have been harvested or because the forest consists of boggy wetland areas, with scrubby poorly growing forests. Areas that have been harvested are indicated in orange and are often associated with logging roads.

Figure 39. Typical, low-lying bog and shore pine forest of the coastal flats (in the foreground). This boggy forest type does not provide suitable nesting habitat for Marbled murrelets. Nesting sites are generally found in areas with larger trees, often in the upper areas of watersheds (background areas of this photo). Much of PRNPR is located in the coastal flats ecotype (foreground). To date, no Marbled murrelet nests have been documented in the Park. However, the marine areas of the Park contain important foraging habitat for these birds.

The Province of British Columbia is responsible for protecting Marbled murrelet nesting habitat, and has established requirements for the retention of known nests. In addition, in Clayoquot Sound, the Scientific Panel Implementation Process requires identification and conservation of forest stands offering high-potential Marbled murrelet nesting habitat in watersheds where logging is proposed. With these additional mitigations in place (indicating the need for ongoing, active management in the region) the effects on Marbled murrelet populations of the current levels of marine ecotourism should be minor.

Salmon habitat may be cumulatively affected by other activities, including past forest harvesting practices, or improper infrastructure design (e.g. improperly installed culverts that limit access to valuable fish habitat in streams). On a landscape level, several of those activities overlap to affect streams in the National Park (e.g. where streams that flow into the National Park are affected by forest harvesting in their headlands, or where highways and roads have improperly functioning culverts).

Hikers may be tempted to allow their dogs to run off leash in the National Park. Fisheries biologists have reported significant disturbance can be caused to redds (gravel areas in streams where salmon have recently spawned, laying fresh salmon eggs) from humans (or dogs) trampling in the stream. That effect is more significant in the late summer and early fall when the salmon eggs are in the gravel bottoms of streams. The effect is less significant after the fish hatch to fry (late winter early spring). Ensuring that commercial operators keep clients on designated trails, and communicate the appropriate messages about keeping dogs on a leash will mitigate disturbance to salmon spawning habitat. With the mitigations in place and adhered to, the cumulative effects from multiple commercial operators and additional, recreational hikers should be negligible.

Cougar, wolf and bear populations may also be affected by regional management of natural resources. The mechanisms and significance of effects are the focus of a regional partnership that has been initiated by the National Park. Partners include BC Wildlife Conservation Officers, provincial and federal wildlife resource managers, decision makes and academics from several universities. The results of this project will better advise on appropriate regional approaches to manage landscape level cumulative effects on bears, cougars and wolves.

Additional Cumulative Effects on Water Quality

The cumulative effects of hydrocarbon pollution as a result of other boat users could be significant, but we have no data on those pollution levels. After mitigations, there are no expected, residual, cumulative, environmental effects to water quality as a result of commercial, eco-tourism activities. As a result, cumulative effects to water quality are not specifically considered in the CSPR. Compliance monitoring should be implemented to ensure that mitigations are consistently applied.

Additional Cumulative Effects on Cultural Resources

Repeated use of a given site will likely result in an increase in the magnitude of environmental effects to some cultural resources along exposed trail sections. The impacts will be minor in significance, but ongoing cultural site assessments will continue to determine whether active management is required. Compliance and effectiveness monitoring will be implemented as part of the cultural resource management program at the National Park to ensure that the mitigations are consistently applied.

Additional Cumulative Effects on Visitor Experience

The management plans and human use strategies for the National Park identify management approaches for addressing cumulative effects to visitor experience. The dynamic nature of the relationship between independent use, commercial use, and overall human use management objectives and actions means that the potential for cumulative effects will change over time. The cumulative impacts of commercial guiding on the quality of visitor experience should be evaluated based on current surveys and visitor use information.

Cumulative effects indicators, related to the Visitor Experience VEC, to be assessed through the CSPR and Business Licence Review Process include: Conflicts between user groups and a decrease in levels of visitor satisfaction.

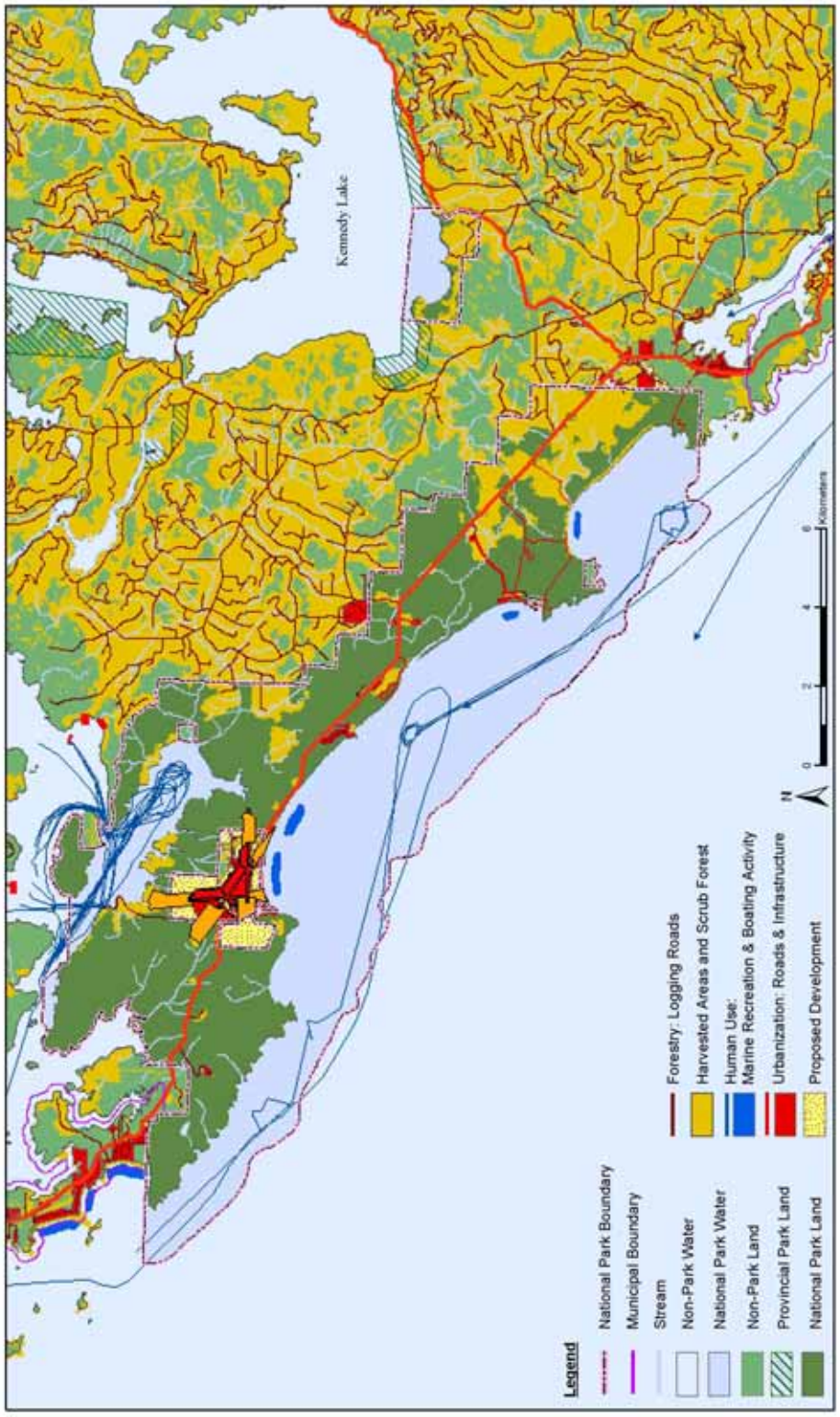


Figure 40. Additional, Cumulative Effects in the Long Beach Unit, PRNPR. In addition to the ecotourism activities, other potential sources of cumulative effects are indicated. Features in red indicate infrastructure associated with Urbanization and Development including that infrastructure within the boundaries of the national park. Features include highways, roads, buildings, offices, trails, campgrounds, and the Tofino airport. Human use in the marine environment is indicated by blue, and represents boat and marine use. The orange areas indicate forest that has either been harvested (areas associated with logging roads generally indicate second growth forest) or has sparse canopy cover (*i.e.* bog forest). Combined, it reflects areas not suitable for marbled murrelet nesting habitat. Yellow areas indicate locations of potential, future development. The map does not portray the environmental effects of each feature represented, the threshold levels of impacts, nor the significance of the potential cumulative effects. For information on those aspects, please refer to the discussion in the text.

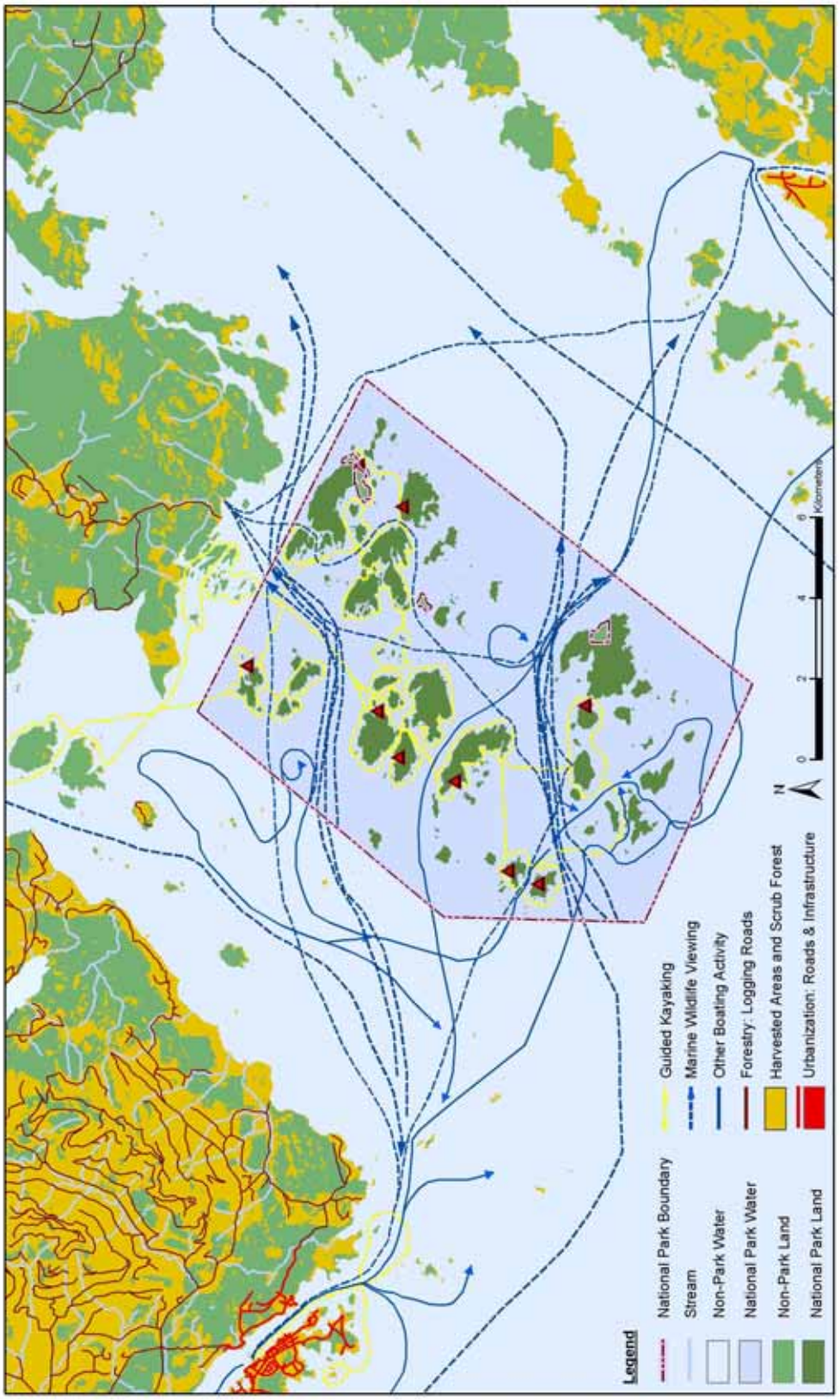


Figure 41. Additional, Cumulative Effects in the Broken Group Islands Unit, PRNPR. In addition to the ecotourism activities, other potential sources of cumulative effects are indicated. Features in red indicate infrastructure associated with Urbanization and Development including that infrastructure within the boundaries of the National Park. Features include highways, roads, buildings, and campsites. Human use in the marine environment is indicated by blue and represents boat and marine use. The orange areas indicate forest that has either been harvested (areas associated with logging roads generally indicate second growth forest) or has sparse canopy cover (*i.e.*bog forest). Combinedm it reflects areas not suitable for marbled murrelet nesting habitat (Recall that the areas in (recall that no Marbled murrelet nests have been located in the Park). Yellow areas indicate locations of potential future development. The map does not portray the environmental effects of each feature represented, the threshold levels of impacts, nor the significance of the potential cumulative effects. For information on those aspects, please refer to the discussion in the text.

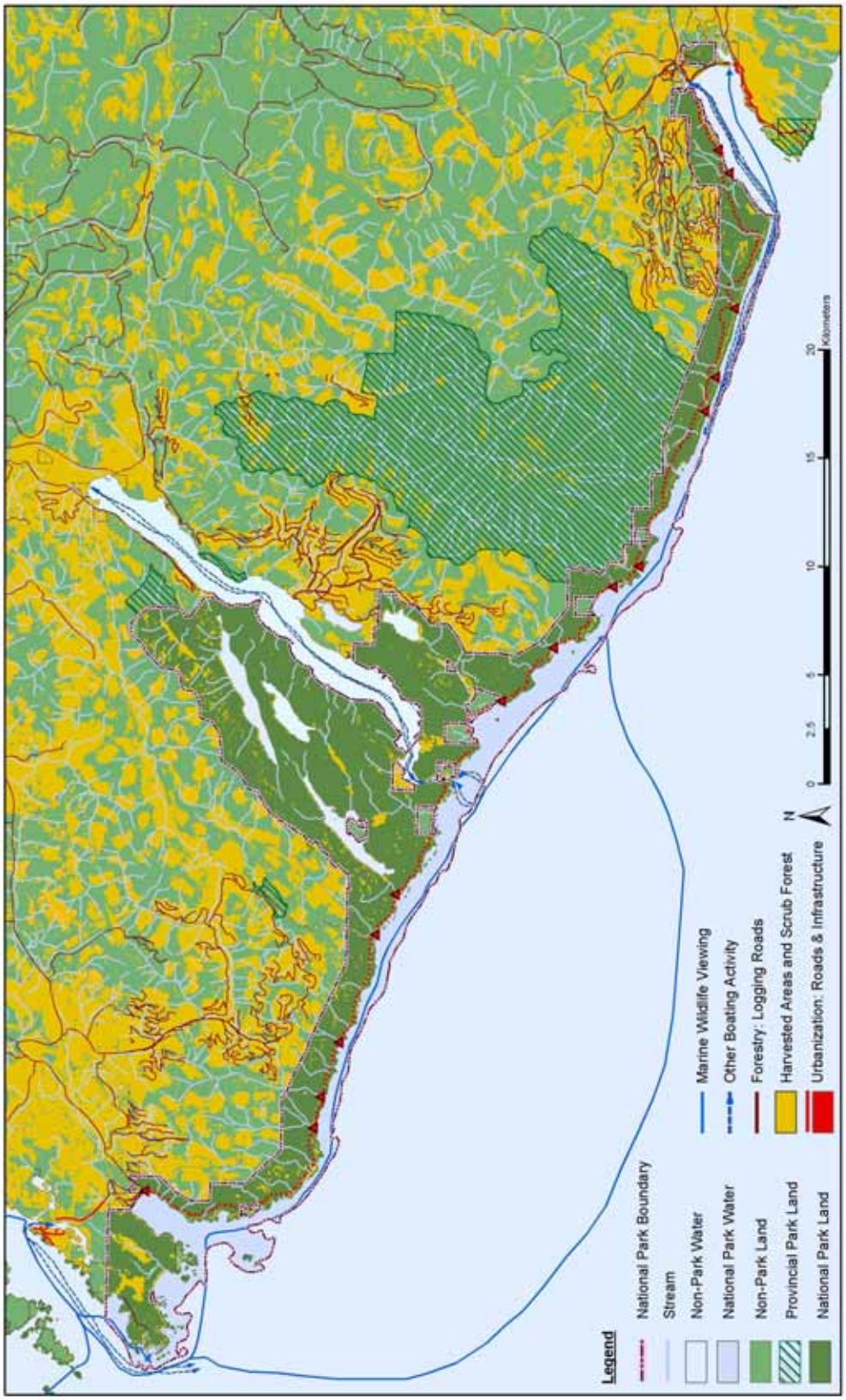


Figure 42. Additional, Cumulative Effects in the West Coast Trail Unit, PRNPR. In addition to the ecotourism activities, other potential sources of cumulative effects are indicated. Features in red indicate infrastructure associated with Urbanization and Development including that infrastructure within the boundaries of the National Park. Features include highways, roads, buildings, and campsites. Human use in the marine environment is indicated by blue and represents boat and marine use. The orange areas indicate forest that has either been harvested (areas associated with logging roads generally indicate second growth forest) or has sparse canopy cover (*i.e.* bog forest). Combined, it reflects areas not suitable for marbled murrelet nesting habitat (recall that no Marbled murrelet nests have been located in the Park). Yellow areas indicate locations of potential future development. The map does not portray the environmental effects of each feature represented, the threshold levels of impacts, nor the significance of the potential cumulative effects. For information on those aspects, please refer to the discussion in the text.

Table 15. Cumulative effects of commercial ecotourism and other activities on VECs.

VEC's	Soils: Organic soil deposits, erosion prone areas	Vegetation: Sea Side Centipede Lichen	Vegetation: Introduced exotic species.	Vegetation: Coniferous forest old- and old interior conditions, riparian forest	Vegetation: Wetlands, Cedar swamp & bog , Sand Dunes, Spruce Fringe forests	Vegetation: Marine plant and algae communities, Eel grass beds	Wildlife: Large predators; black bear, wolf, cougar	Wildlife: Gray whales	Wildlife: Steller sea lion (Haulouts)	Wildlife: Killer whales	Wildlife: Marbled murrelets (marine foraging sites)	Wildlife: Seabirds(Foraging & nesting sites): Black Oyster Catchers, Tufted Puffin, Surf Scoter, Brandt's Cormorant, Cassin's Auklet	Wildlife: Salmon (spawning and rearing habitat)	Water Quality: Clean drinking water and appropriate treatment of human waste. Reduce hydrocarbon pollution in marine waters	Cultural Resources: Cultural sites (FN and non-FN sites)	Visitor Experience: Positive and appropriate visitor experiences
Activities	**Residual effects from previous section (after activity and site specific mitigations)**															
Guided Hikes and Walks																
Overnight Use																
Marine Wildlife Viewing																
Transportation Services (Marine)																
SCUBA Diving																
Kayaking																
Surfing																
Surf Kayaking																
Cumulative Effects after mitigations: All commercial and non-commercial ecotourism & other stressors acting cumulatively on the VECs																
All Commercial Ecotourism:																
Human Disturbance (*i.e. other visitors*)																
Forestry																
Urbanization																
Commercial Fishing (*not including Commercial Sport Fishing)*																
Sport Fishing (*including Commercial Sport Fishing*)																
Petrochemical Pollution						?	?	?	?	?	?	?		?	?	?

= No detectable effect on target VECs
= Effect Negligible
= Effect Minor
= Effect Considerable (Significant Effect)

Petrochemical Pollution

Petrochemical pollution as a stressor on the National Park is difficult to address. Earlier sections in this report identified that water quality may be negatively affected by continued low-level impacts result from minor spills. The National Park can work with communities to install pump-out stations and encourage all boaters to observe green boating guidelines to address small scale spills.

Petroleum tanker traffic off the west coast of North America poses the potential threat of massive, petrochemical spillage on an infrequent basis. Due to its occasional nature, and the uncertainties around location, magnitude and potential effects, the threat of a large-scale, catastrophic spill will not be discussed further in this cumulative effects assessment.

Conclusion

With respect to ecotourism activities, there may be a net benefit, cumulatively, to having highly-trained, commercial, ecotourism operators in Park areas, to set a good example for other recreational users and/or to report infractions when they occur.

With mitigations applied, many of the negative impacts of repeated daily trips, multiple companies, and multiple types of activities acting on the same VEC still appear to be negligible and non-significant (Refer to Summary in Table 15). External stressors on the National Park may be minor but indicate the potential for long-term, cumulative effects. The long-term effects of all activities on several of the VECs (especially wildlife) are still unknown; thus, it appears prudent to monitor for the effectiveness of, and compliance with the current mitigations (Figure 43), or to partner closely with agencies that are assessing effectiveness, and to be adaptive to new input from experts and operators. Additional work to assess seabird habitat and to examine compliance with seabird regulations should be pursued. Partnerships with local communities and marinas to educate recreational boat users about marine wildlife viewing etiquette may improve compliance with the regulations, and may serve to protect wildlife from other cumulative effects.

3.4.3. Integration of CEA, Class Screening and Business Licensing Review Process

Figures 43 and 44 outline the annual business licensing and class screening process for proposed new or modified business licence applications. A pre-screening process ensures the activity is considered appropriate for a national park before the application is further evaluated. Applicants fill out the business licence application forms and a Parks Canada review team evaluates the application and completes the CSPR evaluation for potential environmental effects, including cumulative effects. The results of the class screening process conducted by the review team are documented in the CSPR.

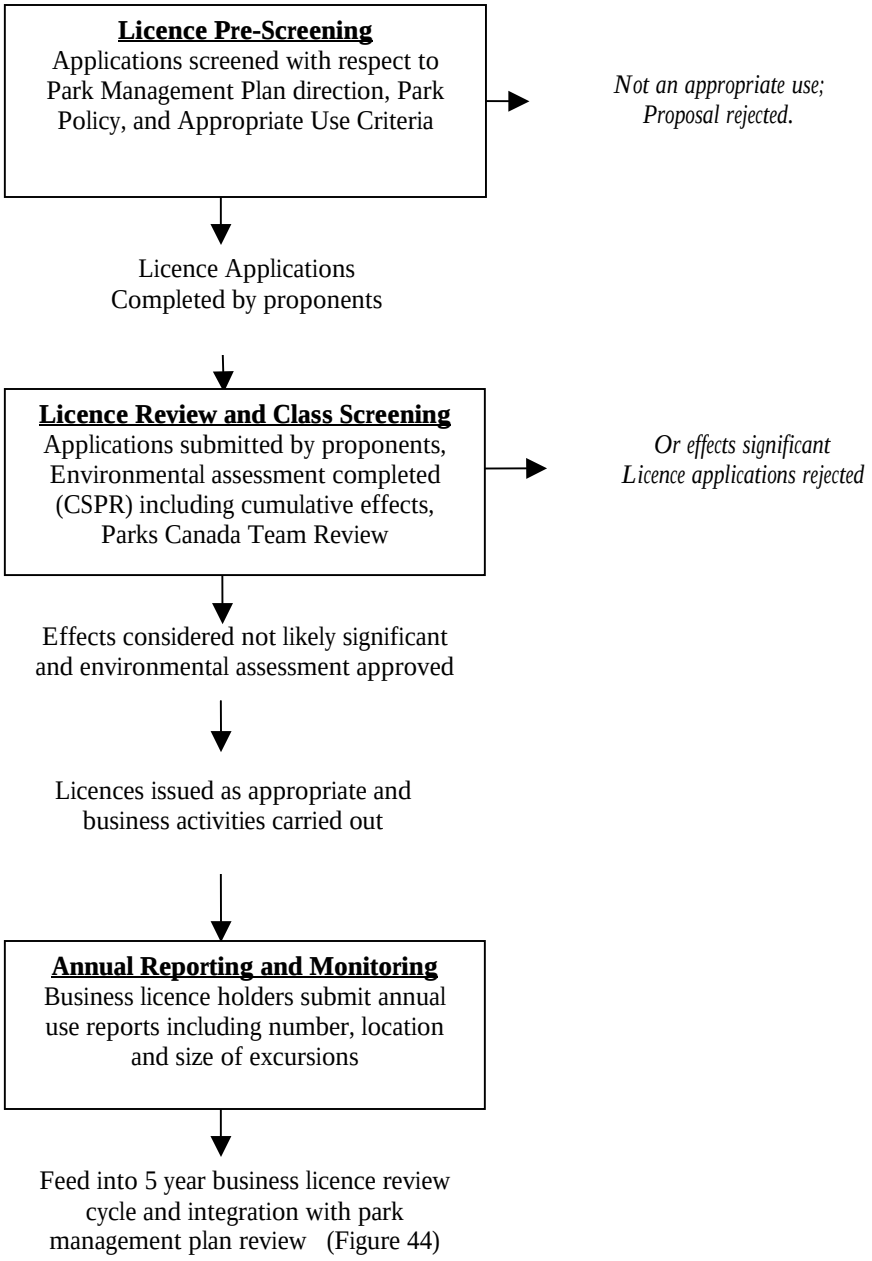


Figure 43. Annual Business Licence and Class Screening Review Process

3.4.4. Integration of CEA, Class Screening and Park Management Plan Review Process

Commercially guided activities, even when considered cumulatively, make up a low proportion of visitor use, and are anticipated to have relatively minor impacts on the selected VECs compared to the influence of other projects and activities, including park management activities, transportation and utility corridors, park communities, independent visitor use and activities outside the park boundaries. As a result, the contribution of commercial guiding activities to cumulative effects are most effectively identified and managed at a landscape scale in concert with other projects and activities. The park management planning process is the appropriate tool to facilitate cumulative effects assessment. The MCSR for commercial ecotourism based activities establishes the process for integrating consideration of the impacts of commercial guiding activities into the five year park management planning process . There are four main steps to the integration of cumulative effects assessment and the class screening process with the park management planning process as illustrated in Figure 44.

Summary Reporting on Commercial Guiding Activity
The submission of annual activity reports is a standard stipulation of a business licence for commercial guiding operations. Reports include information on the number, timing and location of trips and the number of participants. Annual report information is stored in an electronic database and can be queried by trail or land management unit. In preparation for the five year management plan review, report information will be summarized to establish the locations of and trends in commercial use. The same Parks Canada review team that reviews the annual business licence applications will be responsible for reviewing that information and identifying trends and issues of relevance to the management planning process.

State of the Parks Report
The summary and evaluation of commercial guiding activity is one piece of information that will be used by Parks Canada to write the State of the Parks Report. Other information contributing to the State of the Parks Report includes ecological integrity indicator monitoring, implementation of park management activities, and other ecological or social research. The State of the Parks report will provide an evaluation of ecological integrity and cumulative effects at the park scale. This information is then used to guide changes to the management plan.

Five Year Park Management Plan Review
In order to address cumulative impacts, management plans for the Park identify indicators of ecological integrity that are responsive to change and reflect overall ecosystem health. The cumulative effect of all activities on indicators is monitored over the 5 year term of the management plan, and the results of monitoring are used as input into the state of the parks report. The five year management plan review re-evaluates the state of ecological integrity indicators and updates management actions in response to the State of the Parks Report (Parks Canada, 2000a; Parks Canada, 2000b; Parks Canada, 2000c; Parks Canada, 2000d).

Amendments to the Class Screening Process
The updated park management plans are expected to provide direction as necessary related to the management of cumulative effects with respect to commercial guiding activities. Direction provided in the management plan will be used to update and modify the Class Screening and business licence processes. All business licences will then be reviewed using the new model class screening to ensure that mitigation and licence stipulations are appropriate and up-to-date.

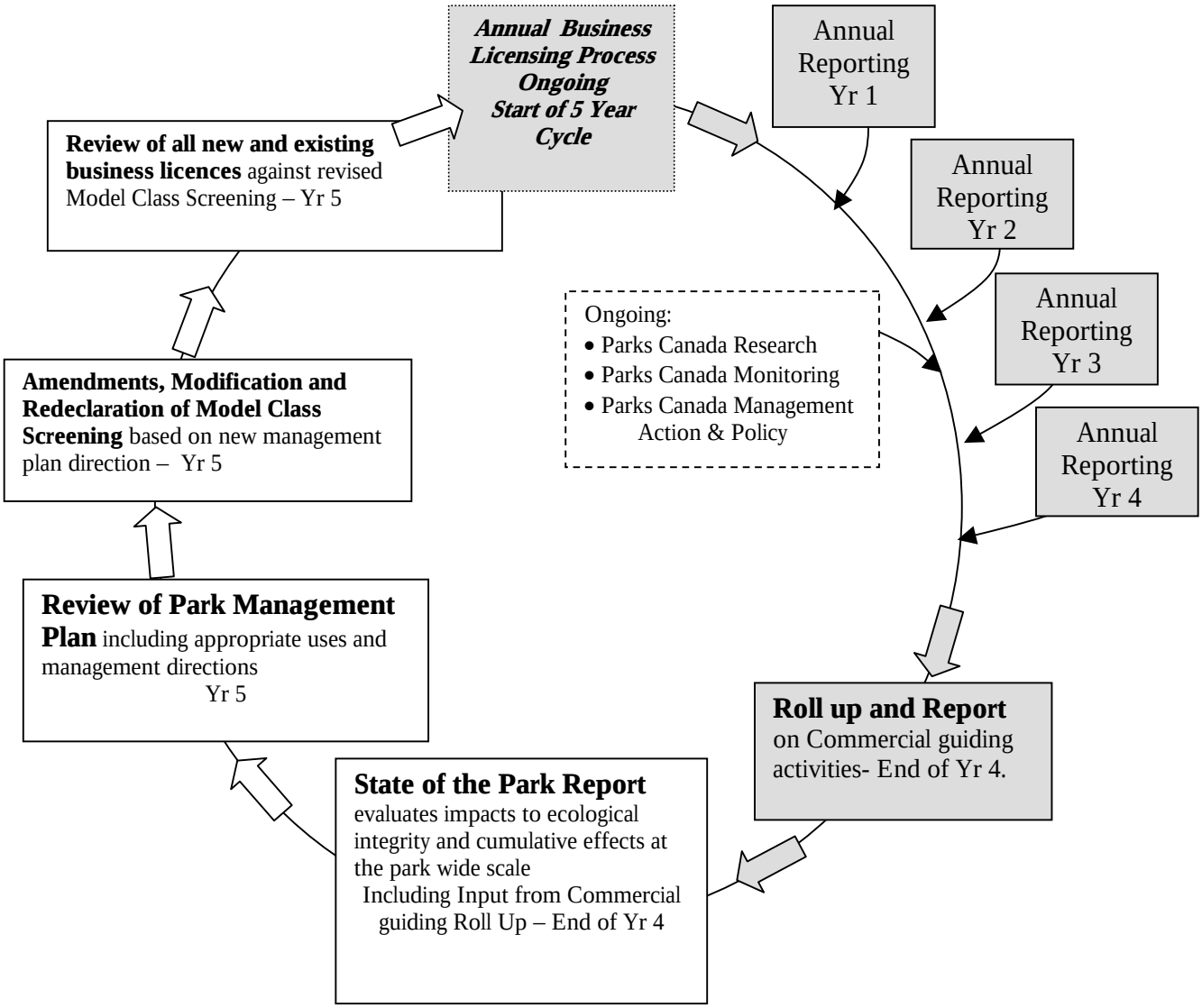


Figure 44. Five Year Business Licence Review Process.

3.5. SURVEILLANCE

Surveillance of commercial ecotourism activities is on-going and ensures that required mitigation is implemented and restrictions or stipulations are complied with. Surveillance also provides the opportunity to react to unpredicted environmental effects in a timely manner. Park Wardens routinely monitor conditions in the backcountry (Figure 45) and will be able to evaluate whether commercial operators are implementing required mitigation. Park Wardens, in cooperation with Park Managers, are also able to identify and enforce any site-specific or short-term mitigation to respond to unpredicted environmental effects. Commercial operators and guides need to stay informed about park policies and management directions to ensure they are in compliance.

Figure 45. From May to October park wardens patrol the Broken Group Islands, West Coat Trail and the Long Beach Unit

3.6. FOLLOW-UP

According to the Act, follow-up is "a program to confirm the accuracy of the environmental assessment of the project and to determine the effectiveness of mitigation measures". Follow-up monitoring is designed to verify the accuracy of the environmental assessment and the proposed mitigation. Follow-up monitoring is also used to identify and record potential cumulative impacts.

The end-of-season reports and monitoring by Parks Canada are part of an adaptive management and cumulative effects assessment process. Reporting requirements are part of the business licensing and review process and are integrated into the park management planning process as outlined in Section 3.5.

Parks Canada is responsible for on-going monitoring of ecological integrity indicators, trail conditions, services & facility conditions, and visitor experience. Therefore, the appropriate follow-up monitoring programs are identified through the management planning and business planning processes.

4. CONSULTATION

4.1. PUBLIC CONSULTATION PROCESS

The consultation process can be separated into three stages during the development of the Class Screening; i) early consultation conducted by PRNPR as part of the development of the best management practices and operator standards for the activities whereby input received formed the basis of the sets of mitigations or "operator standards", ii) consultation conducted by Parks Canada as part of the development of the MCSR, and iii) an Agency led 30-day public consultation on the final draft of the MSCR during the declaration phase of the class screening process.

The intent of consultation during the development of the MCSR is to create awareness of the proposed Model Class Screening process, to offer the opportunity to review both the draft MCSR and draft CSPR forms, and to provide comments and suggestions to Parks Canada prior to their submission to the Agency for declaration. Subsequently, the Agency provided the public with an opportunity to review the draft Model Class Screening report during a 30-day public consultation period.

Three stakeholder groups were considered most likely to have an interest in the class screening process: guiding business operators, guiding and tourism organizations and environmental groups. The initial stage of the consultation process identified potential stakeholder concerns and issues with the environmental assessment process and determined the level of interest among stakeholder groups as well as the need for, and requirements of, any further consultation.

4.1.1. Objectives of Consultations During MCSR Development

The proposed objectives for consultations with identified stakeholders were to:

- inform stakeholder of Parks Canada's intention to create a MCSR, including the intended outcome, the benefits and how it will affect business licence proponents,
- identify the opportunities to be involved in the process of developing the MCSR,
- explain how to obtain additional information and who to contact
- offer interested individuals and organizations the chance to review and comment on the draft MCSR and the CSPR prior to submission of the documents to the Agency for declaration.

4.1.2. MCSR Development Consultation Approach

A cover letter and information backgrounder was developed and mailed out to all identified stakeholders. The information provided the background and objectives of the proposed MCSR for eco-tourism based commercial guided activities in PRNPR. This package outlined the key elements of the MCSR; the process leading to the formal declaration of a MCSR; how additional information could be obtained; opportunities to review the proposed MCSR documents; and all relevant Parks Canada contacts.

Parks Canada staff followed up directly with a representative group of key stakeholders to assess the preliminary reaction to the Class Screening proposal and to determine if there was an interest in reviewing the draft proposal and providing feedback. Follow-up was carried out over the phone or through one-on-one meetings. Written feedback from business groups

and environmental groups was coordinated through the PRNPR Public Consultation Officer and PRNPR CEAA officer. Comments and suggestions were considered and incorporated into the environmental assessment process where appropriate. Responses to comments or suggestions not incorporated were recorded in the public consultation reports. The need for ongoing consultation or stakeholder review and adaptive revision is expected.

4.1.3 Agency Led Consultation

Following the submission of the MCSR to the Agency, it underwent a formal 30 day public review prior to declaration. As with the consultation on the development of the MCSR, comments received were recorded, considered and incorporated into the Model Class Screening Report as appropriate.

4.2. FEDERAL AND PROVINCIAL CONSULTATION

4.2.1 Federal Coordination Regulations

Under the Act, the Federal Coordination Regulations outline the required processes determining whether there are other federal authorities that may (a) exercise a power in respect of the project; or (b) be in possession of specialist or expert information necessary to conduct the environmental assessment of the project.

No Federal Authorities were identified that would exercise a power in respect of the project or act as a Responsible Authority under the Act. Federal Authorities with specialist or expert information that may contribute to the environmental assessment were identified through consultation with regional CEAA representatives in Alberta and British Columbia.

4.2.2. Federal Departments

Parks Canada has sole authority over all lands affected by land-based commercial guiding in the National Parks of Canada and is the sole authority for enforcement of the *Canada National Parks Act*. Under the *Species at Risk Act* (SARA) the Minister of the Environment is responsible for all species at risk in national protected heritage areas administered by Parks Canada including national parks and national historic sites.

Fisheries and Oceans Canada (DFO) is responsible for the conservation and protection of Canada's marine resources, including marine mammals. Within the boundaries of PRNRP, Parks Canada has jurisdiction, but works in collaboration with DFO to manage the marine resources. The best management practices for marine mammal viewing have been evolving for over a decade. PRNPR can set different regulations or mitigations for marine resources within the National Park as long as they meet or exceed those set by DFO. Issues related to commercial ecotourism related activities are not expected to affect other environmental issues, such as water quality or fish habitat, that may involve the jurisdiction or interest of other Federal departments.

4.2.3. Provincial Departments

No provincial departments were identified that would have an interest in the Model Class Screening. Commercial guiding business licences issues by Parks Canada are expected to have negligible impacts on lands or resources within provincial jurisdiction.

4.2.4. Other Expert Consultations

Appropriate experts within Parks Canada, including environmental assessment specialists, wildlife and conservation biology specialists, cultural resource specialists, planners and the Park Warden Service, reviewed the Model Class Screening Report. The consultation of wildlife management biologists from other government agencies (DFO), independent researchers, and guiding and tourism associations was conducted early-on in the process, and resulted in the establishment of the operator standards which form the basis of the mitigation lists.

4.3 PUBLIC REGISTRY / CEAR

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Internet site is administered by the Agency. Parks Canada and the Agency are required to post specific records to the Internet site in relation to the MCSR and any related CSPRs.

Upon declaration of the MCSR, the Agency requires Parks Canada to post on the Internet site of the Registry, at least every three months, a statement of projects for which a MCSR was used. The statement should be in the form of a list of projects, and will include:

- ·the title of each project for which the model class screening report was used;
- ·the location of each project;
- ·contact information (name or number); and
- ·the date of the decision.

The project file component is a file maintained by the Parks Canada, in the appropriate Park Administration and Resource conservation offices, during an environmental assessment. The project file must include a copy of the MCSR, including CSPRs and all records included on the Internet site. Parks Canada, in the appropriate Park Administration and Resource Conservation offices, must maintain the file, ensure convenient public access, and respond to information requests in a timely manner.

Further information regarding the Registry can be found in “The Canadian Environmental Assessment Registry”, prepared by the Agency.

5.0 AMENDING THE MODEL CLASS SCREENING REPORT

5.1. INTRODUCTION

The amendment procedure for the MCSR will allow for regular review and modification as experience is gained with its application and effectiveness. Amendments may be undertaken to:

- clarify ambiguous areas of the document and procedures;

- modify and revise the scope of the assessment to reflect new or changed regulatory requirements, policies or standards;
- account for changing environmental conditions and human use pressures and new information on best management practices; and,
- extend the application of the MCSR to projects that were not previously included but are analogous to projects included in the class definition.

5.2. TERM OF APPLICATION

The term of the Class Screening will be coordinated with the five year PRNPR Interim Management Guidelines/Management Plan review (currently unscheduled). As part of the management plan review, the Class Screening process will be reviewed and amended as required. The coordination of the management plan review and the review of the Class Screening process will provide the policy and human use strategy context for managing commercial, ecotourism-based activities over the subsequent five year period.

5.3. REVIEW AND AMENDMENT PROCEDURES

Parks Canada will have the authority to amend the CSPR where the amendment relates to administrative procedures internal to Parks Canada. Parks Canada may discuss proposed changes to the MCSR with the Agency, affected federal authorities and public interest groups during the regular review period or at any other time. Parks Canada will submit proposed changes, the amended MCSR and the rationale for the modifications to the CEAA, and one of the following will take place:

Amend the MCSR

The CEAA will review the proposed changes; and, if they are consistent with the requirements of the Act, will accept the changes and add the amended document to the CEAA's public registry when the proposed modifications:· a) are minor, b) represent editorial changes intended to clarify or improve the screening process, c) do not materially alter either the scope of the projects subject to the MCSR or the scope of assessment required for these projects, or d) reflect new or changed regulatory requirements, policies or standards.

Amend the MCSR with Conditions

The CEAA may accept the amended document with conditions and add the report to the public registry while not changing the declaration period.

Re-Declare the MCSR

Following the requirements of Section 19 of *the Act*, and after consulting with the RA, the CEAA may re-declare the report for the remaining balance of the declaration period or for a new five-year period when:

- the proposed amendments are considered to be substantial;
- the proposed amendments represent modifications to the scope of the projects subject to the class or to the scope of the assessment required for these projects.

6.0 CONCLUSION

With mitigations applied, environmental effects, including cumulative effects, of commercial ecotourism related activities on the MSCR's VECs are negligible and insignificant.

There is a net benefit to the National Park by having highly trained commercial ecotourism operators in marine and wilderness areas that implement the prescribed mitigation measures and best management practices. These individuals set a good example for other recreational users and/or to report infractions when they occur.

The long-term effects of all activities on several of the VECs (in particular marine wildlife) are as yet unknown; thus, it is prudent to monitor for the effectiveness of the current mitigations (or partner closely with agencies that are assessing effectiveness) and to be adaptive to new input from experts and operators. Additional work to assess seabird habitat and to examine compliance with seabird regulations should be pursued. Ensuring that information is shared with regional planners will also be important. Partnerships with local communities and marinas to educate recreational boat users about marine wildlife viewing etiquette may improve compliance with the regulations and may serve to protect wildlife from other, cumulative effects.

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APPENDIX A. CLASS SCREENING PROJECT REPORT FORM (CSPR)

CLASS SCREENING PROJECT REPORT (CSPR) *FOR COMMERCIAL ECOTOURISM RELATED ACTIVITIES AT* PACIFIC RIM NATIONAL PARK RESERVE

Introduction

This Class Screening Project Report is based on information provided in the *Model Class Screening Report for Ecotourism Related Business Licences in Pacific Rim National Park Reserve.*
This Class Screening Project Report (CSPR) is to be completed annually in its entirety by Parks Canada staff and is to be based on information provided by applicants through the approved Business Licence Application Process.

SECTION 1 – APPLICANT INFORMATION

	LICENCE APPLICANT (COMPANY NAME, AND LOCATION OF MAIN OFFICE, CONATACT PHONE #)	**UNIT** (INDICATE ONE OR MORE: LBU, BGI, WCT)	**REQUIRED LICENCE CATEGORY (S)**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Etc.			

Note: Generic commercial guiding mitigations as found in the MCSR, as well as the activity specific and unit specific mitigation measures as indicated in the above table are to be attached as conditions of the individual business licence under; Business Licence Schedule A) Section 3) "Environmental Stewardship".

SECTION 2 – ADDITIONAL ENVIRONMENTAL EFFECTS AND MITIGATION

This section evaluates additional project activities and site-specific environmental effects that may not have been addressed through the application of standard mitigation measures as identified in the Model Class Screening Report.

Additional Activity-Specific Environmental Effects and Mitigation

Licence Category	*Env Effect*	*Mitigation*

Additional Site-Specific Environmental Effects and Mitigation

Site and Unit	*Env Effect*	*Mitigation*

Additional Impacts to Species at Risk and Mitigation

Species	*Env Effect*	*Mitigation and Permit Requirements*

Note: Additional mitigation measures as described above are to be attached as conditions of the individual business licence under; Business Licence Schedule A) Section 3) "Environmental Stewardship".

SECTION 3 – ADDITIONAL CUMULATIVE ENVIRONMENTAL EFFECTS AND MITIGATION

This section evaluates cumulative impacts of proposed commercial operations that may not have been addressed through the application of standard mitigation measures as identified in the Model Class Screening Report.

Factors to be considered in the cumulative effects assessment should include:
The nature of the proposed operation including the type of activity and the intensity and timing of use;
The sensitivity of the areas of concern affected by the proposed operation;
Direction provided in park management plans, state of the parks reports and other monitoring information;
Spatial and temporal overlap of activities, additive or repetitive impacts, and synergistic effects
The relative contribution of the proposed operation to cumulative visitor use impacts

Cumulative environmental effects on areas of concern affected by the proposed operation are assessed against established indicators of ecological integrity for each area of concern as identified in the Model Class Screening Report.

Additional Cumulative Environmental Effects and Mitigation

Broken Unit		
CE Indicators	*Cumulative Effects*	*Mitigation*
West Coast Trail Unit		
CE Indicators	*Cumulative Effects*	*Mitigation*
Other / New:		
Long Beach Unit		
CE Indicators	*Cumulative Effects*	*Mitigation*
Other / New:		

Note: Additional mitigation measures as described above are to be attached as conditions of the individual business licence(s) under; Business Licence Schedule A) Section 3) "Environmental Stewardship".

SECTION 4 – RESIDUAL ENVIRONMENTAL EFFECTS AND SIGNIFICANCE

This section evaluates the residual impacts of proposed commercial operations that may not have been fully addressed through the Model Class Screening Report. Indicate the level of residual adverse environmental effects following mitigation as follows:
Negligible Effects – not likely to affect ecological or cultural integrity
Minor Adverse Effects – insignificant impacts to ecological or cultural integrity
Considerable Adverse Effects of proposed licensed activities are not adequately assessed through the CSPR process.

Residual Effects

Residual Impacts - Activity-Specific	
Impact	*Significance*
Residual Impacts - Site-Specific	
Impact	*Significance*
Residual Impacts – Species at Risk	
Impact	*Significance*
Residual Impacts – Cumulative Effects	
Impact	*Significance*

If the level of effect is rated as considerable, or if the environmental effects of the proposed activities are not adequately addressed through the CSPR process; DO NOT proceed with the Class Screening.
Contact Parks Canada Environmental Assessment Specialist for advice on environmental assessment requirements.

SECTION 5 – MONITORING AND FOLLOW-UP

Compliance monitoring, monitoring of impacts and follow-up activities related to most commercial guiding operations will be generally carried out as part of the regular duties of the warden service and as indicated in Sections 3.6 and 3.7 of the Model Class Screening Report. If considered necessary, describe any special requirements for compliance or environmental impact monitoring in relation to the proposed commercial guiding operation. Attach additional information as required.

Monitoring and Follow-Up Requirements

SECTION 6 – DECISION STATEMENT

☐ Business Licence may be issued as the proposed activities are not likely to cause significant adverse environmental effects.

☐ Business Licence should not be issued because the proposed activities are likely to cause significant adverse environmental effects.

Environmental Review Team:

_____ _____

Environmental Assessment Reviewer Date

_____ _____

Field Unit Superintendent Date

APPENDIX B. ZONING PLANS AT PACIFIC RIM NATIONAL PARK RESERVE OF CANADA

Long Beach Unit Zoning Plan

Zone	Terrestrial	Marine
ESA		**Gowlland Rocks** **The rocks and surrounding waters are an important harbour seal haulout and pupping site. The area also supports breeding colonies of glaucous-winged gulls and oystercatchers.** **Sea Lion Rocks** **the main year-round haulout site for Stellar sea lions in the Long Beach Unit, the rocks are also a breeding site for Brandt's cormorants, pelagic cormorants, glaucous-winged gulls and pigeon guillemots.** **Florencia Islet and Surrounding Islets** **Florencia Islet is one of two nesting colonies in the park for tufted puffins; which, as burrow-nesters, are particularly sensitive to disturbance. Surrounding islets also serve as breeding habitat for pelagic cormorants, glaucous-winged gulls and pigeon guillemots.** **White Island** **The island supports nesting pelagic cormorants and glaucous-winged gulls. Brandt's cormorants also nest there intermittently.** **Grice Bay Tidal Flats and Salt Marsh** **ESA designation provides additional protection for the fragile marine community and for resident and migratory waterfowl habitat.**

1	**Lower Kootowis Creek Drainage** **The undisturbed rainforest of the lower sections of Kootowis Creek includes large specimens of western hemlock. The Special Preservation designation acknowledges the uniqueness of the area and the need for specific guidelines to ensure its continued protection as a relatively pristine, temperate rainforest.**	
2	**Indian Island; the peninsula between Grice Bay and the tidal flats of Browning Passage (including the McBey Islets); the shoreline and watershed of Grice Bay; the northwest coast of Long Beach, from Schooner Cove to Cox Point; Sandhill Creek Area**	**Grice Bay** **The whole of the protected waters of Grice Bay are designated Natural Environment, encompassing the smaller ESA. While limited resource harvesting will be permitted, it will be kept to a minimum.**
3	**Lands south of the Tofino Airport and west of Highway No. 4; the Kennedy Lake Day Use Area; the Schooner Cove area; Long Beach itself** **Most of the Long Beach Unit is designated Natural Environment, including areas in which no facilities are located due to their proximity to roads or disturbed areas outside of park boundaries. With the exception of the road into Kennedy Lake Day Use Area, no motorized access will be permitted.**	**All offshore waters in the Long Beach Unit except Grice Bay and the waters surrounding the islands designated as ESA's** **The Conservation designation accommodates a broad range of activities consistent with the conservation of marine resources. Among such uses are boating, whale watching, sport fishing and approved commercial fisheries.**
4	**Park roads open to public traffic as well as all campgrounds, picnic sites, viewpoints, parking areas, park operation and administration facilities, and visitor information centres**	
5		

Broken Group Islands Unit Zoning Plan

Zone	Terrestrial	Marine
ESA		**Jacques and Jarvis Islands Lagoon** The low wave energy occurring in the area has resulted in a mud bottom embayment and associated eelgrass beds, a habitat type poorly represented in Pacific Rim. In addition, a significant number of archecological sites have been recorded in the area. **Sail Rock, Hankin Island and the Faber Islets** Each of the three sites is home to seabird nesting colonies.
	The Wouwer Island Complex The resources of Wouwer Island and the surrounding waters include sea lion haulouts, seabird nesting sites, a biologically diverse tide pool, and numerous archaeological sites. The accumulation of heritage resources make the Wouwer Island area an exceptionally rich and significant area wherein resource protection will assume the highest level of importance. **The Wouwer Island Tide Pool** The geological formations on the southeast side of the island have created a large tidal pool with a modified tidal regime. The unique configuration offers the opportunity to study species zonation as related to tidal level on a variety of substrates , ranging from a boulder bottom to a sand bottom and estuarine mudflats. A population of hemichordata at one end of the lagoon is one of only two known populations in British Columbia. **The Wouwer Island Sea Lion Haulouts** Both Steller and California sea lions utilize rocks on and around Wouwer Island as sites for resting. The Wouwer Island haulout is the main site in the park for California sea lions. Up to 2,300 animals have been recorded. **Wouwer Island Seabird Colonies** Pigeon guillemots and glaucous-winged gulls nest on the exposed shorelines of the island.	
1		**Seabird Nesting Sites on Cree, Austin, Effingham, Gibraltar, Dempster, and Batley Islands** Six of the ten seabird nesting colonies are designated Zone 1 within the terrestrial and marine zoning. Public access to the sites will not be permitted except under research permit. The preservation designation of the landscape and associated marine foreshore is necessary to protect nesting pigeon guillemots and cave-nesting pelagic cormorants.
2	**All of the islands in the Broken Group except for Aboriginal reserve lands** Under the Wilderness designation, facilities will be limited to primitive campsites, trails and toilet facilities. The Warden Cabin anchored in Nettle Bay will be the only roofed accommodation permitted in the Broken Group Islands Unit.	**All of the waters in the Broken Group Islands not otherwise designated** The Warden Cabin float anchored in Nettle Bay will be the only anchored float permitted in the Broken Group Islands Unit.

3		**The waters of Peacock, Coaster and Sechart channels, including the navigation route between Benson and Clarke islands** The Conservation zone provides for the navigation of private and commercial vessels through the Broken Group Islands.
4		
5		

West Coast Trail Unit Zoning Plan

Zone	Terrestrial	Marine
ESA	**Cheewhat Sand Dunes and Salt Marsh** The area at the mouth of the Cheewhat River constitutes a rare habitat type in Pacific Rim, containing a number of unusual floral and faunal species. As the area is sensitive to human trampling, public access will be minimized. **Cribbs Beach, Dare Point and Carmanah Point Fossil Sites** Located in horizontal sedimentary formations along the beach route of the West Coast Trail, the sites are susceptible both to erosion by human trampling and to poaching by fossil hunters. **Kichha Lake and Surrounding Wetlands** The Cape Beale portion of the West Coast Trail Unit encompasses almost the entire watershed of Kichha Lake, most of which is wetland. It is a unique location in the park for some rare and unusual flora.	**Cape Beale, Deadman Cove, Crescent Beach and Swimming Beach Seabird Colonies** Due to their sensitivity, public access to the four seabird nesting sites will be minimized. **Pachena Point and Carmanah Point Sea Lion Haulouts** The Carmanah haulout is located on an offshore island, and is used by 120-150 animals all year long. The Pachena site is accessible by foot from the West Coast Trail, and is occupied by up to 150 animals from September to May. As the haulouts serve as resting sites for Stellar sea lions, visitor access will be minimized.
1		**Camper Bay Caves Harbour Seal Haulout** Located between Camper Bay and Trisle Creek, the area is used for breeding and rearing. The animals are particularly sensitive to disturbance in that situation. Access by foot is not possible. Access by boat will not be permitted except under research permit. **Seabird Rocks, Lowton Point, Whyac and Gordon River Seabird Colonies** Four of the eight seabird colonies identified in the West Coast Trail Unit have been designated as Preservation zones in order to protect nesting pigeon guillemots, tufted puffins, and pelagic cormorants.
2	**All of the West Coast Trail Unit Not Otherwise Designated** Facilities in the Wilderness Zone will be limited to primitive campsites, trail structures and toilet facilities. No facilities will be provided in the Nitinat Triangle area.	**Waters Surrounding Cape Beale from Tapaltos Bay to Clutus Point** Emphasis will be placed on low-intensity recreation and the maintenance of the wilderness values of the area. Resource harvesting will be kept to a minimum.

3	**The Satellite Parcel of Land in the Estuary of the San Juan River in Port Renfrew** Motorized access will be prohibited, and emphasis will be placed on the maintenance of ecological and aesthetic integrity.	**All Marine Waters Not Otherwise Designated** The Conservation designation recognizes the continued use of waters in this zone for navigation and limited commercial fishing.
4	**Pachena Bay Trailhead Facility, the Satellite Parcel of Land in Bamfield and the Lighthouse Sites along the West Coast Trail** Facility development and vehicular access will be permitted only to the degree that the ecological integrity of the park is impacted to the smallest extent possible.	
5		

APPENDIX C. DEFINITIONS OF THE TOP SIX STRESSORS ON THE ECOLOGICAL INTEGRITY OF PRNPR:

1. Human Disturbance

For our purposes, human disturbance refers to human use within the Park. The annual visitor population at Pacific Rim approaches one million. The majority of that visitation is front country visitation to the highly accessible Long Beach Unit. Back country visitation to the Broken Group Islands Unit and the West Coast Trail Unit is the highest of any National Park in Canada. Visitation to the West Coast Trail Unit is capped, but it is not in other units of the Park. Human disturbance is evidenced by hardening and erosion of trails and campsites as well as deliberate damage to or removal of both live and dead vegetation (primarily in search of firewood).

2. Forestry

Though logging continues today at a decreased rate in the area surrounding the Park, the effects of logging are cumulative and permanent as old-growth communities are changed to second-growth plantations. The Park is bounded by land that almost entirely consists of active Provincial Crown timberlands under lease to four forest companies: Weyerhaeuser, Interfor, Timberwest and Iisaak. Cutting is regulated under two different codes of practice. Within Clayoquot Sound, which encompasses most of the land bounding the Long Beach Unit of the Park, the recommendations of the Scientific Panel on sustainable forest management take precedence. In every other part of the Province, the Forest Practices Code applies. The Scientific Panel recommendations are the more stringent code of practice in terms of providing for ecological integrity.

3. Urbanization

Recent declines in forest harvesting activity in the vicinity of the Long Beach Unit of the Park and a decline in the pelagic commercial fishery have led the two largest of the communities adjacent the park, Tofino and Ucluelet, to focus on tourism as an economic base. The result has been an increase in commercial recreational ventures such as guided sport fishing, nature tours (both terrestrial and marine), and private interpretive tours. A growing visitor population is prompting the expansion of visitor facilities and infrastructure adjacent the park. Urban population and urban development is increasing, and land values adjacent the park are rising. Both communities are approaching their maximum size at the tips of the two peninsulas on which they are located. Like the communities of Tofino and Ucluelet, which abut the Long Beach Unit of the Park, the community of Bamfield adjacent the West Coast Trail Unit of the Park pressures the Park to offer increased visitor services and opportunities to serve the growing tourism industry.

4. Commercial Fishing (including fish farming, but not Commercial Sport Fishing)

With declining fish stocks, the increasing concentration in the ownership of commercial fishing boats, and the reduction in the sizes of small fish boat fleets in particular in the last decade, the bulk of the commercial fishery is now with the large, offshore vessels which take large individual catches by the process of "dragging" a net across the ocean bottom. Large by-catches and bottom scouring are the result. Even the pelagic fishery for anadromous species

(notably salmon) is being prosecuted by fewer, larger vessels than was the case only 10 years ago. New fisheries (for species such a s hake, mackerel and octopus) target an increasing range of species. A commercial crab fishery within Park waters (a relic of park establishment) continues. While the pelagic fishery is declining in terms of landed catch of many target species and in mean size of species caught, both in the commercial and sport fishery, the fish farming industry has expanded over recent years. Impacts from pollution by the fish farms, escapement of exotic species and killing by the operators of natural predators (esp. of sea lions) cause concern by a variety of interests.

5. Sport Fishing (including Commercial Sport Fishing)

While the pelagic sport fishery is declining in terms of landed catch of highly-targeted salmon species and mean size of species caught, the fishery continues to grow as a recreational activity and an economic venture, accounting for a growing proportion of the fish catch every year in relation to the commercial fishery. The numbers of sport fishers utilizing guided fishing services and the numbers of operators of such services grow annually. Advances in both knowledge and technology result in increasing catch success. Resident, easier-to-catch bottom fish populations are becoming more heavily targeted as prized anadromous (primarily salmon) species become harder to find.

6. Petrochemical Pollution

Continued low-level impacts result from minor spills. Petroleum tanker traffic off the west coast of North America poses the potential threat of massive petrochemical spillage on an occasional basis. A current provincial referendum on the re-opening of offshore oil and gas exploration may see that potential threat increased. There is little that can be done in advance of a massive petrochemical spill to mitigate the impacts.

APPENDIX D. EXAMPLE OF PRE-TRIP INFORMATION AVAILABLE ON THE PARKS CANADA WEBSITE:

Providing visitors with pre-trip information on wilderness etiquette and low-impact camping guidelines.

Parks Canada Parcs Canada

Canada

Français	Contact Us	Help	Search	Canada Site
About the Parks Canada Agency	National Parks of Canada	National Historic Sites of Canada	National Marine Conservation Areas of Canada	Cultural Heritage
				Natural Heritage

Canada

Welcome
Planning
Your Visit

Search

Top of Form
Enter a keyword:

Search

Bottom of Form

- Introduction
- What's New
- Visitor Information
- Natural Wonders & Cultural Treasures
- Activities
- Birding
- Fishing
- Whale, seal and sea lion watching
- Long Beach Unit
- Broken Islands Group Unit
- West Coast Trail Unit
- Learning Experiences
- Park Management

Pacific Rim National Park Reserve of Canada

Activities

THE WEST COAST TRAIL

Overnight Use on the West Coast Trail

Protecting and Presenting

The entire West Coast Trail Unit of Pacific Rim National Park Reserve lies within the territories of the Huu-ay-aht, Ditidaht and Pacheedaht First Nations. Over countless generations, traditional knowledge of these territories has helped the First Nations to protect and live in harmony with their environment.

Parks Canada is responsible for ensuring the sustainability and integrity of the landscape and resources in its care. Parks Canada and Quu'as West Coast Trail Group (comprised of Huu-ay-aht, Ditidaht and Pacheedaht First Nations) strive to ensure ecological protection of the area.

Quu'as guardians hiking the West Coast Trail

©Parks Canada / Quu'as

Appropriate respectful behaviour by hikers contributes to a healthy functioning ecosystem. Our collective actions will ultimately ensure that future generations can appreciate and enjoy this special place.

Backcountry Etiquette: Low Impact Camping

Respect other visitors and protect the quality of their experience.

Use a stove: Do not rely on fires. Small fires are permitted on beaches: fires are not permitted in the forest. Use only driftwood (no thicker than your wrist).

Never cut trees or other vegetation and keep fires away from logs. Make sure fires have burned out and fire rings are dismantled.

Contact Us

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Canada
V0R 3A0
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No trace of the fire should be left. Try camping without a fire.
Camp above high tideline on the beach at designated camping areas. This helps reduce impacts in vegetated areas. Never remove branches from trees around the campsite. The endangered Seaside Centipede Lichen, has been found on the lower branches of Sitka Spruce near the high-tideline in this National Park. Hikers could potentially kill the local populations by removing branches and twigs.
Use outhouses when possible:
Protect the integrity of freshwater sources. If you are stuck between outhouses, dig a hole 20cm (7 inch) deep, at least 30 metres (three bus lengths) away from fresh water, campsites and the trail. Bury the human solid waste. Dispose of toilet paper in outhouses or pack it out. Pack out hygiene products.
Wash yourself, your clothes and dishes in the ocean or at the mouth of rivers. Dispose of any dirty water at least 30 m from freshwater. Use only biodegradable soap. Better yet, try soap free camping.

Cook a minimum of 100 metres away from tents
©Parks Canada / E. Brittain, 1994 / V-1

You will need to bring a tide table with you and have the ability to read it
©Parks Canada / W. Lynch, 1985

Only human waste, toilet paper and woodchips should go into the composting toilets.
©Parks Canada / B. Brittain / 2002

Your actions can kill wildlife and endanger hikers. Use metal food lockers when they are available. When they are not, hang your food, garbage and toiletries out of reach of animals and away from tents.

Storing food properly prevents human/wildlife conflicts. Use the food lockers where provided.
©Parks Canada / B. Brittain, 2002

Pack it in: pack it out. There are no garbage cans on the WCT: Everything you pack in you must pack out (orange peels, hygiene products, tarp ropes, wet clothes etc). Before arriving at the Trail, minimise packaging to reduce garbage and weight.
Indian Reserves (IR) are private property. Stay on the main trail and obey all signs when on reserve lands. Violators will be prosecuted. QUU'AS Guardians regularly patrol the trail and may be able to provide information about these areas. Patrol cabins are for Quu'as Guardians, they are not for hikers.
It is an offence under the National Parks Act to collect, remove, destroy or deface any natural or cultural heritage resource within National Park boundaries. This includes cutting trees for firewood or makeshift shelters and collecting or removing marine life, shellfish, fossils, artefacts, plants, etc.
Leave Pacific Rim National Park Reserve in as good or better condition than you found it.

Fishing

Are you thinking of catching or harvesting finfish, shellfish or other marine creatures? Remember Pacific Rim is a national park reserve established to protect the diversity of life in this area for present and future generations. Help Parks Canada protect both the marine and the terrestrial environment.
Harvest limits are reduced within Pacific Rim. If you are harvesting you must:
carry the appropriate licences (Non-Tidal Angling Licence and Tidal Waters Sports Fishing Licence).

- now, and follow, the Department of Fisheries and Oceans regulations and closures.

Check your saltwater sport fishing regulations for specific size limits and openings
© Parks Canada / D. Pickles / D-9

As of August 14th, 2002 the Department of Fisheries and Oceans (DFO) permanently closed a large section of the Broken Group Islands (BGI) to fin-fishing. View DFO information for details of this closure.
This closure was implemented to aid in the protection of inshore rockfish. Some fish are non-migratory, spending the majority of their adult lives in specific home territories. These fish tend to live on or near, the ocean bottom and are called 'bottom fish' or 'groundfish'. Lingcod, kelp greenling and rockfish are all examples of groundfish. Preliminary results from surveys of rockfish indicate that their abundance, species diversity, and sizes, are lower than expected, given the amount of suitable habitat available in the BGI. Due to incidental rockfish catch when fishing for other fish, such as salmon, the closure is for all fin-fish.