

Vancouver Island Region

MANAGEMENT PLAN

for Race Rocks
Ecological Reserve



Ministry of Water, Land
and Air Protection
Environmental Stewardship
Division

Race Rocks Ecological Reserve

MANAGEMENT PLAN

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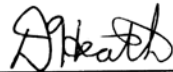
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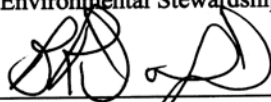
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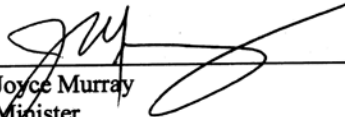
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Plan Highlights

- Established in 1980 as a result of a proposal by Lester B. Pearson College (the College), Race Rocks Ecological Reserve (the Reserve) will continue to be managed to protect a provincially significant high current sub-tidal and inter-tidal ecosystem and to provide outstanding educational/research opportunities.
- In 1998, the federal Minister of Fisheries and Oceans announced Race Rocks as one of four pilot areas being considered for designation as Marine Protected Areas (MPAs) under the *Oceans Act*. Designation of the Race Rocks area as a MPA is supported as a way to complement the objectives of the Reserve.
- Race Rocks Ecological Reserve is not being managed for the purpose of providing recreational opportunities. Use within the Reserve is intended only for education or research purposes.
- Race Rocks Ecological Reserve will be managed in a way that allows educational and research opportunities, to the extent that impacts from these activities are within acceptable limits.
- The former lightstation buildings will be operated by the College (under permit) and other partners as the Race Rocks Marine Education and Research Centre. The future of these buildings within the Reserve is dependent on partnerships and financial contributions for their operation and maintenance.
- The consultation process identified public expectations for a high level of protection for the Reserve. Achieving this expectation requires the complementary application of federal jurisdiction within the waters of the present ecological reserve and the adjacent area. As well, the protection objectives for the Reserve will be enhanced through the co-operation of First Nations, the College, interest groups (e.g. recreation fishers) and commercial organizations (e.g. commercial tour operators' association).
- The Province wants to ensure that it does not unlawfully infringe any aboriginal rights or title that may exist. The Environmental Stewardship Division (ESD) will work cooperatively

with aboriginal communities to identify and allow for continued use of compatible traditional activities.

- The Environmental Stewardship Division will pursue the Reserve's protection objectives using cooperative and regulatory arrangements with federal agencies, First Nations, the College, interest groups, commercial associations and the general public, particularly in the following areas:
 - Using federal authority to close all commercial and recreational fisheries and make the waters within the Reserve a "no-take" area;
 - Developing regulations and guidelines for managing air and marine traffic to ensure the impacts from these activities do not affect the long term well-being of the natural values of the area;
 - Working with the Department of National Defence to ensure their activities respect the Reserve's objectives; and
 - Developing marine pollution prevention and response plans.

- This plan will form the basis of a "governance" agreement with Fisheries and Oceans Canada (DFO) and an "umbrella" management plan. This agreement and plan will ensure a coordinated approach to the management of the area under the complementary marine protected area designations of the federal *Oceans Act* and the provincial *Ecological Reserve Act*.

Introduction

Purpose of the Management Plan

This plan defines management objectives and strategies for Race Rocks Ecological Reserve. It provides the direction necessary to protect and manage the Reserve, particularly concerning the protection of natural and cultural heritage values, recreation use, research and education uses.

The management plan is a working tool that will require periodic updating. Specific strategies are documented for a multi-year management program.

An objective of the ecological reserve program in British Columbia is the conservation of representative and special natural ecosystems, plants and animal species, features and phenomena. Ecological reserves contribute to the maintenance of biological diversity and the protection of genetic materials. They also offer opportunities for scientific research and educational activities. In many ecological reserves, non-consumptive, low-intensity uses such as nature appreciation, wildlife viewing, bird watching and photography are allowed. The objectives and strategies identified for the Reserve in this plan have been set in this context.

The Management Planning Process

The original draft of this plan was prepared by Garry Fletcher of the College, and benefited immeasurably from his knowledge and experiences in the Reserve. That original draft was reformatted to the Environmental Stewardship Division's (ESD) standards, and updated with the input from Division staff, other agencies and the public. A draft was completed in 1998 that received agency and public support.

In 1998, the federal Minister of Fisheries and Oceans announced Race Rocks as one of four pilot areas being considered for designation as marine protected areas (MPAs) under the *Oceans Act*. At that time, the Ministry of Water, Land and Air Protection withheld the formal approval of this management plan, pending the results of the MPA pilot initiative.

As part of the federal initiative, further public consultations and a series of meetings with an advisory group were held. First Nations were also consulted. Out of this process, a number of recommendations were made on boundaries, fishing closures, vessel management, use of surplus lightstation lands and facilities, and ongoing federal-provincial coordination for the protection and management of marine values. As well, a complementary designation under the federal *Oceans Act*, with boundaries contiguous with the existing provincial designation, was recommended. In 2000, the federal Minister of Fisheries and Oceans announced a commitment to this designation and the support for fishing regulations to make the Reserve a "no-take" area (subject to First Nation Treaty). As a result, ESD has updated the 1998 version of the plan, incorporating the recommendations from the pilot initiative.

This plan will form the basis of the ministry's contribution to a "governance" agreement with Fisheries and Oceans Canada (DFO) and an "umbrella" management plan for the ecological reserve and marine protected area. This agreement and plan will ensure a coordinated approach to the management of the area under the complementary marine protected area designations of the provincial *Ecological Reserve Act* and the federal *Oceans Act*.

Background Information

Race Rocks Ecological Reserve was created to protect a unique small archipelago, including its inter-tidal areas, and a high current sub-tidal area at the eastern entrance of the Strait of Juan de Fuca. It is located off the southern tip of Vancouver Island, approximately 17 kilometres southwest of Victoria. It covers an area of 227 hectares (Figure 1), of which about 2 hectares is terrestrial. The remaining 225 hectares cover provincial seabed. The Reserve was originally established in 1980 as a result of a proposal by the Lester B. Pearson College to protect a provincially significant high current sub-tidal and inter-tidal ecosystem and provide outstanding educational/research opportunities. In 2001, the majority of the island known as Great Race Rock was added to the Reserve. This addition includes the land and surplus support buildings from the lightstation, but does not include the actual navigation light or land necessary to operate that structure.

The marine environment of the Pacific coast is not currently well represented in either the federal or provincial protected areas systems. The federal and provincial governments are committed to establishing a system of marine protected areas and have developed a draft Marine Protected Areas Strategy to serve this purpose. Race Rocks Ecological Reserve is a marine protected area as defined in this federal/provincial strategy.

The Race Rocks Ecological Reserve Background Report (Appendix 2) provides a summary of information on the Reserve. This information is the basis for setting the objectives and strategies of this plan.

Relationship with Other Land Use Planning

Management planning processes provide a mechanism for public input, resolution of competing points of view and interests, and for identifying a protected area's objectives and management strategies. In this respect, an ecological reserve management plan must be considered in relation to adjacent land use and other land use plans.

In June 1994, the Province announced the Vancouver Island Land Use Plan which recommended strategic planning occur for marine areas. As an existing protected area, recognized for its significant marine and cultural heritage values, Race Rocks will be an integral part of an expanding system of federal and provincial marine protected areas. With its location near the population of Greater Victoria, and the readily recognizable images of the lightstation and the area's marine wildlife, Race Rocks is an important symbol for the marine protected area system, and for broader coastal zone management initiatives.



Figure 1: Race Rocks Ecological Reserve – Context

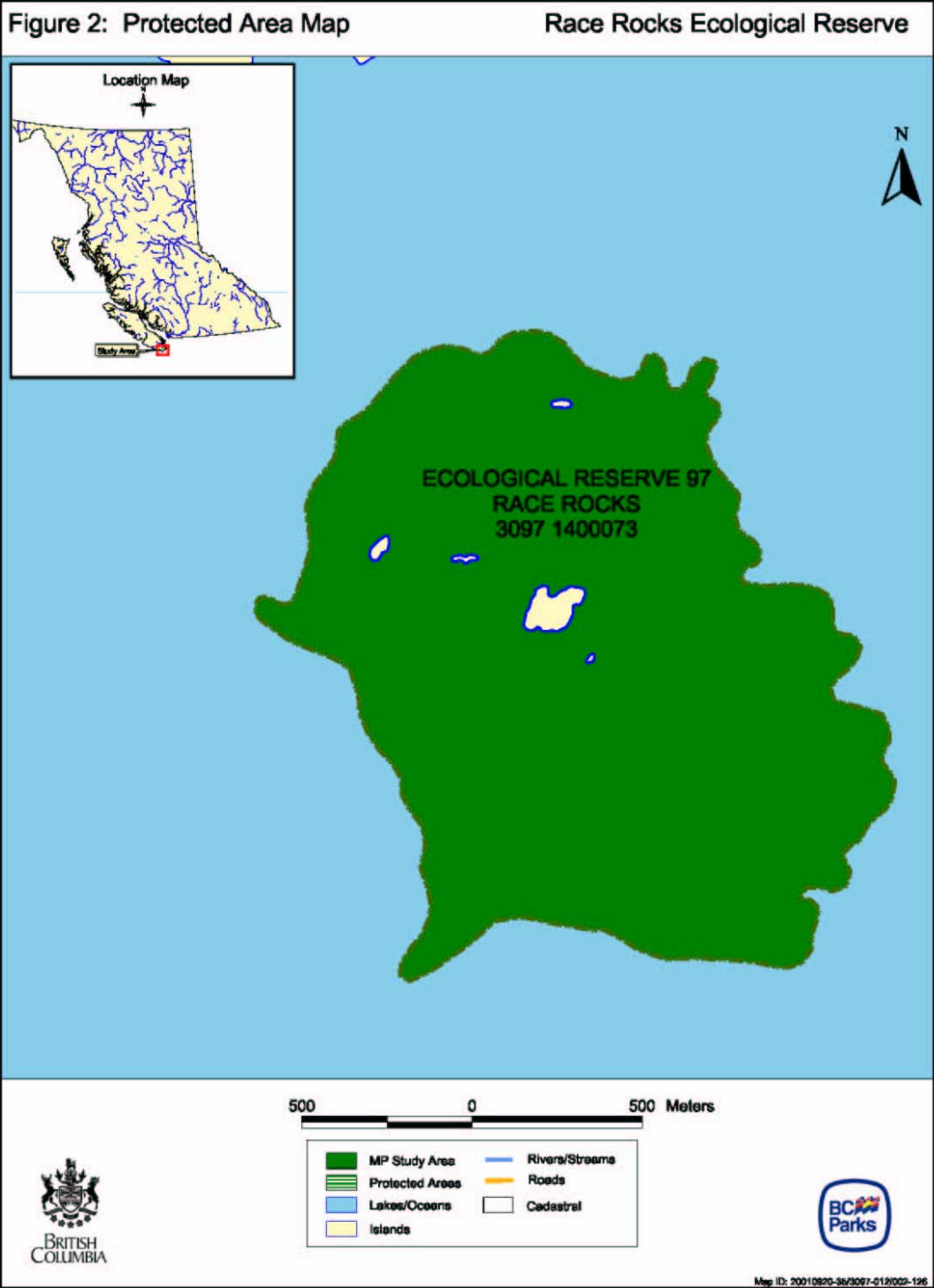


Figure 2: Race Rocks Ecological Reserve Boundary (20 Fathom / 36.6 metre depth)

Key Management Issues

Ecological Reserve Boundary

The ecological reserve includes an area of seabed and a group of small islands and reefs bounded by the 20 fathom, or 36.6 metre, contour. The appropriateness of this boundary was reviewed. The boundary should be easily identifiable for boaters and encompass intact natural units of sub-tidal land.

Cooperation with the Federal Government

Jurisdictional responsibilities for the management of the marine environment and marine values are shared between the federal and provincial governments. For example, Fisheries and Oceans Canada (DFO) is responsible for the regulations of fisheries and the lead responsibility for navigation and marine mammal protection. The Coast Guard, an agency within DFO, is responsible for the automated lightstation on Great Race Rock. The Department of National Defence uses explosives in the area, which may also have impacts on the Reserve.

The province, on the other hand, is responsible for the terrestrial areas, the seabed, and the natural values on those lands. The Province is working with federal agencies, including DFO, Parks Canada and Environment Canada, to develop and implement a marine protected areas strategy, and with Parks Canada to implement the Pacific Marine Heritage Legacy (PMHL) program.

The highest level of protection for the Race Rocks area can only be achieved through the cooperative application of both federal and provincial authorities.

Cooperation with Lester B. Pearson College

The College plays a special role in the Reserve and, in fact, was instrumental in the establishment of the Reserve. The College acts as the Reserve warden and provides an important monitoring function. The College is the principal research agency and has the most comprehensive environmental information on the Reserve. The College also provides public education opportunities as part of the Great Race Marine Research and Education Center. The College is under a long-term permit authorizing these activities within Reserve. The ongoing roles and activities of the College need to be regularly reviewed and updated to ensure the objectives for the Reserve are effectively being achieved.

Management of Education Activities

Given its rich natural attributes in proximity to an urban center, the Reserve provides excellent educational opportunities. The College uses Race Rocks for their marine ecology program and the provision of interpretation programming for College and local school students and naturalists. Commercial operators (e.g. whale watching tours) regularly use the marine area portion of the Reserve for educational nature tours. Impacts from these educational activities can be significant, and need regular monitoring. Management of impacts is dependent on a cooperative effort using the federal authorities for navigation and marine mammal protection,

and the influence of commercial associations and interest groups. Efforts will be taken, in cooperation with the College, to ensure all operators and visitors receive appropriate information on the purpose and use of Race Rocks and ecological reserves.

Management of Recreation and Commercial Activities

Ecological reserves are not designated for recreational purposes. Recreational use may occur when the impacts from that use do not adversely affect the values for which the Reserve was designated. Commercial and non-commercial recreation activities, such as wildlife viewing, diving, boating and nature appreciation, occur within the boundaries of the Reserve. There is growing evidence that the amount of boating use is affecting marine mammal behavior throughout the Strait of Juan de Fuca and southern Gulf Islands.

Recreational activities such as boating and diving within the boundaries of the Reserve are not currently restricted. Due to jurisdictional issues, the Province's ability to fully control impacts from marine and air navigation is limited. The control of these activities requires the cooperative and regulatory efforts of provincial agencies, federal agencies, First Nations, tour operators, recreational associations, and recreationists.

First Nations Issues

Achieving the Reserve's protection objectives requires a good working relationship between the Environmental Stewardship Division and the First Nations people.

Marine Pollution

Marine pollution, particularly from an oil spill, could pose a significant threat to the Reserve. The Reserve is vulnerable because of the tidal currents in the area, and the proximity to high volumes of commercial and recreational marine traffic.

The Role of the Ecological Reserve

Significance in the Protected Areas System

Race Rocks is one of 148 ecological reserves in British Columbia (Appendix 1 provides an overview of the ecological reserve program). It is one of 17 ecological reserves that include marine foreshore. Within the immediate region, Race Rocks is part of an ecological reserve system that includes Ten Mile Point, Oak Bay Islands, and Trial Island. In the Juan de Fuca area, complementary provincial parks include Juan de Fuca, French Beach, and Discovery Island parks. There is a National Wildlife Area at Esquimalt Lagoon, a Regional Park at East Sooke, a National Historic Site at Fort Rodd Hill at Colwood, and the proposed southern Gulf Islands national park reserve.

Another area in the local marine area system is Victoria Harbour's breakwater. Although it is not a formal protected area, in order to protect its unique underwater habitats, it is closed to divers' harvesting all marine life. The breakwater area hosts a range and abundance of marine species that serves as an important, easily accessible introductory dive opportunity. As well, the breakwater does not have the strong rip tides that make Race Rocks inappropriate for the inexperienced diver.

Race Rocks is distinguished from these areas by the combination of:

- its location at the transition between the Strait of Juan de Fuca and the southern Gulf Islands;
- its exposure to extreme tidal and weather phenomena;
- its richness in species diversity and abundance,
- its infrastructure and level of use for research and educational opportunities; and,
- its difficult access.

Ecological Reserve Roles

Race Rocks Ecological Reserve serves four roles. The protection of the natural and cultural heritage values is the priority.

Conservation Role

Race Rocks Ecological Reserve protects a provincially, if not globally, significant high-current sub-tidal and inter-tidal ecosystem. The Reserve has ecologically significant and unique assemblages of benthic and pelagic invertebrates. It protects several rare species, including the spiral white snail (*Opalia*), and many rare hydroid species (such as *Rhysia fletcheri*), that represent unique occurrences. The Reserve also provides haul outs and feeding areas for elephant seals, sea lions, and breeding areas for harbour seals. The Reserve provides nesting habitat and is a migration stop and resting area for seabirds.

In addition to protecting the cultural heritage values, the primary purpose of Race Rocks Ecological Reserve is for the protection of its natural values and cultural heritage values. All uses of the Reserve will be restricted, to the extent possible, in order to maintain the natural functioning of the Reserve's ecosystems.

Education Role

Race Rocks Ecological Reserve has a level of human use and development that makes it unusual within the provincial ecological reserve system. The type and level of use create opportunities to build awareness and support for the ecological reserves system, for the ongoing management of the Reserve, for the designation and management of other ecological reserves and types of protected areas and for coastal zone management practices.

A purpose of Race Rocks Ecological Reserve is to provide educational opportunities. The impacts from educational uses will be monitored and restricted as necessary to achieve the protection objective of the Reserve.

Research Role

Race Rocks Ecological Reserve is established for the purpose of conducting non-invasive research into marine ecosystems to benefit the management of the Reserve itself, other marine protected areas, and as a benchmark for the understanding the marine environment in general.

Recreation - Public Access Role

Race Rocks Ecological Reserve has not been designated for the purpose of providing public recreational opportunities. Use within the Reserve is intended only for education or research purposes.

Vision Statement

Race Rocks Ecological Reserve will continue to protect the high energy marine system found on and adjacent to the Race Rocks group of islands in the eastern portion of the Strait of Juan de Fuca. Research conducted in the Reserve contributes directly to the protection of the values within the Reserve and indirectly to the management of marine areas on the entire Pacific coast. The Reserve provides special opportunities to increase awareness, understanding and support for British Columbia's ecological reserve program. The College and the surrounding communities play a key role in the provision of educational opportunities, research and on-site management of the Reserve. Although visits to the islands are not encouraged, non-consumptive low-intensity educational uses of the Reserve, such as nature appreciation, wildlife viewing, bird watching and photography, will continue as long as their impacts are within acceptable limits.

Management Objectives and Strategies

Relationship with First Nations

First Nation interests and traditional uses of Race Rocks are not well documented. The eastern portion of the Strait of Juan de Fuca is the traditional territory for four Coast Salish Nations, including the Beecher Bay, T'souke, Songhees and Esquimalt First Nations (Te'mexw Treaty Association). Other Coast Salish Nations may also have used the general area on a seasonal basis. The area provided a wide range of food for these First Nations. The richness of the area is reported to have also allowed these foods to be traded for other commodities.

The Province wants to ensure that it does not unlawfully infringe any aboriginal rights or title that may exist. The Environmental Stewardship Division will work cooperatively with aboriginal communities to identify and allow for continued use of compatible traditional activities.

OBJECTIVES:

- *To develop working relationships and on-going communications with First Nations that contribute to the objectives for the Reserve.*
- *To increase the knowledge of First Nations' interests and values of the lands and waters of the Reserve.*
- *To define appropriate First Nations' interests and uses in the Reserve.*

STRATEGIES:

- Continue meetings with representatives of the First Nations to develop an understanding of the common interests between the purpose of the Reserve and the First Nations, and to create opportunities for their involvement in aspects of the Reserve's management. Develop a working agreement, as necessary, to ensure the management of the Reserve is coordinated, efficient and effective.
- Consult with First Nations to determine the type and nature of their uses of the Reserve.
- Review traditional use information and complement this information as necessary.

Ecological Reserve Boundary

Establishing boundaries in marine environments that are identifiable by users is a challenge. Unlike terrestrial areas where signs and other visual indicators often identify protected area boundaries, signs are not generally practical in marine areas. As well, not all users have depth or geo-positioning instruments for determining precise locations. The successful enforcement of protection measures is partially dependent on the ability of users to know whether they are inside or outside the Reserve. The present 20 fathom (36.6 metre) boundary was determined by the normal limit of SCUBA diving and based on the contours of the nautical charts of the time. While this boundary is readily identifiable by any boat with an accurate depth-measuring

instrument, it does not encompass the full extent of the Race Rocks seamount. In addition, metric charts are now used, making the 20 fathom description more difficult to determine.

As part of the DFO-led pilot initiative, boundaries of the Reserve were reviewed. There was some interest in extending the boundary to include all of the seamount that forms the Race Rocks group, and examples of the adjacent flatter bottom habitats. There was no consensus, however, on increasing the boundary of the Reserve. Consensus was reached on maintaining the Reserve boundary as originally designated in the foreshore area.

An area of 0.144 hectares on Great Race Rock is the site of the Race Rocks lightstation, under provincial *Land Act* lease to Canada Coast Guard. The land on which the lightstation is located, and sufficient land needed for the operation of the lightstation (e.g. helicopter landing site), are not included in the Reserve. Great Race Rock also has a number of residential and support buildings used by the lightstation prior to its automation. The land (1.48 hectares) and structures that became redundant with the lightstation's automation were returned to the province, and were added to the Reserve in 2001.

OBJECTIVE:

- *To define the boundaries of the Reserve in a way that protects a natural ecological unit, is identifiable by users, and has the support of the public, First Nations, and interest groups.*

STRATEGIES:

- Maintain the boundary at the 20 fathom contour.
- Monitor the effectiveness of the boundary and adjust it as necessary to achieve the Reserve's objectives.
- Identify the Reserve boundaries on marine charts and related marine guides and publications.

Legal Status

The Reserve is established by the *Protected Areas of British Columbia Act* and managed under the authority of the *Ecological Reserve Act* and the *Ecological Reserve Regulations*. In addition, the provisions of the *Park and Recreation Area Regulation* apply to ecological reserves and are used to assist in protecting the area's values. These provisions apply to the terrestrial and seabed lands within the Reserve.

Due to the limits of provincial jurisdiction in the marine environment, the authority of the *Ecological Reserve Act* is limited in the tidal water area of the Reserve.

Fisheries and Oceans Canada (DFO) manages marine resources under the authority of the federal *Fisheries Act*. As well, the *Oceans Act* can be used to designate a form of marine protected area (MPA). Under the *Oceans Act*, MPAs can be established for a number of purposes, including conservation and protection of: commercial and non-commercial fisheries resources; marine mammals and their habitats; endangered or threatened species and their habitats; unique habitats; and areas of high biodiversity or biological productivity.

OBJECTIVES:

- *To maintain British Columbia's interests for the terrestrial and seabed lands designated under the Protected Areas of British Columbia Act and managed under the authority of the Ecological Reserve Act.*
- *To engage federal authorities in ways that complement provincial authorities and that contribute to the highest level of protection of the Reserve's natural values.*

STRATEGIES:

- Support DFO's complementary designation of the water column within the ecological reserve as a Marine Protected Area under the federal *Oceans Act*.
- Develop a protocol or working agreement with DFO to ensure the coordinated, cooperative and effective management of the area, particularly in relation to the tidal water portions of the Reserve where interests are shared between federal and provincial agencies.
- Confirm ESD as the lead responsibility for all matters on the terrestrial portion of the Reserve.

Fish Management

The location of Race Rocks in the Strait of Juan de Fuca, the island's physiography, and the high velocity currents combine to make this area a particularly rich marine environment. It is widely valued as a place of high species diversity and abundance, and is ideal for increasing human understanding of marine ecosystems. Marine biologists have indicated that the value of the Reserve's marine ecosystem would be enhanced if the species using the area were as unaffected by human activity as possible. A "no-take" status for this relatively small area would be useful for a number of reasons, including being a benchmark on which to compare other areas, and as a "nursery" for adjacent areas.

In 1991, DFO closed Race Rocks Ecological Reserve to commercial fishing and shellfish harvesting. Race Rocks was also closed to the recreational harvest of shellfish, ling cod and rock fish. The Reserve remains open for recreational fishing of salmon, halibut and other species. As a result of fishing for salmon and halibut within the Reserve, resident fish are being inadvertently caught. The extent of this "by-catch" effect is not fully known.

OBJECTIVE:

- *To provide the highest level of protection for the resident marine species within the Reserve.*

STRATEGIES:

- Continue to work with DFO to implement a complete closure for all fishing in the Reserve.
- Subject to conservation needs, the no-take status of the Reserve will not apply to First Nations' treaty and traditional use rights.
- Develop an enforcement strategy with the DFO, the provincial Conservation Officer Service, and other appropriate federal agencies.

- Monitor compliance with the fishing closure.
- In cooperation with DFO, undertake enforcement of fishing regulations.
- Undertake inventory and evaluation studies in cooperation with DFO and the College to document the effects of the fishing closure on the fish, avian and mammalian species within the Reserve and the adjacent populations.

Wildlife Management

About 45 known species of marine birds use the Race Rocks area for feeding, roosting and nesting. The Reserve provides critical nesting habitat for glaucous-winged gulls, pigeon guillemots, black oystercatchers and possibly Brandt's cormorants. Twenty-three percent of the pelagic cormorant population in the eastern Strait of Juan de Fuca nests at Race Rocks.

Marine mammal species found at Race Rocks are representative of the Strait of Juan de Fuca and include five species of pinnipeds and ten species of cetaceans (five of which are common). The area is primarily used as a stopover and rafting site for California and northern seal lions in the winter. Harbour seals are the primary year-round resident users for haul-out, birthing, and rearing. The Reserve is the largest haul-out for harbour seals in the Strait of Juan de Fuca, the second largest in the Canadian waters of the Georgia Basin, and can represent up to 20% of the southern Gulf Islands' population.

There is a high abundance and diversity of benthic invertebrates within the Reserve. Urchins, soft coral, brittle stars and anemones are particularly abundant. Pacific abalone occurs throughout the Reserve and is listed as a threatened species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

OBJECTIVE:

- *To maintain current species diversity, abundance and distribution.*

STRATEGIES:

- In the event of inter-species competition that impacts the long-term wellbeing of a particular species, develop criteria, priorities and actions for the management of the affected wildlife populations.
- Work with Environment Canada, Canadian Wildlife Service, to ensure uses within the Reserve are not adversely affecting the bird populations' viability.
- Prohibit or restrict uses to ensure the long-term viability of marine wildlife species.
- Continue to monitor marine mammals within the Reserve, and in cooperation with DFO, develop a plan of action to ensure impacts from human use are maintained within acceptable limits.

Cultural Heritage

The Reserve's cultural heritage is also significant. Race Rocks is a prominent part of the famous "graveyard of the Pacific." The rocks were named by the officers of the Hudson's Bay Company who recognized the area's severe navigational hazards. These hazards are created by a combination of the strong rip tides, frequent poor visibility from fog, and extreme exposure to all prevailing winds. Numerous shipwrecks led to the establishment of a lightstation in 1860. The lightstation is the second oldest on British Columbia's coast and is now protected as a designated heritage structure. The Underwater Archaeological Society of British Columbia maintains an inventory of shipwrecks within the Reserve. The College has established an internet archive of relevant historical information and images.

Efforts are now being made to document First Nations' historical interests and use of the Reserve.

OBJECTIVE:

- *To ensure that the cultural heritage values in the Reserve are protected.*

STRATEGIES:

- Work with the Coast Guard and appropriate federal agencies to preserve historic attributes of the lightstation.
- Review traditional First Nation use information and complement this information as necessary.

Marine Pollution Risk Management

Petroleum tankers, freighters, cruise ships, and other marine traffic regularly pass within a few kilometers of the Reserve. On average, two supertankers pass through the Strait of Juan de Fuca each day. The risk of an oil spill or contamination from ballast discharge or other forms of pollution is high. An oil spill or discharge of other pollutants near the Reserve could potentially devastate the sensitive inter-tidal communities, and the marine mammal and bird populations. While the Reserve may have a relatively short cleansing time given its location in a high current zone and its exposure to both easterly and westerly winds, these factors also increase the probability that any spill in the Strait of Juan de Fuca will have an affect on the Reserve.

OBJECTIVE:

- *To work with the appropriate federal and provincial agencies to minimize the potential of, and impacts from, oil spills and other contaminants.*

STRATEGIES:

- Participate in the preparation of an oil spill prevention plan and develop an oil spill response plan in conjunction with the lead federal and provincial agencies. In conjunction with the Oil Spill Recovery Information System (OSRIS), develop and register a strategy for protection of the Reserve in the event of an oil spill.

- Maintain prohibition of ocean dumping within the Reserve, and work to ensure any dumping outside the reserve does not impact the values within the reserve.
- Prohibit ballast and other vessel discharges within or adjacent to the Reserve.

Facility Management

With the automation of the lightstation, the support buildings that were no longer required for the operation of the lightstation were transferred to the Province. These buildings are now within the Reserve. The former lighthouse buildings pose two threats to the marine environment.

First, sewage from the residences is being discharged directly into the water column. Although the extreme tidal flushing lessens the impact, this situation is not appropriate in a highly valued marine environment.

Secondly, diesel generators provide the electrical power. Diesel fuel poses an environmental hazard. Alternative, lower risk technologies for sewage treatment and power generation, such as composting toilets and solar energy, may be more appropriate for use in the Reserve. A composting toilet has already been installed in the former assistant's residence.

Another facility issue is the ongoing maintenance of the former lightstation buildings. The cost of regular maintenance is relatively high. In relation to other management activities throughout the provincial protected areas system, these costs may place significant pressures on organizational resources. It is unlikely that sufficient funding will be available from within ESD's budget to maintain the buildings. The maintenance of the buildings will likely depend on outside funding sources, including partnerships and corporate sponsorships.

OBJECTIVES:

- *To ensure the environmental (existing and potential) impacts from the facilities on Great Race Rock are managed within acceptable limits.*
- *To showcase alternative, low impact technologies.*
- *To maintain the buildings within the Reserve to the extent that funding allows.*

STRATEGIES:

- Ensure sewage does not adversely affect natural values by installing and maintaining self-composting toilets.
- Take actions to minimize the risk of fuel spills or other contaminant discharges within the Reserve.
- Investigate opportunities to utilize alternative technologies. Monitor technology improvements that make more intensive use possible with less impact on the natural values.
- Work with the College to address building funding issues as they arise. Where appropriate, ESD will assist the College in securing resources from provincial and federal funding sources and programs for the implementation of specific projects or activities authorized within the Great Race Marine Research and Education Center Permit. As authorized by permit, the College may pursue private and non-government sources of support.

Access Management and Site Visitation

In addition to the protection of natural values, ecological reserves are established to support research and educational activities. Visitation to the waters surrounding Race Rocks Ecological Reserve has been increasing, particularly by those engaged in wildlife viewing and diving. During peak summer viewing times, it is not unusual for the Reserve to have 25 tours each day.

All use within the Reserve arrives by water or by air, and has some form of impact on the natural values. These impacts include:

- Disturbances to the underwater marine communities by anchoring;
- Disturbances to nesting sea birds or resting sea lions and seals by landing or passing too close to these small islets and reefs;
- Injury to marine mammals and birds from high speed boats;
- Poaching;
- Physical injury or mortality from handling or improper dive techniques; and,
- Low flying aircraft occasionally disturb the Reserve's wildlife.

At critical periods (e.g. nesting and pupping times), the impacts from these disturbances can be significant. Most use within the Reserve is by commercial operations.

The market demand for both "whale watching" nature tours and SCUBA diving, suggests that the use by commercial operations is likely to increase.

There are many challenges to controlling the type and level of use within the Reserve. For example:

- The regulation of navigation is principally within the federal jurisdiction.
- The weather and tidal currents within the Reserve make it unsuitable for inexperienced divers. The richness of the underwater marine life is a significant attraction though, and the public safety issues put pressures on search and rescue capacities.
- Uses that occur within the Reserve should contribute to education or research objectives without negatively impacting the natural values. Distinguishing between general recreational use and educational activities is not always clear. If use within the Reserve continues to increase and higher levels of impact are recorded, restrictions may be necessary. Determining the most effective and efficient constraints must involve a wide range of rights and interests, and include a number of government agencies, commercial and non-government organizations, and the general public.

As part of the DFO pilot MPA initiative, two sets of voluntary guidelines were prepared. The dive community prepared guidelines for appropriate diving practices. These are included as Appendix 3. In principle, diving can be an extremely low impact activity. Certain practices, however, such as mooring boats and the physical disturbance and habituation of species, can have impacts. Successful implementation of the guidelines will be dependent on an effective communication strategy that reaches as many divers as possible. A second issue with diving is

the risks associated with the weather and tidal conditions common in the Reserve area. A high level of experience and local knowledge are required for safe diving opportunities.

The Whale Watch Operators Association also developed a “Best Practices for Tour Operators” Guideline (Appendix 4). These guidelines complement the recent activities of DFO to establish voluntary boating guidelines. The Association’s guidelines specify minimum viewing distances and maximum speed limits. As a non-government initiative, compliance with the guidelines is voluntary. The Association has indicated it is prepared to use the influence of its membership to ensure compliance. The guidelines are also intended to apply to general recreational boaters. Compliance, however, will only be as effective as communications are able to inform the general recreational boating public.

In the Strait of Juan de Fuca, there is growing concern that the number and regularity of whale watching tours, coupled with the industry’s constant and accurate awareness of whale locations, could be affecting whale behavior. This level of use particularly affects their resting and feeding habits. There is a growing desire among whale protection interests to see “no-go” sanctuary areas established where whales and other marine mammals can retreat to escape whatever stresses this level of human activity is creating. The current boundaries of the Reserve are probably insufficient to provide the necessary level of protection for such a “no-go” sanctuary. However, as part of a system of marine protected areas, the Reserve may play an integral role.

Boat Access

OBJECTIVE:

- *To respect boaters’ rights of navigation and the potential needs for marine safety, while restricting access to and within the Reserve in ways which minimize the impacts to the area’s natural values.*

STRATEGIES:

- In cooperation with federal agencies, commercial associations and public interest groups, develop a marine navigation action plan to ensure protection of inter-tidal and rare species, and to ensure that elephant seals, harbour seals, California and northern sea lions, and seabirds are not disturbed on their haul-out and nesting sites. Such a plan will consider the use of speed limits, minimum distances from specific features, seasonal or permanent “no-go” zones, mooring practices, and other mechanisms to achieve the Reserve’s objectives.
- Protect seabed habitats by prohibiting anchoring in the Reserve.
- Develop a communication strategy to ensure the boundary of the Reserve is identifiable, and the speed limits and its protective status are clearly described in the BC Sports Fishing Regulations and on marine charts and guides.

Aircraft Access

OBJECTIVE:

- *To maintain the impacts on the Reserve from aircraft use within acceptable limits.*

STRATEGIES:

- Continue to monitor aircraft activity and determine the extent of the impacts. Consider opportunities to control the airspace over the Reserve if and when necessary and appropriate.
- Prohibit aircraft landings within the Reserve, except as authorized by permit.
- Continue the working relationship with the Canadian Coast Guard to minimize the impacts from their use of the lightstation lands.

Diving Access

OBJECTIVE:

- *To manage underwater diving to minimize or eliminate impacts.*

STRATEGIES:

- Implement the guidelines for diving in the Reserve.
- Develop a communication plan to ensure public / diver awareness for the diving guidelines.
- Monitor compliance with diving guidelines.
- Monitor impacts from diving.
- In consultation with the diving community, review and amend the guidelines, if and as necessary, to ensure the impacts from diving remain at an acceptable level.
- In cooperation with the College and marine rescue organizations, develop a rescue plan that identifies responsibilities and procedures.

Terrestrial Area Access

OBJECTIVE:

- *To minimize the impacts from human use on the terrestrial areas of the Reserve within the constraints of the operation of Great Race Marine Research and Education Centre.*

STRATEGIES:

- Discourage public access to the terrestrial portions of the Reserve. However, visits to the islands will be allowed when their impacts are within acceptable limits.

- Monitor compliance with the terrestrial use objective and, if necessary, consider the addition of the Reserve’s terrestrial areas to the list of ecological reserves that are closed by ministerial order to public access.

Commercial Use Access

OBJECTIVES:

- *To allow commercial access to the Reserve, when authorized by permit, for educational opportunities that have minimal impact and that increase public awareness, understanding and appreciation for the Reserve and its values.*
- *To prohibit commercial activities that are not for educational purposes.*

STRATEGIES:

- Ensure that commercial operators in the Reserve have permits for their activities as required by the *Ecological Reserve Regulations*.
- For administrative efficiency and implementation effectiveness, consider opportunities to meet the requirements of the *Ecological Reserve Regulations* permitting requirements by issuing an “umbrella” permit to the Whale Watch Operators Association (WWOA) for commercial activities within the Reserve. Coordinate such authorization with DFO.
- Issue permits for commercial activities in the Reserve only if they are for educational or research purposes and when the impact of the proposed use is within an acceptable limit.
- Implement the Whale Watch Operators Association guidelines.
- Monitor effectiveness of WWOA guidelines. Review and amend as necessary.
- Monitor the level of use within the Reserve and adjacent area, evaluate the impacts from this use, and, in cooperation with federal agencies, commercial associations, non-government organizations, and the public, implement measures to protect marine life and the naturally functioning ecosystem within the Reserve.
- Work with the Reserve warden, the College, to provide orientations for permittees.
- Work with commercial operators and researchers to develop and maintain a code of conduct within the Reserve to ensure protection of the natural values and to maintain a high quality educational experience.

General Access Strategies

The following strategies apply to all forms of access and site visitation:

STRATEGIES:

- Develop a monitoring system with the College, site guardian, researchers and commercial tour operators to ensure appropriate behavior of diving and wildlife viewing companies and other visitors.
- Prohibit anchoring in the Reserve.
- Develop and implement outreach and stewardship programs to assist with site management.
- In cooperation with other marine agencies and interests, support the study and identification of a system of marine areas designated and managed for the needs of marine mammals.

Adjacent Land Uses

Commercial and sports fishing, nature tours, marine traffic, and the Department of National Defence's use of explosives occur in the waters adjacent to the Reserve. Presently, the federal government administers the lightstation on Great Race Rock. As one of the heaviest marine traffic areas on the Pacific coast, the lightstation is likely to continue indefinitely.

A number of federal and provincial initiatives for planning in the marine environment are either proposed or underway. These include the Pacific Marine Heritage Legacy, Marine Protected Areas Strategy and strategic planning for marine areas that is consistent with the Vancouver Island Land Use Plan.

OBJECTIVE:

- *To participate in land use planning initiatives and work with other agencies to ensure these agencies' activities do not adversely impact the Reserve.*

STRATEGIES:

- Work with the Department of National Defence to minimize or eliminate the impacts on the Reserve from the use of explosives.
- Work with DFO, other federal and provincial agencies, commercial associations and non-government organizations to ensure the Reserve contributes to a network of areas and standard practices that improve the interests of fish, marine mammals and birds of the region.
- Develop an agreement / protocol with the Coast Guard for their continuing operation of the lightstation, including helicopter landings, marine access, and maintenance.
- Participate in federal and provincial marine planning initiatives that may affect the Reserve.

Research Management

One of the main objectives of the ecological reserve program is to provide opportunities for scientific research. The Reserve has been very successful at fulfilling this objective through the interests and actions of the College. The College undertakes and assists in most of the research

conducted at Race Rocks. The students and faculty provide local knowledge, orientation services and often assist other authorized researchers. Additionally, the College monitors permanent inventory transects and conducts their own research as part of their permit and course requirements.

ESD encourages research that contributes to the long-term protection and understanding of ecosystems. Research priorities reflect the Division's mandate, with emphasis on conservation objectives, acute and chronic management problems, and rare and endangered species. To achieve this, research proposals are subjected to a systematic review process. The collected data are available to, and shared with, the scientific community.

In the past, the College worked closely with the Coast Guard and the lightstation keepers. The College was able to use some of the buildings to facilitate their research. With the automation of the lightstation, and the transfer of the surplus support buildings to the Ministry of Water, Land and Air Protection, the College has been given a long-term permit for the use of the buildings. The College uses these buildings as the Great Race Marine Research and Education Center in accordance with the conditions specified in the permit.

OBJECTIVES:

- *To encourage and learn from non-destructive research on marine ecosystems that will benefit:*
 - Race Rocks Ecological Reserve;
 - management of other marine protected areas; and
 - provide an understanding of the condition of marine ecosystems in general.
- *To encourage the compilation of information on the Reserve's cultural heritage.*

STRATEGIES:

- With the assistance of the College and other researchers, develop a long-term research and monitoring plan to minimize impact to ecological reserve values and maximize research opportunities and benefits.
- Ensure all researchers are authorized by permit.
- Ensure research activities are coordinated in a way that minimizes impacts and maximizes understanding of marine ecosystems and their management.
- Authorize the College's use of the buildings on Great Race Rock as the Great Race Marine Research and Education Center.
- Maintain a comprehensive permit with the College defining their roles and responsibilities for education, research and on-site management.
- Work with community groups and other partners for the ongoing operation and funding of the Great Race Marine Research and Education Center.
- Data collected in the Reserve will be made available to, and shared with, the scientific community.

Education Opportunities

The provision of educational opportunities is an objective of ecological reserves. Since the late 1970s, the College has been using the Reserve as an outdoor classroom and educational facility for College and local school students. In addition, groups like the Friends of Ecological Reserves, naturalist groups, and commercial operators visit the Reserve as part of their education programs.

Films and live televised programs, such as the “Underwater Safari” series, assist in developing an appreciation of the biodiversity and have little impact on the Reserve. Approval for filming takes into account the purpose of the filming and the type of footage in relation to the purpose of the Reserve and the current inventory of “stock” footage.

The Internet is another means of education. In the mid-1990s, the College included information on the Reserve on their college website (www.racerocks.com) to communicate information and activities specifically on the Reserve. This website has expanded to include more research records, profiles of the Reserve’s species and ecology, aspects of the area’s history, and live web-camera broadcasts. This service has raised global awareness of the Reserve, and has resulted in students from other parts of the world undertaking comparative studies in their respective communities.

OBJECTIVES:

- *To increase understanding, appreciation and support for Race Rocks Ecological Reserve and its terrestrial, inter-tidal and sub-tidal ecosystems, cultural heritage, and First Nations’ culture through education while ensuring the integrity of the Reserve.*
- *To utilize educational opportunities to build on the value of Race Rocks as a symbol of marine protected areas and the ecological reserves system, and their environmental, economic, and social contributions to the well being of British Columbians.*
- *To use the Reserve to build awareness and support for the ecological reserves system.*

STRATEGIES:

- Undertake proactive measures to provide educational information to the public and visitors.
- Ensure the Reserve is mapped on marine charts and navigation guides.
- Work with the College and other community groups to provide:
 - low impact educational opportunities for schools and the community;
 - offsite educational opportunities; and,
 - information on the Reserve and the ecological reserves system on the Internet.
- Continue to permit filming only for educational and research purposes. Develop stock footage to respond to standard filming requests.

- Monitor the level of educational use and take management actions, in consultation with the College, commercial tour operators and others, as necessary to contain impacts within acceptable limits.
- Develop, in consultation with the College and First Nations, educational information on ecosystems and the cultural and marine history of Race Rocks Ecological Reserve.
- Provide on-site information on the natural and cultural heritage values of the Reserve.
- Assist in providing information for an internet web-site (e.g. www.racerocks.com) for the communication of the Reserve's values and current management initiatives.

Communication Strategy

OBJECTIVES:

- *To develop all communication initiatives for the purpose of protecting the natural and cultural heritage values of the Reserve. Acceptable communication activities will focus on information for specific user groups or the general public and not encourage use of the Reserve. Examples of appropriate subjects include knowledge of the Reserve's species and their habitats, appropriate uses and practices, and information that builds support and understanding for ecological reserves.*

STRATEGIES:

- Approve the College's communication activities related to their use of the Reserve as a condition of their permit.
- Continue to provide public information to increase awareness of the Reserve, the potential for impacts from various activities, and the need for caution when in the Reserve. This information may include a brochure, accurate information in the British Columbia Tidal Waters Sport Fishing Regulations, information at points of entry, notations on marine charts and navigational guides, and the use of an internet website.
- Ensure accurate information on fishery regulations.
- Provide information at key departure points (such as marinas) and point of entry.
- Communication initiatives may be required to profile the financial needs of the ongoing operation of the Great Race Marine Research and Education Center to encourage supporters' contributions.

Roles, Responsibilities and Relationships

Provincial Agencies

Race Rocks Ecological Reserve is managed under the authority of the *Ecological Reserve Act* by the Environmental Stewardship Division of the Ministry of Water, Land and Air Protection. For Reserve management issues requiring federal/provincial cooperation, BC Parks will coordinate provincial government agency participation, as necessary or appropriate.

Federal Agencies

OBJECTIVE:

- *To ensure that the management and protection of the Reserve and the coordination of federal and provincial agencies involved are both efficient and effective.*

STRATEGIES:

- Use this plan as the basis of a “governance” agreement with Fisheries and Oceans Canada (DFO). This agreement should consider all aspects of a coordinated and cooperative approach to the management of the Reserve and the accomplishment of the area’s objectives. As the lead agencies for the federal and provincial governments, DFO and ESD will endeavor to be the initial contact for other respective federal and provincial agencies’ interests.
- With the designation of the marine protected area under the federal *Oceans Act*, use this plan as the basis of an “umbrella” management plan for the two complementary marine protected area designations under the provincial *Ecological Reserve Act* and the federal *Oceans Act*. A key objective for this “umbrella” management plan is the promotion of the entire coastal marine protected areas program.
- Establish a working agreement with DFO and the Coast Guard to enforce site-specific fisheries regulations and navigation objectives.

First Nations

OBJECTIVE:

- *To ensure that aboriginal rights or title that may exist are incorporated into the management of the Reserve.*

STRATEGIES:

- Work cooperatively with First Nations to ensure that their rights are upheld and their interests are incorporated into management directions for the Reserve.
- Ensure First Nations’ activities and uses within the Reserve are able to continue, subject only to restrictions necessary for the conservation of the area’s values.

Community Stewardship

Under the volunteer program, ESD has an ecological reserve warden program to provide on-site monitoring and reporting on ecological reserves. Since the establishment of the Reserve, the Biology and Environmental Systems faculty and students at Lester B. Pearson College have taken on the role of warden. The College have been assisted by the former lighthouse keepers stationed at Race Rocks who monitor activities in the Reserve and report violations such as commercial fishing and the shooting of sea lions.

ESD is developing a province-wide conservation stewardship initiative as part of its volunteer program. This program will encourage community involvement in the stewardship of parks and ecological reserves. Given the interest in Race Rocks Ecological Reserve and its proximity to an urban center, there are good opportunities to implement the program within the Reserve. The integrity of the Reserve will be assisted by involving permittees and other interests in the stewardship of Race Rocks.

OBJECTIVE:

- *To engage the public, affected communities and interest groups in ways that assist ESD's management and protection of the Reserve.*

STRATEGIES:

- Recognize the College as the Reserve warden with a key role to assist in on-site management.
- Support the College in the provision of an on-site presence to assist in information distribution, education, monitoring and reporting of violations. It is recognized that a continued on-site presence may be dependent on outside financial support.
- In consultation with the warden, develop opportunities for operators, naturalists and others to contribute to the stewardship of the Reserve.
- Develop procedures to report violations in order to assist enforcement authorities.

Plan Implementation

Approval of the management plan is not an indication that funding to implement management actions is available. Standard funding procedures (annual appropriations, donations, corporate sponsorships, etc.) are necessary for the full implementation of this plan.

This section compiles all the strategies listed in this plan into three categories: ongoing management (day-to-day tasks); priority one strategies (actions within next 5 years); and priority two strategies (long-term actions).

Ongoing Management

- Respect treaty rights and ensure they are clearly communicated to ESD staff, Reserve wardens, permittees and the general public.
- Continue meetings with representatives of the First Nations to develop an understanding of the common interests between the purpose of the Reserve and the First Nations, and to create opportunities for their involvement in aspects of the Reserve's management. Develop a working agreement, as necessary, to ensure the management of the Reserve is coordinated, efficient and effective.
- Maintain the boundary at the 20 fathom contour.
- Monitor compliance with the fishing closure.
- In cooperation with DFO, undertake enforcement of fishing regulations
- In the event of inter-species competition that impacts the long-term wellbeing of a particular species, develop criteria, priorities and actions for the management of the affected wildlife populations.
- Work with Environment Canada, Canadian Wildlife Service, to ensure uses within the Reserve are not adversely affecting the bird populations' viability.
- Prohibit or restrict uses to ensure the long-term viability of marine wildlife species.
- Continue to monitor marine mammal use within the Reserve, and in cooperation with DFO, develop a plan of action to ensure impacts from human use are maintained within acceptable limits.
- Work with the Coast Guard and appropriate federal agencies to preserve and present the historic significance of the lightstation.
- Ensure sewage does not adversely affect natural values by installing and maintaining self-composting toilets.
- Take actions to minimize the risk of fuel spills or other contaminant discharges within the Reserve.
- Investigate opportunities to utilize alternative technologies. Monitor technology that makes more intensive use possible with less impact on the natural values.
- Work with the College to address building funding issues as they arise. Where appropriate, ESD will assist the College in securing resources from provincial and federal funding sources and programs for the implementation of specific projects or activities authorized within the Great Race Marine Research and Education Center Permit. As authorized by permit, the College may pursue private and non-government sources of support.
- Protect seabed habitats by prohibiting anchoring in the Reserve.
- Continue to monitor aircraft activity and determine the extent of the impacts. Consider opportunities to control the airspace over the Reserve if and when necessary and appropriate.
- Continue the working relationship with the Canadian Coast Guard to minimize the impacts from their use of the lightstation lands.

- Monitor compliance with diving guidelines.
- Monitor impacts from diving.
- In consultation with the diving community, review and amend the guidelines, if and as necessary, to ensure the impacts from diving remain at an acceptable level.
- Monitor compliance with terrestrial use objective and, if necessary, consider the addition of the Reserve's terrestrial areas to the list of ecological reserves that are closed by ministerial order.
- Prohibit commercial activities that are not for educational purposes.
- Monitor effectiveness of WWOA guidelines. Review and amend as necessary.
- Monitor the level of use within the Reserve and adjacent area, evaluate the impacts from this use, and, in cooperation with federal agencies, commercial associations, non-government organizations, and the public, implement measures to protect marine life, and the naturally functioning ecosystem, within the Reserve.
- Ensure that commercial operators in the Reserve have permits for their activities as required by the *Ecological Reserve Regulations*.
- Issue permits for commercial activities in the Reserve only if they are for educational or research purposes and when the impact of the proposed use is within an acceptable limit.
- Work with the Reserve warden, the College, to provide orientations for permittees.
- Work with commercial operators and researchers to develop and maintain a code of conduct within the Reserve to ensure protection of the natural values and to maintain a high quality educational experience.
- Develop a monitoring system with the College, site guardian, researchers and commercial tour operators to ensure appropriate behaviour of diving and wildlife viewing companies and other visitors.
- Work with the Department of National Defence to minimize or eliminate the impacts on the Reserve from the use of explosives.
- Work with DFO, other federal and provincial agencies, commercial associations and non-government organizations to ensure the Reserve contributes to a network of areas and standard practices that improve the interests of fish, marine mammals and birds of the region.
- Participate in federal and provincial marine planning initiatives that may affect the Reserve.
- Ensure all researchers are authorized by permit.
- Ensure research activities are coordinated in a way that minimizes impacts and maximizes understanding of marine ecosystems and their management.
- Maintain a comprehensive permit with the College defining their roles and responsibilities for education, research and on-site management.
- Work with community groups and other partners for the ongoing operation and funding of the Great Race Marine Research and Education Center.

- Data collected in the Reserve will be made available to, and shared with, the scientific community.
- Work with the College and other community groups to provide:
 - low impact educational opportunities for schools and the community;
 - offsite educational opportunities; and,
 - information on the Internet.
- Continue to permit filming only for educational and research purposes. Develop stock footage to respond to standard filming requests.
- Monitor the level of educational use and take management actions, in consultation with the College, commercial tour operators and others, as necessary to contain impacts within acceptable limits.
- Communication initiatives may be required to profile the financial needs of the ongoing operation of the Great Race Marine Research and Education Center to encourage supporters' contributions.

Priority One Strategies

- Consult with First Nations to determine the type and nature of their uses of the Reserve.
- Review traditional use information and complement this information as necessary.
- Monitor the effectiveness of the boundary and adjust as necessary to achieve the Reserve's objectives.
- Support DFO's complementary designation of the water column area within the Reserve as a Marine Protected Area under the federal *Oceans Act*.
- Develop a protocol or working agreement with DFO to ensure the coordinated, cooperative and effective management of the area, particularly in relation to the tidal water portions of the Reserve where interests are shared between federal and provincial agencies.
- Confirm ESD as the lead responsibility for all matters on the terrestrial portion of the Reserve.
- Continue to work with DFO to implement a complete closure for all fishing in the Reserve.
- Subject to conservation needs, the no-take status of the Reserve will not apply to First Nations' treaty and traditional use rights.
- Develop an enforcement strategy with the provincial Conservation Officer Service, DFO, and other appropriate federal agencies.
- Undertake inventory and evaluation studies in cooperation with DFO to document the effects of the fishing closure on the fish, avian and mammalian species within the Reserve and the adjacent populations.

- Participate in the preparation of an oil spill prevention plan.
- Prohibit ocean dumping and ballast discharges within the Reserve and work to ensure any dumping outside the reserve does not impact the values within the Reserve.
- In cooperation with federal agencies, commercial associations and public interest groups, develop a marine navigation action plan to ensure protection of inter-tidal and rare species, and to ensure that elephant seals, harbour seals, California and northern sea lions, and seabirds are not disturbed on their haul-out and nesting sites. Such a plan will consider the use of speed limits, minimum distances from specific features, seasonal or permanent “no-go” zones, mooring practices, and other mechanisms to achieve the Reserve’s objectives.
- Develop a communication strategy to ensure the boundary of the Reserve is identifiable, and the speed limits and its protective status are clearly described in the BC Sports Fishing Regulations and on marine charts and guides.
- Prohibit aircraft landings within the Reserve, except as authorized by permit.
- Implement the guidelines for diving in the Reserve.
- Develop a communication plan to ensure public / diver awareness for the diving guidelines.
- Prohibit public access to the terrestrial portions of the Reserve, except as authorized by permit.
- For administrative efficiency and implementation effectiveness, consider opportunities to meet the requirements of the *Ecological Reserve Act* and associated regulations permitting requirements by issuing an “umbrella” permit to Whale Watch Operators Association (WWOA) for commercial activities within the Reserve. Coordinate such authorization with DFO.
- Implement Whale Watch Operators Association (WWOA) guidelines.
- Develop a protocol agreement with the Coast Guard for their continuing operation of the lightstation, including helicopter landings, marine access, and maintenance.
- Authorize the College’s use of the buildings on Great Race Rock as the Great Race Marine Research and Education Center.
- Undertake proactive measures to provide educational information to the public and visitors.
- Ensure accurate information on fishery regulations.
- Develop, in consultation with the College and First Nations, educational information on ecosystems and the cultural and marine history of Race Rocks Ecological Reserve.
- Provide on-site information on the natural and cultural heritage values of the Reserve.
- Encourage the maintenance of an internet website, www.racerocks.com, for the communication of the Reserve’s values and current management initiatives.
- Approve all of the College’s communication activities related to the Reserve as a condition of their permit.

- Continue to provide public information to increase awareness of the Reserve, the potential for impacts from various activities, and the need for caution when in the Reserve. This information may include a brochure, accurate information in the British Columbia Tidal Waters Sport Fishing Regulations, information at points of entry and notations on marine charts.
- Use this plan as the basis of a “governance” agreement with Fisheries and Oceans Canada (DFO). This agreement should consider all aspects of a coordinated and cooperative approach to the management of the Reserve and the accomplishment of the area’s objectives. As the lead federal and provincial agencies, DFO and ESD will endeavor to be the initial contact for other respective federal and provincial agencies’ interests.
- With the designation of the marine protected area under the federal *Oceans Act*, use this plan as the basis of an “umbrella” management plan for the two complementary marine protected area designations by the provincial *Ecological Reserve Act* and the federal *Oceans Act*. A key objective for this “umbrella” management plan is the promotion of the entire coastal marine protected areas program.
- Establish a working agreement with DFO and the Coast Guard to enforce site-specific fisheries regulations and navigation objectives.
- Enter into an agreement with First Nations that will ensure their rights and interests are upheld.
- Ensure First Nations’ activities and uses within the Reserve are able to continue, subject only to restrictions necessary for the conservation of the area’s values.
- Recognize the College as the Reserve warden with a key role to assist in on-site management.
- Support the College in the provision of an on-site presence to assist in information distribution, education, monitoring and reporting of violations. It is recognized that a continued on-site presence may be dependent on outside financial support.
- In consultation with the warden, develop opportunities for operators, naturalists and others to contribute to the stewardship of the Reserve.
- Develop procedures to report violations in order to assist enforcement authorities.

Priority Two Strategies

- Identify the Reserve boundaries on marine charts and related marine guides and publications.
- Review traditional use information and complement this information as necessary.
- Develop an Oil Spill Response plan in conjunction with the lead federal and provincial agencies. In conjunction with the Oil Spill Recovery Information System (OSRIS), develop and register a strategy for protection of the Reserve in the event of an oil spill.
- In cooperation with the College and marine rescue organizations, develop a rescue plan that identifies responsibilities and procedures.

- Develop an outreach program and stewards program to assist with site management, and to develop respect for the Reserve and its values.
- In cooperation with other marine agencies and interests, support the study and identification of a system of marine areas designated and managed for the needs of marine mammals.
- With the assistance of the College and other researchers, develop a long-term research and monitoring plan to minimize impact to ecological reserve values and maximize research opportunities and benefits.
- Provide information at key departure points (such as marinas) and point of entry.
- Ensure the Reserve is mapped on marine charts and navigation guides.

Appendix 1

Purpose, Role and Benefits of Ecological Reserves

PURPOSE

Ecological reserves are areas selected to preserve representative and special natural ecosystems, plant and animal species, features and phenomena. Scientific research and educational purposes are the principal uses of ecological reserves. Ecological reserves are established for the:

- Preservation of representative examples of British Columbia's ecosystems;
- Protection of rare and endangered plants and animals in their natural habitat;
- Preservation of unique, rare or outstanding botanical, zoological or geological phenomena;
- Perpetuation of important genetic resources; and
- Scientific research and educational uses associated with the natural environment.

ROLE IN THE PROTECTED AREAS SYSTEM

Ecological reserves role in the protected areas system focuses on the maintenance of biological diversity and the protection of genetic materials. Appropriate research and educational functions are the primary uses of ecological reserves. They are not created for outdoor recreation. Parks and ecological reserves complement each other, with ecological reserves providing a narrow range of educational and research activities associated with strict preservation while parks and protected areas provide a broad spectrum of uses from preservation to intensive facility oriented recreation.

BENEFITS OF ECOLOGICAL RESERVES

Ecological reserves are established for the maintenance of biological diversity. They assist in developing and promoting an environmental consciousness and provide outdoor laboratories and classrooms for studies concerned with the natural environment. Ecological reserves are benchmarks against which environmental changes can be measured.

As many ecological processes are as yet poorly understood, today's scientists cannot predict some of the questions that will require research in unaltered ecosystems. Ecological reserves keep our options open for the future. A system of ecological reserves is a "genetic data bank" which may hold the key to new discoveries in many scientific fields.

Appendix 2

Race Rocks Ecological Reserve Background Report

INTRODUCTION

The objective British Columbia's ecological reserve program is to preserve representative and special natural ecosystems, plants and animal species, features and phenomena. Ecological reserves contribute to the maintenance of biological diversity and the protection of genetic materials. Scientific and educational activities are the principal reasons for ecological reserves. Most ecological reserves are open to the public for uses that are non-consumptive, educational, low-intensity such as natural appreciation, wildlife viewing, bird watching and photography.

Race Rocks Ecological Reserve was created to protect an unique small rocky island system, and its adjacent inter-tidal and high-current sub-tidal areas in the eastern entrance of the Strait of Juan de Fuca. It has ecologically significant and unique assemblages of benthic and pelagic invertebrates. In addition, it is a haul out and feeding areas for seals and sea lions and a nesting and staging area for seabirds.

ECOLOGICAL RESERVE DESCRIPTION

LOCATION AND ACCESS

Race Rocks Ecological Reserve is located 17 km south west of Victoria at 123° 31.85'W latitude and 48° 17.95'N longitude. It is 1.5 km off the extreme southern tip of Vancouver Island at the eastern end of Strait of Juan de Fuca. Given the marine environment, access is limited. A Canadian Coast Guard helicopter pad is located on Great Race Rocks (which is excluded from the ecological reserve). Only seaworthy vessels are able to approach the ecological reserve, given the extreme sea conditions and lack of sheltered moorage.

SIZE AND BOUNDARIES

The Reserve includes 227 hectares and extends to a depth of 20 fathoms (36.6 metres). The Reserve is almost entirely sub-tidal. The terrestrial portion of the Reserve is just over 2 hectares in size. The present boundaries were determined by the normal limits of SCUBA diving and the contour lines of nautical charts.

HISTORY OF ECOLOGICAL RESERVE ESTABLISHMENT

Race Rocks Ecological Reserve was first proposed by Lester B. Pearson College in 1979. Concerned about the effect of increasing visitation and harvesting, the marine biology teacher, Garry Fletcher, and his students sought legal protection. Their goal was to ensure the preservation of marine mammals, sea birds and underwater organisms for future generations.

They were assisted by Brent Cooke of the Royal British Columbia Museum, Dr. Paul Breen of the Pacific Biological Station in Nanaimo, Dr. Derek Ellis of the University of Victoria and a host of other advisors. Garry and his students undertook 80 dives to collect data. They compiled background information to support ecological reserve designation including: observation records; species checklists; bottom profiles; tidal currents; salinity levels; and temperature variations. They also offered to undertake the responsibility for stewardship of the area as volunteer wardens. Their role would be to provide information to divers and advised them of appropriate behavior. They would also continue to accumulate information and serve as assistants to researchers.

With the data collected by Lester B. Pearson College, the Race Rocks area fit the criteria for ecological reserve designation and was originally proclaimed under Order In Council Number 692, on March 27, 1980. Great Race Rock was added by Order In Council Number 137 on February 12, 2001.

NATURAL FEATURES

PHYSICAL FEATURES

The ecological reserve is almost entirely sub-tidal, but includes a group of islets comprising about 2 hectares in total. Inter-tidal and sub-tidal zones have substrates primarily of continuous rock and a rugged topography that includes cliffs, chasms, benches and surge channels. The location at the southern tip of Vancouver Island, plus the rugged shallow sea bottom, result in strong currents, eddies and turbulence.

GEOLOGY

The geology of Race Rocks is volcanic in origin, with the islets being offshore basalts. Granite and quartz intrusive, probably of the undeformed kind, are evident. Sediment basins can be found in sub-tidal areas.

OCEANOGRAPHY

The important oceanographic features that have a bearing on biodiversity are tides, currents, wave action, water temperature and turbidity.

Tidal currents are a major oceanographic feature of Juan de Fuca Strait. The ebb and flood tides and residual current have a major influence on the water structure. In addition, Race Rocks is a transition zone between the inner waters and the open ocean. For ebb tide that funnels water from the low-salinity, nutrient-rich waters of coastal rivers such as the Fraser and countless tidal marshes along the Strait of Georgia and Puget Sound through the narrow part of the Strait of Juan de Fuca. The flood tides, that bring in water from the nutrient-rich upwellings of the open Pacific Ocean. As tidal flow surges past the rugged topography of Race Rocks results in 'racing' current, eddies and turbulence. Currents flow with velocities of two to seven knots and change direction according to tide, wave and wind direction. The wave action is more pronounced at Race Rocks due to the exposure to the outer portion of the Strait of Juan de Fuca. The variability in undersea topography results in waves being reflected, diffracted and refracted in irregular

patterns, resulting eddies and complex tides. Recent observations by oceanographers have identified an upwelling and mixing process at Race Rocks that is unique to this coastal area.

The water temperature is generally greater than 7°C with no distinct thermocline occurring. Mean surface temperatures are 7°C to 8°C in January, rising to 10°C to 11°C in August and September. In summer, the water is slightly cooler during flood than during the ebb tidal phase. Tidal flushing and turbulent currents reduce vertical layering of water masses. Surface salinity values average 31‰ through the years and are characteristic of the waters in the Strait of Juan de Fuca.

Water clarity is seasonally dependent, being largely determined by the phytoplankton content of the water. In the winter low phytoplankton populations result in good underwater visibility (sometimes greater than 15 metres) except after storms. In the summer underwater visibility lowers with increasing phytoplankton. There is no significant turbidity due to freshwater run off.

Race Rocks is subjected to strong wave action during southeasterly and southwesterly gales that are characteristic of fall and winter. A prolonged westerly storm may produce swells 3 to 4.6 m high with 1 to 3.24 m high wind waves superimposed. Southwesterly gales produce smaller swells (2.5 to 3.7 m high) because of the limited fetch available across the Strait of Juan de Fuca. During calm periods between gales and the summer, a surge is produced by the low westerly swells (1 - 1.2 m) that are present through most of the year.

CLIMATE

Race Rocks is in the rainshadow of the Olympic Mountains and the end of the wind funnel of the Strait of Juan de Fuca. Often, the ecological reserve experiences weather patterns quite different than southern Vancouver Island. It has an unusually high amount of sunshine the winter months, very seldom recording freezing temperatures. In summer, there is the occasional blanketing of fog.

The winds in Juan de Fuca Strait blow principally from the southeast and northwest. Outward blowing winds occur 50% of the time during the winter (October through March) while the inward blowing winds predominate during the summer (April through September).

BIOTIC FEATURES

The rich variety and abundance of seashore life of the Pacific coast is due to the nutrient-rich waters, relatively uniform seasonal range of temperature and freedom from winter icing. Excellent light penetration results in the shallow clear waters teeming with plankton. Combined with the varied topography, the ecological reserve has exceptional variety and productivity of marine life and tremendous ecological diversity. Inter-tidal, shallow water, deep water and rocky substrate ecosystems support encrusting animals and plants capable of withstanding high velocity currents. In the lee of the island, quiet water flora and fauna are extremely abundant.

The marine communities here are unusually luxuriant and rich. The “cnidarian” fauna is perhaps the richest in the world and benthic fauna is abundant and diverse. Species such as pink coral, *Gersemia rubiformis*, and basket seastar, *Gorgonocephalus eucnemis*, which are usually found at much greater depths, are found here at several metres. In addition, there is an unusual abundance

of ubiquitous species such as coralline algae, *Corallina sp.*, and brooding anemone, *Epiactis prolifera*.

Given the nutrients, some organisms grow to a large size. For example, giant barnacle, *Balanus nubilus*, reaches sizes in excess of four inches. The thatched barnacle, *Semibalanus cariosus*, achieves a prickly texture. The occurrence of disjunct echinoderm species such as the seastar *Ceramaster articus*, numerous specimens of the cup coral, *Balanophyllia elegans*, the northern abalone, *Haliotis kamtschatkana*, and the butterfly or umbrella crab, *Cryptolithoides sp.*, contribute to the unusual character of the sub-tidal communities.

The ecological reserve contains an abundance of plumose (*Metridium spp.*) and brooding anemones, *Epiactis prolifera*, and large numbers of sponges and ascidians. At least 65 species of hydroids, giant barnacles, a variety of colonial tunicates, three species of sea urchins, sea cucumbers, and basket stars adorn the underwater cliffs. Bright pink hydrocoral, soft pink coral, bryozoans and long-lived species of mussels are found here. Other molluscs include chitons, limpets, snails, scallops, and pacific octopus. The rare spiral white snail, *Opalia sp.*, occurs in one limited area. The ecological reserve protects thriving populations of inter-tidal species that have been severely impacted by sports and commercial harvesting elsewhere. These include three species of sea urchins, goose-neck barnacles and the mussel, *Mytilus californianus*.

Twenty-two species of algae have been recorded, including extensive stands of bull kelp, *Nereocystis luetkeana*. In the inter-tidal zone, over 15 species of red, brown and green algae exhibit striking algal zonation patterns, distinctive to the Pacific coast. Several species of red algae, *Halosaccion glandiforme*, *Endocladia muricata* and *Porphyra sp.*, occupy relatively high levels on the inter-tidal shoreline. *Porphyra sp.* are particularly abundant in the early spring at higher inter-tidal levels. Microscopic flagellated euglenoids, *Pyramonas*, live in the high rock pools, giving them a bright green color. The rock walls of tide pools and the shallow sub-tidal areas are encrusted with the encrusting pink algae, *Lithothamnion sp.*, and large populations of coralline algae. dead man's fingers, *Codium fragile*, rare to this area, is found in two small isolated areas of the inter-tidal zone on the main island. Over 20 species live sub-tidally and a dense canopy of bull kelp rings all the islands and extends underwater to 12 metres.

The Surfgrass, *Phyllospadix scouleri*, is abundant in a narrow band near zero tide level and in the deeper tidepools on the western side of the main island.

MARINE MAMMALS

Over fifteen hundred California sea lions, *Zalophus californianus*, and Stellar or northern sea lion, *Eumetopias jubatus*, haul out on the islets south of Great Race Rocks between months of September and May. In the spring, they tend to move out the area and head north to breed on the Scott and Queen Charlotte Islands. In recent years, 50 to 100 northern sea lions and up to 2000 California sea lions have used Race Rocks as a winter haul-out.

Several hundred harbour seals, *Phoca vitulina*, inhabit Southwest and North Race Rocks year round, bearing their young in June. Six to eight northern elephant seals, *Mirounga angustirostris*, have started to frequent the reserve. Up to 60 transient and resident killer whales, *Orcinus orca*, frequent the waters foraging on salmon, sea lions and seals. River otters, *Lutra canadensis*, are

known to have lived in the Reserve. Other marine mammals that are occasionally observed in the waters of the ecological reserve are northern fur seal, *Callorhinus ursinus*, Dall's porpoises, *Phocoenoides dalli*, gray whales, *Eschrichtius robustus*, and false killer whales, *Pseudorca crassidens*.

SEA BIRDS

Race Rocks serves as a nesting colony and a migration resting area. glaucous-winged Gulls, *Larus glaucescens*, and pelagic cormorants, *Phalacrocorax pelagicus*, are the most abundant nesting birds in the summer months. Approximately 235 pairs of cormorants nest on the cliffs of Great Race Rock and on the southern outer island. One hundred and eighty pairs of gulls nest in the high spray zone around the perimeter of the main island and on the small outer islands. Eighty pairs of pigeon guillemots, *Cephus columba*, nest in rock crevasses on the central island and up to 10 pairs of black oyster catchers, *Haemotopus bachmani*, nest on the islands. Bald eagles, *Haliaeetus leucocephalus*, frequent the area, with groups of 50 birds being sighted on the rocks in winter months. Harlequin Ducks, *Histrionicus histrionicus*, surfbird, *Aphriza virgata*, rock sandpipers, *Calidris ptilocnemis*, and black turnstones, *Arenaria melanocephala*, can be observed occasionally, particularly in the winter. Brandt's cormorants, *Phalacrocorax penicillatus*, and glaucous-winged gulls, *Larus glaucescens*, are the most abundant birds in the fall and winter. common murrelets, *Uria aalge*, tufted puffins, *Fratercula cirrhata*, rhinoceros auklets, *Cerochinca monocerata*, ancient murrelets, *Synthliboramphus antiquus*, and marbled murrelets, *Brachyramphus marmoratus*, are occasional visitors. In 1997, Lester B. Pearson College staff reported counting thirteen brown pelicans also on Race Rocks.

The islets of Race Rocks function as suitable alternate habitat for various sea birds that have been forced out of other areas due to environmental disturbances. For example, in the fall of 1974, unusually severe weather conditions off the Queen Charlotte Islands forced the ancient murrelet to frequent Race Rocks.

FISH

Decorated warbonnets, *Chirolophis decoratus*, red Irish lords, *Hemilepidotus hemilepidotus*, sculpin, *Cottidae* species, kelp greenling, *Hexagrammos decagrammus*, ling cod, *Ophiodon elongatus*, China rockfish, *Sebastes nebulosus*, tiger or black banded rockfish, *Sebastes nigrocinctus*, and copper rockfish, *Sebastes caurinus*, swim in ecological reserve waters. Wolf eels, (*Anarhichthyes ocellatus*, also inhabit the rock cervices. Salmon species pass through the area including: pink salmon, *Oncorhynchus gorbuscha*; chum salmon, *O. keta*; sockeye salmon, *O. nerka*; coho salmon, *O. kisutch*; chinook salmon, *O. tshawytscha*.

HISTORICAL AND CULTURAL FEATURES

This small group of islets was known to the early sailors as the "dangerous group". They were subsequently renamed "Race Rocks" by officers of the Hudson's Bay Company upon the recommendation of Captain Kellet who previously noted the dangers created by the rip tides and current which raced around the islands.

Given that the rocks and reefs of Race Rocks were a danger for converging shipping traffic from Seattle, Vancouver and Victoria, the second oldest lighthouse on the southwest coast lighthouse was built on Great Race Rock. It was constructed of four-foot, cut and fitted granite blocks

brought around Cape Horn from England in 1858, built in 1860 and lit on December 26, 1860. It stands 39 metres (105 feet) above the ground. The tower was automated in 1996 and no longer requires light keeper staff.

Despite the Race Rocks lighthouse and another at Fisgard at Esquimalt Harbour, by 1936 at least thirty five vessels had met with disaster in the immediate vicinity of Victoria. The “Nanette” (1860), the “Lookout” (1872), the “Sechelt” (1911), “Rosedale”, “James Griffith”, “Albion Star”, and the “Siberian Prince” are only a few of the ships which were wrecked on or near Race Rocks. Within the ecological reserve lie at least two shipwrecks, the “Nanette” and the “Fanny”, a sailing ship which was built in Quebec.

In 1950, the lighthouse keeper disappeared in Race Passage while trying to row to the mainland for supplies. In 1960, the Department of National Defense installed a bronze plaque on the lighthouse tower to commemorate the centennial of the lighting of this important aid to navigation.

TENURES, OCCUPANCY RIGHTS AND JURISDICTIONS

Water column is in federal jurisdiction and the land, including the sea bottom, is provincial jurisdiction. Great Race Rock was added to the Reserve in 2001 after the automation of lightstation and the houses and support building became redundant. Under the terms of the lease to the federal government, once the land was no longer required for lightstation purposes, it was to be returned to the Province. Lester B. Pearson College originally had a two-year agreement with the Canadian Coast Guard to occupy the site and run a research station from the outbuildings, before the return of the land to the Province. The College has been successful in generating funding to maintain the buildings and to keep on the lighthouse keeper as a guardian since 1997.

The lightstation has been designated a heritage site under the *Heritage Conservation Act*. With recent changes to the *Heritage Conservation Act*, wrecks more than two years old are protected from unauthorized removal of artifacts.

RESOURCE USE ADJACENT TO ECOLOGICAL RESERVE

FISHING

This part of the coast is one of the most productive recreational salmon sport fishing water in British Columbia and in the past sports fishing has been a popular activity in ecological reserve waters. In 1990, the Department of Fisheries and Oceans closed the waters within the Reserve to the commercial harvest of fin and shellfish and to recreational harvest of shellfish, ling cod and rockfish. Recreational fishing of salmon and halibut can still occur. Fishers have reported that the ecological reserve is not a good fishing area for salmon and that the halibut recreation fishery occurs in deeper water beyond the bounds of the ecological reserve.

MILITARY

The Department of National Defence, based in Esquimalt, uses the area for training and testing explosives. Underwater explosions may be negatively impacting marine mammals in and around the ecological reserve.

MARINE TRAFFIC

Oil tankers from Alaska, freighters from Europe and Japan with industrial goods ranging from cars to forest products pass by the ecological reserve. Ships used to come within half a mile of the rocks but since designation of the Traffic Separation Lanes, they pass further away. Smaller vessels come close or pass through Race Passage, mainly tenders and fishing boats from Vancouver and Victoria on their way to or from the salmon and herrings grounds in the Pacific. On weekends, particularly in the summer, the surrounding waters are covered with sports fishers and small boats.

Activities

RESEARCH

Much of the research activity in the ecological reserve has been undertaken or assisted by Lester B. College, for two reasons. First, the college is close by, located in nearby Pedder Bay. Secondly, the marine ecology instructor, Garry Fletcher, has used the area for educational purposes with his students undertaking many research projects and has an interest in researching the area. The light station complex on Great Race Rock provides a base and sanctuary for the researchers.

Since the establishment of the ecological reserve, the science students, members of the diving service and faculty of Lester B. Pearson College have continuously monitored underwater and inter-tidal life. They now monitor tidepools and 13 under water reference stations and have installed inter-tidal and sub-tidal reference pegs. Students have done original research on the following topics:

- distribution of barnacles in the inter-tidal zones in the different exposures;
- population density study on sea urchins;
- inter-tidal anemone *Anthopleura elegantissima*;
- limpets;
- marine mammals acoustic monitoring;
- Euglenoid distribution in high level tide pools;
- incidence of Imposex in carnivorous snails such as the spindle whelk (*Serlesia dira*);
- internal parasites of the hairy shore crab (*Hemigraspus oregonensis*) and purple shore crab (*H. nudas*);
- colonization in a heavy current channel;
- marine red algae *Halosaccion glandiforme* populations; and research on biotic association of giant barnacles with hydroid species.

The students of Lester B. Pearson College assisted Dr. Anita Brinkmann-Voss (under the auspices of the Royal Ontario Museum) to identify 65 species of hydroids. Many of these had

never been found in North America and are totally changing the classification of these animals, with a new genus and possibly a new family. The Royal British Columbia Museum has done research on nesting seabirds. Other researchers have studied transient killer whales, seals and sea lions. Research on northern abalone (*Haliotis kamschatkana*) as an indicator species for 'No Take' marine protected areas was completed in 1997 by Scott Wallace. The College operates a series streaming video linked to the internet which provides an important monitoring information.

Daily water temperature since 1927 and salinity records since 1936 have been taken by the staff of the lightstation. Water currents were monitored by instruments from the Institute of Ocean Sciences with assistance of Lester B. Pearson College in the early 1980s. The present Race Passage Current tables are a result of that research.

EDUCATION

Since the late 1970s, Lester B. Pearson College has been using the ecological reserve as an education facility for courses on biology and environmental systems. In addition, they lead school tours in the spring and fall. Up to 150 grade seven students from local schools either visit Great Race Rock for ecology work in the spring. The objectives of this school program are: to gain a first hand experience on the complex marine systems; to instill a respect for marine life and concern for its conservation; and, to develop an appreciation for ecological reserves. The children often get a tour of the light station, and are introduced to inter-tidal and sub-tidal marine life.

Education has been enhanced through live telecasts in the Underwater Safari series, which continue to be broadcast. This experiment in real-time video access for one week in 1992 showed the potential for using technology to provide access electronically to thousands of viewers without impacting the integrity of this sensitive ecosystem. This has raised awareness globally on the "Adopt an Ecosystem" approach.

The Internet is another means of education. In 1995, Lester B. Pearson College established a World Wide Web page with information on Race Rocks Ecological Reserve and their activities in the Reserve. This has raised awareness globally. The number of visits to this website make it a valuable tool for building awareness and support for the entire ecological reserves system.

OTHER ACTIVITIES

Generally, there are three categories of visitors to the ecological reserve: 1) boaters who are primarily observing the marine life around the rocks, particularly marine mammals; 2) commercial eco-tourism users; and, 3) divers. Visitation to the ecological reserve has been increasing, particularly those engaged in whale watching and diving. Concerns are being raised about the affects on visitation on the whales and their foraging activities. Uncontrolled and unrestrained pursuit of the whales could interfere with behaviors and ability of the whales to feed in this area.

Dive tours are also increasing. Uncontrolled use of the ecological reserve could result in increasing in poaching of sea life, physical injury and mortality from handling and improper dive techniques. These could lead to impacts on the underwater life, for which the ecological reserve is to protect.

MANAGEMENT CONSIDERATIONS

MANAGEMENT OF RECREATION AND COMMERCIAL ACTIVITIES

Activities such as whale watching, commercial diving, boating and nature appreciation occurs in the ecological reserve, both in the water and on land. Activities, their types, and levels of use require management to ensure that values of the ecological reserve are maintained.

MANAGEMENT OF RESEARCH ACTIVITIES AND FACILITIES

Race Rocks is well-known and well-used for research purposes, as a result of the efforts of Lester B. Pearson College. The college undertakes and assists with most of the research.

COOPERATION WITH THE FEDERAL GOVERNMENT

The ecological reserve legislation applies to the foreshore and the land under the water column. Jurisdiction for the fishery, navigation, and national defence activities within the water column of the Reserve are led by Federal jurisdiction.

COOPERATION WITH LESTER B. PEARSON COLLEGE

Lester B. Pearson College plays a large role in the management and the research undertaken in the research. Garry Fletcher and his students have been the wardens of the ecological reserve since its creation. They work closely with school groups, naturalist groups, divers and other researchers who visit the ecological reserve, providing information on appropriate conduct and guiding services. With their plans to set up and staff a research center on Great Race Rock, they could provide an even greater monitoring role.

ECOLOGICAL RESERVE BOUNDARY

The 227 hectares of the Reserve include an area of ocean, group of small islands and reefs, bounded by the 20 fathom or 36.6 metre depth contour. This boundary is difficult to mark and enforce.

MANAGEMENT OF EDUCATIONAL ACTIVITIES

Lester B. Pearson College uses Race Rocks Ecological Reserve for their marine ecology program involving college, local school students, and naturalists. Tourism operators from Victoria also offer natural history tours of the area.

MANAGEMENT OF ECOLOGICAL RESERVE VALUES

Sewage disposal on Great Race Rocks, fishing in the ecological reserve for salmon and halibut, military explosive training and testing, and the potential for oil spills are issues that exist on this site.

Appendix 3

Voluntary Guidelines for Dive Vessels and Divers Within Race Rocks Ecological Reserve

INTRODUCTION

With extensive polling within the Diving Community, it has become apparent that there is positive support for the marine protected area. At Race Rocks, it is our view that with a clear set of diving operators' guidelines both non-commercial and commercial access may continue. Under these guidelines, diving activities will have an almost non-existent impact on the MPA.

It is recommended by the Diving Community that the following guidelines be adopted as standard operating practices by all divers and dive vessels, commercial and non-commercial, entering the MPA.

GUIDELINES

1. All vessels entering the MPA will reduce speed to under 5mph over the ground.
2. All vessels must fly a recognizable divers flag (i.e. Alpha blue and white, or the standard red and white divers down flag) while divers are in the water. Flags are to be removed when the last divers are back on board the vessels.
3. Dive vessels are to contact any approaching vessel by VHF radio to notify them of divers' positions and direction of travel.
4. As it is necessary for safety reasons that dive vessels approach land masses and the outside of kelp beds in close proximity it is recommended that this be done at a "dead slow" speed to reduce intrusiveness and wake.
5. There is no anchoring permitted within the MPA including the use of kelp anchors.
6. With regard to MPA pre-dive briefings given by vessel operators or diving supervisors, these must include:
 - a) Goals and Objectives of the Race Rocks MPA;
 - b) Buoyancy control expectations to reduce contact with the ocean bottom;
 - c) Diver recall procedures;
 - d) "No Go" zones for divers (on land masses, etc.);
 - e) Hand-outs for the MPA;
 - f) Reinforcement of the "no-take" regulations

CONCLUSION

As it has been the focus of World Diving, the British Columbia coast has established itself as a premiere diving destination. In several cases, it has been rated the number one selection for quality adventure diving. Protecting this resource is of high priority within the Diving Community and the management of the MPA at Race Rocks has overwhelming support. It is our view that with a solid set of diving guidelines both commercial and non-commercial access will have little if any impact on the natural processes at Race Rocks.

Appendix 4

Race Rocks: Best Practices for Tour Operators

Introduction

The Whale Watch Operators Association – South Vancouver Island (WWOA) has reviewed the initiative by the Federal Fisheries and Oceans Canada to formally designate Race Rocks as a marine protected area under the *Oceans Act*. Race Rocks is recognized as a valuable area for tour operators to provide safe access and education to the general public for the increased awareness and benefit of the greater British Columbia coastline.

In recognition of this status, the WWOA is proposing a “Best Practices” guideline that will address the concerns of shore based observers yet still permit marine wildlife tour operators to view wildlife in a manner that does not disturb “life processes.”

These guidelines are purposely kept simple so that they may be followed by all vessels - commercial or private.

Guidelines

1. All vessels will recognize a boundary one eighth of a nautical mile off any landmass of the Race Rocks group. This represents the “GO SLOW” zone where vessels will proceed as slow as possible to minimize wake and wash.
2. All vessels within this area will stay mid-channel between the main rock outcrops referred to as North Race, West Race and Helicopter Rock. Vessels will attempt to run in a direction with the current whenever suitable conditions allow.
3. When whales are present within the Ecological Reserve / Marine Protected Area, all vessels will stay out for observation purposes only.

Summary

These guidelines should cover most of the concerns that have been raised during all the discussions between the WWOA and any other concerned parties.

The WWOA will attempt to establish an example of self-regulating guidelines for the Ecological Reserve / MPA model which is hoped to be established in other coastal areas. Successful membership in our Association will provide discipline so that a group of competitors can bear upon each other to adhere to our “Best Practices for Race Rocks.”

Appendix 5

Race Rocks Public Advisory Board Membership

Cheryl Borris	Friends of Ecological Reserves
Erin Bradley	Dive community
Howard Breen	Georgia Strait Alliance
Garry Fletcher	Pearson College
Kelly Francis	Fisheries & Oceans
Gordon Hanson	First Nations projects
Dan Kukat	Sports Fish Advisory
Angus Matthews	Pearson College
Jim Morris	Environmental Stewardship Division
Marc Pakenham	Fisheries and Oceans Canada
Tom Sampson	Coast Salish Sea Council
Jennie Sparkes	Parks Canada
Dr. Anita Voss	Science
Kevin Walker	Whale Watchers Operators Association
Keith Symington	Canadian Parks and Wilderness Society
Andrew Smith	Department of National Defence
Nancy Fowler	Communications Branch, Fisheries and Oceans Canada