
The Role of British Columbia's Parks and Protected Areas in Conservation and Recovery of Species and Ecosystems at Risk

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Abstract: Protected areas in British Columbia contribute significantly to the conservation and recovery of nationally- and provincially-listed species and ecosystems at risk. The Parks and Protected Area Branch of the British Columbia Ministry of Water, Land and Air Protection leads, cooperates in, and facilitates conservation and management activities in British Columbia's protected areas, including system planning, and province-wide operational activities. Practices, programs, and projects specific to individual protected areas include controlling invasive alien plants and vertebrates; protecting, replacing, enhancing, or rehabilitating the habitats and/or residences of species at risk; prohibiting public access and changing park maintenance activities; reintroducing extirpated species; conducting inventory, monitoring and research; and participating in recovery teams and contributing to recovery action plans.

Key Words: parks, protected areas, recovery actions, natural values, British Columbia

Introduction

The provincial protected areas system is seen by many as the cornerstone of biodiversity conservation and recovery of species and ecosystems at risk in British Columbia (B.C.). Many of the species in British Columbia that are listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) occur in the province's protected areas. Nationally-listed species at risk have been on our agenda for decades, and our past, current, and proposed management activities reflect our commitment to effective conservation and protection of these species and other natural values in parks and protected areas around the province. The B.C. government also maintains a list of species and ecosystems at risk within the province; this list overlaps with, but extends beyond, the COSEWIC list. Conservation and management activities undertaken in British Columbia's protected areas include system planning, province-wide operational activities, and the practices, programs, and projects specific to individual protected areas. This paper combines the information we presented in two posters at the Species at Risk 2004 conference and highlights the policies, programs, and on-the-ground projects developed, led, and facilitated by the Parks and Protected Areas Branch (B.C. Ministry of Water, Air and Land Protection) that

directly contribute to recovery planning and recovery of COSEWIC-listed and provincially-listed species and ecosystems at risk in British Columbia.

System Planning

Species and ecosystems at risk are protected through planning processes at the system level and protected area level.

- Protected areas are often established to protect and conserve particular species or ecosystems at risk such as woodland caribou (*Rangifer tarandus caribou*) in Entiako Provincial Park; rare coastal plants or seabirds in Trial Island and Cleland Island Ecological Reserves; giant black sticklebacks (*Gasterosteus* sp. 1)¹ in Misty Lake Ecological Reserve; unique and sensitive freshwater stromatolite features in Marble Canyon Provincial Park; and coastal tailed frog (*Ascaphus truei*), Pacific giant salamander (*Dicamptodon tenebrosus*)², and coastal forest ecosystems in Chilliwack Provincial Park.
- Protected areas established for recreation or other purposes have subsequently been found to have a significant role in protecting species or ecosystems at risk. For example, E.C. Manning Provincial Park, established for wilderness touring and as a travel destination, protects rare alpine plants. Management in Liard River Hot Springs Provincial Park, which was established for recreational access to the hot springs, considers hotwater physa (snails) (*Physella wrighti*: COSEWIC Endangered), tufa calcium deposits, an isolated population of lake chub (*Couesius plumbeus*) adapted to warm water, and uncommon plants of warm water communities. Beaver Creek Provincial Park, established as a roadside camping park, is now known to protect several rare fish and plant species.
- Protected area management is directed by a province-wide planning program. Planning documents (Management Plans, Ecosystem Management Plans, Management Direction Statements, Purpose Statement and Zoning Plans) may recognize conservation of species or ecosystems at risk as the primary, secondary, or tertiary role of the protected area. These documents are amended when species or ecosystems at risk are identified, and special management considerations must be incorporated into management activities.

Province-Wide Operational Level

To ensure protection of all resources, including species and ecosystems at risk, the Parks and Protected Areas Branch has adopted principles and structured processes that apply to all operational activities in protected areas in the province.

¹The BC Species and Ecosystems Explorer (September 2004) currently lists the giant black stickleback as *Gasterosteus* sp. 1.

²The BC Species and Ecosystems Explorer (September 2004) now lists this species as the Coastal giant salamander.

- Guiding principles and policies of the Parks and Protected Areas Branch apply to all facility-, recreation-, or conservation-related activities that occur in protected areas.
- On-the-ground activities such as the B.C. Parks Conservation Risk Assessment, B.C. Parks Backcountry Recreation Impact Monitoring, and the B.C. Parks Impact Assessment process are applied to assess and evaluate natural values, to identify threats to their conservation, and to identify priorities for management action.
- Ecosystem Management Planning is implemented in protected areas that have significant ecosystems or ecosystem management issues. The plans include goals that facilitate effective planning, monitoring, and assessment.
- An Annual Management Planning process determines priorities for regional conservation and recreation management activities.

Controlling Invasive Alien Plants

The Parks and Protected Areas Branch includes control of invasive plants in its arsenal to protect species and ecosystems at risk.

- Invasive alien plants threaten native plants, at-risk native plants or ecosystems, and native plants that provide critical forage or habitat for wildlife (at risk or otherwise).
- Invasive plants in protected areas such as Kikomun Creek and Kekuli Bay Provincial Parks in the Kootenays and southern interior of British Columbia, respectively, are being managed aggressively as part of a region-wide weed management program. Many provincially- and COSEWIC-listed flora and fauna are threatened by invasive plants that compete with native species and degrade habitat. Twenty-one invasive species are listed as priorities for control in the Okanagan Region. In protected areas, invasions are prevented through public education and ongoing inventory and monitoring, while efforts to control established populations include biological control (e.g., *Mecinus janthinus* [weevil] to control dalmatian toadflax [*Linaria genistifolia* ssp. *dalmatica*]), mechanical treatment (mowing, pulling, crushing, cutting), and, as a last resort, pesticide application for the most invasive species.
- Eurasian water-milfoil (*Myriophyllum spicatum*) is a threat to freshwater plants and aquatic values (e.g., Cultus Lake sockeye salmon [*Oncorhynchus nerka*]: COSEWIC Endangered) in British Columbia. As part of a province-wide program to control the further spread of this and other invasives, the Parks and Protected Areas Branch places information signs and educational materials at visitor centers, public access points, and sensitive sites in protected areas.
- Inventory and monitoring of native and non-native plants on coastal ecological reserves provides important information about the density and survival of many plants at risk, such as golden paintbrush (*Castilleja levisecta*), Scouler's catchfly (*Silene scouleri* ssp.

grandis)³, and bear's-foot sanicle (*Sanicula arctopoides*)⁴, all of which are listed as Endangered by COSEWIC.

Addressing the Threat of Introduced Mammals

Introduced mammals that impinge on species or ecosystems at risk are managed through inventory, monitoring, eradication, public education, and recreation management.

- A community-wide program of live trapping and euthanizing North American opossums (*Didelphis virginiana*), which were first observed on Hornby Island in the early 1990s, involves Tribune Bay and Helliwell Provincial Parks. These parks are home to several species of rare and endangered lepidopterans, including Edith's (Taylor's) checkerspot (*Euphydryas editha taylori*):⁵ COSEWIC Endangered). When butterfly larvae were discovered in the stomachs of captured opossums, a more intensive opossum eradication program was identified as being critical to the survival of these butterflies at risk. The Parks and Protected Areas Branch now funds the trapping program in the parks and contributes to the community program. Monitoring indicates a decline in the number of opossums in the parks; however, eradication of opossums on the island will be an issue for some time to come.
- On the coast of Hippi Island, within V.J. Krajina Ecological Reserve, large nesting colonies of ancient murrelets (*Synthliboramphus antiquus*: COSEWIC Special Concern) are found up to 500 m inland in mossy, old-growth spruce forests. In this reserve setting, human impacts are kept to a minimum, and research activities are encouraged. Raccoons (*Procyon lotor*), which can greatly impact nesting seabird colonies, are found on the adjacent mainland < 1 km away. This site has a long record of monitoring raccoon populations and seabird colony condition and productivity. Though raccoon control is not being used now, close monitoring will indicate whether it is required to further protect the ancient murrelet colony.

Providing Artificial Housing for Species at Risk

Artificial housing erected in several protected areas contributes to the conservation and recovery of species at risk.

- Fintry Provincial Park provides habitat for Townsend's big-eared bat (*Corynorhinus townsendii*: blue-listed), yuma myotis (*Myotis yumanensis*), and little brown myotis (*M. lucifugus*). Bat houses have been erected throughout the park to provide alternative roosts to historic buildings that are being restored or removed.

³The BC Species and Ecosystems Explorer (September 2004) now lists this species as Scouler's campion.

⁴Currently, the BC Species and Ecosystems Explorer (September 2004) lists this species as snake-root sanicle.

⁵The BC Species and Ecosystems Explorer (September 2004) now lists this subspecies as Edith's checkerspot, *taylori* subspecies. NatureServe Explorer (version 4.0, July 2004) lists it as Taylor's checkerspot.

- Newcastle Island Provincial Park is the site of an important nest box colony for purple martins (*Progne subis*: red-listed), one of the oldest and largest of the 11–18 colonies that have been active in British Columbia over the last two decades. This site housed an average of 18 pairs in 1998–2003, about 10% of the annual breeding population in British Columbia, and produced an average of 12% of the young fledged each year. The colony is maintained and monitored by enthusiastic volunteers.

Protecting the Residences of Species at Risk

Protection, replacement, enhancement, and/or rehabilitation of the natural residences and habitats of species at risk is a priority for the Parks and Protected Areas Branch, as the following example shows:

- As part of an agreement to locate an underground pipeline through Beaver Creek Provincial Park, and to avoid a significant archeological site and provide mitigation and site restoration, BC Gas Inc. funded a project to rehabilitate the site and recreate habitat for the racer (*Coluber constrictor*: blue-listed) in the park. A den was constructed that included important features of natural racer hibernacula and maternity sites. Subsequent annual monitoring identified newborn racers at the entrance to the den.

Changing Park Maintenance Activities to Protect Species and Ecosystems at Risk

To reduce or eliminate the effects of on-the-ground activities on species and ecosystems at risk, the Parks and Protected Areas Branch has implemented the following changes in maintenance activities and recreation management:

- Grass cutting was ceased in Kokanee Creek Provincial Park to protect a spurless touch-me-not (*Impatiens ecalcarata*) site, and on Race Rocks Ecological Reserve to allow growth of tall grasses around seabird nest sites.
- Trails were relocated and upslope logging plans were altered to protect giant helleborine (*Epipactis gigantea*) in Pilot Bay Provincial Park.
- High-use trails were relocated to protect painted turtles (*Chrysemys picta*) in Champion Lake Provincial Park, and Coeur d'Alene salamanders (*Plethodon idahoensis*) in Syringa Provincial Park.
- Old roads were closed to protect numerous rare plants in Beaver Creek, King George VI, and Erie Creek Parks.
- Smooth wire fencing was installed to protect the antelope-brush/bluebunch wheatgrass (*Purshia tridentata*/*Pseudoroegneria spicata*) community that was threatened by unauthorized all-terrain vehicle use in Wasa Lake Provincial Park. Along with thinning and prescribed fire, this will also benefit the Lewis' woodpecker (*Melanerpes lewis*) and long-billed curlew (*Numenius americanus*).

Prohibiting Public Access to Protect Species and Ecosystems at Risk

To reduce or eliminate effects of human access and activities on species or ecosystems at risk, the Parks and Protected Areas Branch has implemented public access prohibitions in the following situations:

- to protect fauna at risk at a seasonal food resource (e.g., grizzly bears [*Ursus arctos*] feeding on clover on hillsides in Kokanee Glacier Provincial Park and on salmon in Khutzymateen Provincial Park; bald eagles [*Haliaeetus leucocephalus*] feeding on salmon in Goldstream Provincial Park);
- to protect flora at risk from trampling (e.g., phantom orchid [*Cephalanthera austini*] and other fragile vegetation in Mara Meadows Ecological Reserve; many rare coastal plants on Oak Bay Islands and Trial Island Ecological Reserves);
- to protect breeding sites (e.g., Triangle Island Ecological Reserve is closed to the public to protect a thick-billed murre [*Uria lomvia*] colony and an endemic subspecies of the Townsend's vole [*Microtus townsendii*] and its habitat); and
- to protect ecosystems at risk (e.g., in Kikomun Creek Provincial Park, motorized and bicycle access is restricted to protect two endangered plant communities, three plant species, and at least three wildlife species at risk).

Facilitating Research and Inventory of Species and Ecosystems at Risk

The Parks and Protected Areas Branch supports, contributes to, facilitates, and encourages research on, and inventory of, species and ecosystems at risk in provincial protected areas, such as:

- habitat of Edith's (Taylor's) checkerspot in Helliwell Provincial Park where re-introduction is being considered;
- impacts of recreation on freshwater molluscs, hotwater physa in Liard River Hot Springs Provincial Park;
- biology of bull trout (*Salvelinus confluentus*) in Skagit River Provincial Park;
- re-introduction and recovery of sea otters (*Enhydra lutris*) in an area of Checleset Bay Ecological Reserve;
- inventory of Slim Creek, West Twin, Sugarbowl-Grizzly Den and Jackman Flats Provincial Parks in the Robson area. Researchers found two dozen lichen species that are rare and uncommon in B.C., including *Nephroma occultum* (COSEWIC Special Concern);
- testing remote sensing methodologies for identifying potential habitat for Vancouver Island marmots (*Marmota vancouverensis*: COSEWIC Endangered) in Strathcona Park;
- long-term, intensive seabird research and monitoring in Anne Vallee/Triangle Island Ecological Reserve conducted by Simon Fraser University and the Canadian Wildlife

- Service. Species studied include Cassin's auklets (*Ptychoramphus aleuticus*), rhinoceros auklets (*Cerorhinca monocerata*), and tufted puffins (*Fratercula cirrhata*), and studies focus on seabird behavior, breeding success, foraging ecology, and marine distribution, and on the feasibility of establishing a marine wildlife area; and
- caribou foraging and habitat use in northern mountain parks.

Addressing the Threat of Declining Populations and Species Extirpation

To prevent further reduction of a declining population and extirpation of a species at risk, the Parks and Protected Areas Branch implements a number of management and monitoring activities in the lands under its jurisdiction, including the following:

- At one time, burrowing owls (*Athene cunicularia*) lived in small colonies in and around Lac du Bois Grasslands Provincial Park. Captive-bred yearling owls were released in artificially constructed burrows in the park's grasslands from 1992 to 1997. The program was unsuccessful within the park, but releases made on private lands adjacent to the park experienced some success. Owls have been observed within the park, which provides suitable foraging habitat. Reintroduction of burrowing owls to the park was thought to be hampered by poor weather conditions, and so, may be attempted again later in the season or at lower elevations to avoid inclement weather conditions.
- In Naikoon Provincial Park, the Parks and Protected Areas Branch protects young Charlotte unarmoured sticklebacks (*Gasterosteus* sp.: COSEWIC Special Concern) from predation by coho salmon (*Oncorhynchus kisutch*) fry by controlling beaver (*Castor canadensis*) populations where their structures allow the salmon access to lakes used by the sticklebacks.
- Human impacts on hotwater physa at Liard River Hot Springs Provincial Park are minimized by area closures, ranger presence, and public education.
- Phantom orchids in Katherine Tye (Vedder Crossing) Ecological Reserve are protected by the ecological reserve designation, the objectives of which are to preserve natural ecosystems, species and phenomena, and to provide opportunities for research and education.

Addressing the Threat of Habitat Loss

Facilitating habitat research and protecting habitat through land use planning and public access management are critical steps in reducing the threat of habitat loss for species at risk in provincial protected areas.

- All woodland caribou populations in the Southern Mountains National Ecological Area, including the Tweedsmuir-Entiako population, have been designated as Threatened by COSEWIC.

- To conserve woodland caribou populations, large areas of suitable habitat that included a portion of woodland caribou distribution were protected in the protected areas system in the late 1990s. Through the regulation of human access and recreational activities in key habitats, the Parks and Protected Areas Branch is able to reduce the level of disturbance to caribou.
- Because some caribou require mature pine forests with abundant terrestrial lichens, mountain pine beetle (*Dendroctonus ponderosae*) outbreaks could result in significant impacts to caribou. To monitor canopy changes due to mountain pine beetle attack, 15 permanent lichen-monitoring photo plots were established in the Entiako Park and Protected Area in 2001. The plots were located in mountain pine beetle attack areas in three site series in the SBPSmc (moist, cold Sub-Boreal Pine-Spruce) biogeoclimatic subzone. Given the heightened interest in mountain pine beetle and fire relationships, results of this study will aid in developing management strategies for caribou habitat in mountain pine beetle-killed areas.

Addressing Species Recovery

When a species or ecosystem is listed as Endangered or Threatened by COSEWIC, many individuals and agencies, including the Parks and Protected Areas Branch, convene to work toward the recovery of the species or ecosystem at risk.

- Parks and Protected Areas Branch regional staff participate in recovery teams when protected areas in their region support a significant portion of habitat that is critical to the survival of the species or ecosystem at risk. Staff contribute to recovery strategies and action plans, and to their implementation.

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