



SAVING  
C O A S T A L B L U F F  
SENSITIVE  
E C O S Y S T E M S  
ECOSYSTEMS

E A S T V A N C O U V E R I S L A N D A N D G U L F I S L A N D S



## WHAT ARE COASTAL BLUFF ECOSYSTEMS?

### ROCKY SHORELINES, ROCKY ISLETS AND COASTAL CLIFFS



Coastal bluff ecosystems include rocky shorelines, rocky islets and steep coastal cliffs with grasses, forbs (low, broad-leaved plants), mosses and lichens. Coastal bluffs are similar to the terrestrial herbaceous ecosystems found inland, but distinctive because of the prevailing influence of salt spray.

Most coastal bluffs have little or no soil, except in rock crevices and sheltered depressions where there are dry, shallow and often very saline soils. The plants and animals that

survive here have adapted to hostile conditions such as salt spray, crashing waves, winds, storms and summer heat. On these thin soils, plants are particularly sensitive to any type of use or development. Plant root systems are easily destroyed, causing disruptions to the entire ecosystem.

On cliffs, the steep slopes limit the accumulation of soils, except in cracks where a few hardy plants grow and stunted trees maintain a precarious grip. On these bare rocks, the few micro-sites where soils have developed are critical for plant survival.

#### FAMILIAR LOCATIONS COASTAL BLUFFS

*Ballenas/Winchelsea Islands*  
*Yellow Point*  
*Active Pass bluffs*

#### COASTAL CLIFFS

*Gordon Head*  
*Lyall Harbour*  
*Chrome Island*

#### TYPICAL SPECIES

*Turkey Vulture*  
*Glaucous-winged Gull*  
*Pigeon Guillemot*  
*sea blush*  
*entire-leaved gumweed*  
*Nootka rose*  
*coastal reindeer lichen*  
*sea tar lichen*

### A VARIETY OF CONSERVATION TOOLS

ARE AVAILABLE TO PROTECT COASTAL BLUFF ECOSYSTEMS, SUCH AS OFFICIAL COMMUNITY PLANS, OTHER BYLAWS, CONSERVATION COVENANTS AND STEWARDSHIP AGREEMENTS.

CHECK THE CONSERVATION MANUAL FOR MORE INFORMATION (SEE BACK PAGE).



# HOW MUCH COASTAL BLUFF IS LEFT?

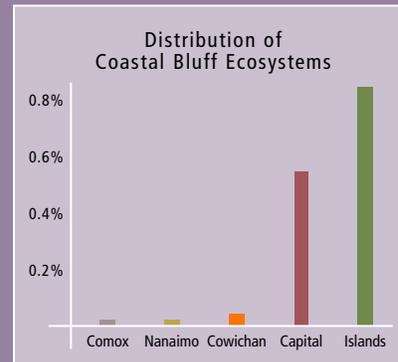
LESS THAN 0.3% OF THE LANDSCAPE

Coastal bluff ecosystems are naturally rare in this area; undisturbed sites are very rare. Coastal bluffs occupy less than 0.3% (1,043 ha) of east Vancouver Island and Gulf Islands. Even rarer are coastal cliffs, represented in less than 0.03% of this area.

Coastal bluffs are mostly found in the southern part of Vancouver Island and on the adjacent Gulf Islands where there are extensive areas of exposed bedrock close to the shoreline or offshore on numerous rocky islets. They are less common further north, as shorelines are more protected from the elements, and deep deposits

from former glaciers and rivers have buried the bedrock surface.

Although coastal bluffs may seem isolated, many have become popular stopping places for kayakers and other boaters, resulting in compaction of the soils, erosion of the mosses and lichens, and disturbance to the wildlife. Coastal bluffs often offer spectacular locations for waterfront houses and parks, again resulting in loss of ecosystem function. Coastal bluffs are also at risk from rising sea levels due to global warming.



## WHAT CAN I DO?

- LEARN ABOUT THE NATURAL ENVIRONMENT AND BE A GOOD STEWARD OF YOUR OWN LAND
- JOIN A STEWARDSHIP ORGANIZATION, LAND TRUST OR ADVOCACY GROUP
- PARTICIPATE IN LOCAL GOVERNMENT DECISION-MAKING
- CONSIDER CONSERVATION COVENANTS AND OTHER LEGAL AGREEMENTS
- CONSIDER THE TAX ADVANTAGES OF DONATING LAND



## WHY ARE COASTAL BLUFF ECOSYSTEMS IMPORTANT?

### CHOICE NESTING SITES

Isolation from predators makes coastal bluffs and rocky islets choice nesting sites for a number of birds, such as Black Oystercatchers, Turkey Vultures and the rare Brandt's and Double-crested Cormorants. Many birds nest directly on the ground and human intrusion can result in damage to eggs and nests, or abandonment of the nests due to disturbance.

Deep rock crevices are used for shelter, feeding and hibernation by snakes and lizards. River otters, racoons and even minks cavort over the slippery rocks. Some of the rocky islets and shorelines are popular haul-out sites for harbour seals, as well as northern and California sea lions.

Important micro-habitats in this ecosystem may encompass only a few square centimetres or metres. In areas of mostly bare rock on coastal cliffs, the soil that accumulates in small crevices may be the only place for plants to grow. Moist shoreline gullies, swales and vernal pools – the puddles that form in winter and spring rain and dry up during the summer on islets and headlands – are occupied by species such as the rare water-plantain buttercup and Macoun's meadowfoam.

Coastal bluffs and cliffs offer spectacular waterfront views, and are highly visible from the water. The scenic beauty of this area attracts recreational boaters and cruise ships, contributing to local economies. Where properties are developed in these areas, land values are high because of the scenic views and waterfront location.

ALL SENSITIVE ECOSYSTEMS ARE IMPORTANT  
BECAUSE OF THEIR CONTRIBUTIONS TO:

- BIODIVERSITY
- CLEAN AIR, CLEAN WATER, NUTRIENT RECYCLING, POLLINATION
- RECREATION AND SCENIC VALUES
- EDUCATION AND RESEARCH
- ECOTOURISM AND OTHER ECONOMIC BENEFITS



## HOW CAN WE PROTECT COASTAL BLUFF ECOSYSTEMS?

### AVOID DIRECT AND INDIRECT IMPACTS

**Create a vegetated buffer around sensitive ecosystems.** Buffers of woodland or other native vegetation can help to slow the spread of non-native species, and help restrict human and animal access.

**Restrict recreational, livestock, pet and feral animal access.** Coastal bluff ecosystems are exceptionally vulnerable to human disturbance. Plants and soils are fragile and can be easily trampled, compacted or dislodged onto bare rock where they cannot re-establish, and human influences should be minimized. Mountain biking, horseback riding, and ATVs are all inappropriate in these ecosystems. Rock climbing should be prohibited where there are rare plant species or communities and/or breeding wildlife. Fences, railings, and signs could be used to control land and water access.

**Control invasive species** such as Scotch broom and non-native grasses, which can spread rapidly and crowd out native species. Nearby homeowners and developers could help buffer sensitive ecosystems by landscaping their properties with native species that have adapted to that specific habitat.

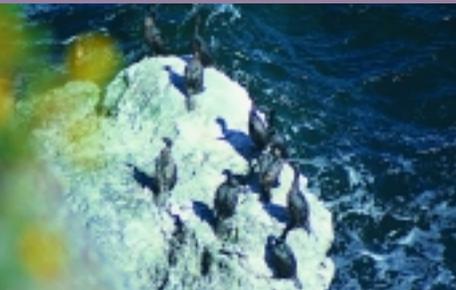
**Prevent disturbance of nesting or breeding areas.** Prime nesting season for many coastal birds is between early March and early August. For more information, check with staff at the BC Ministry of Environment, Lands and Parks or the Canadian Wildlife Service.

**Allow natural disturbances to occur.** Docks, jetties and other structures can disrupt processes such as wave action and sediment accretion/erosion, fundamentally changing the nature of the area. These structures can also be sources of pollution affecting these coastal bluffs and islets.

### IF DEVELOPMENT IS THE ONLY OPTION – DEVELOP CAREFULLY!

**Conduct an ecological inventory before any development takes place,** ideally through the seasons over a period of a year. Identify the existing flora and fauna, and in particular, distinguish any threatened or endangered species or plant communities and habitat features needing protection.

**Plan and implement all development activities (including trails) in a manner that will not adversely affect or disturb the coastal bluff ecosystem.** A qualified professional can interpret the ecological inventory data and work to incorporate designs that are sensitive to the natural ecosystem. Hiking trails should avoid sensitive areas, and be designed to keep people on the trails.



### CREATE AND MAINTAIN CONNECTIONS

BETWEEN NATURAL AREAS TO PRESERVE  
WILDLIFE MIGRATION AND DISPERSAL





The federal/provincial Sensitive Ecosystems Inventory has identified and mapped seven types of "sensitive" ecosystems on east Vancouver Island and adjacent Gulf Islands: Older Forest, Woodland, Sparsely Vegetated, Terrestrial Herbaceous, Coastal Bluff, Riparian and Wetland. Two other ecosystem types – Older Second Growth Forest and Seasonally Flooded Agricultural Field – were also mapped because they are important to the biodiversity of this area. This brochure is one in a series that describes these ecosystems.

For detailed information on sensitive ecosystems, refer to the Sensitive Ecosystems Inventory manuals, available in libraries, your local government planning department and on the SEI website.

**TECHNICAL REPORT:** *Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993-1997. Volume 1: Methodology, Ecological Descriptions and Results.* P. Ward et al. 1998. Technical Report Series No. 320, Canadian Wildlife Service, Pacific and Yukon Region, British Columbia.

**CONSERVATION MANUAL:** *Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993-1997. Volume 2: Conservation Manual.* M. McPhee et al. 2000. Technical Report Series No. 345, Canadian Wildlife Service, Pacific and Yukon Region, British Columbia. This manual provides recommendations for the management of sensitive ecosystems, and discusses conservation tools available to governments and others.

PHOTO CREDITS: Mark Kaarremaa, Trudy Chatwin, Neil K. Dawe

MORE INFORMATION ON THE SENSITIVE ECOSYSTEMS INVENTORY CAN BE OBTAINED FROM:

**SEI WEBSITE:**  
[WWW.ELP.GOV.BC.CA/RIB/CBS/SEI](http://WWW.ELP.GOV.BC.CA/RIB/CBS/SEI)  
OR [WWW.PYR.EC.GC.CA/WILDLIFE/SEI](http://WWW.PYR.EC.GC.CA/WILDLIFE/SEI)

*Ministry of Environment, Lands and Parks*  
Bill Hubbard  
Vancouver Island Regional Office, Nanaimo  
Phone: (250) 751-3100  
e-mail: [Bill.Hubbard@gems2.gov.bc.ca](mailto:Bill.Hubbard@gems2.gov.bc.ca)

Jan Kirkby  
Conservation Data Centre, Victoria  
Phone: (250) 387-0732  
e-mail: [Jan.Kirkby@gems9.gov.bc.ca](mailto:Jan.Kirkby@gems9.gov.bc.ca)

*Environment Canada*  
Peggy Ward  
Canadian Wildlife Service, Qualicum Beach  
Phone: (250) 752-9611  
e-mail: [Peggy.Ward@ec.gc.ca](mailto:Peggy.Ward@ec.gc.ca)



Environment  
Canada

Environnement  
Canada



BRITISH  
COLUMBIA

Ministry of Environment,  
Lands and Parks



HABITAT  
CONSERVATION  
TRUST FUND



WORKING TOGETHER  
FOR THE  
GEORGIA BASIN  
—  
AU TRAVAIL  
POUR LE  
BASSIN DE GEORGIA