



SAVING
our living
SENSITIVE
Legacy
ECOSYSTEMS





The Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands

The federal/provincial Sensitive Ecosystems Inventory (SEI) has systematically identified and mapped relatively unmodified ecosystems on the coastal lowlands of east Vancouver Island and the adjacent Gulf Islands. It is the first inventory of its kind in British Columbia to focus on mapping remnant ecosystems in a highly disturbed landscape.

The SEI includes 66 map sheets at 1:20,000 scale, supported by an information database, a technical report, and a conservation manual. The inventory collected information about sensitive ecosystems from aerial photographs and selected site visits. The maps and database are also available in GIS (Arc/Info) format.



The SEI provides valuable information that can support sound land management decisions and promote good land stewardship.

Acknowledgements

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homes and habitats



The coastal lowlands of east Vancouver Island and the adjacent Gulf Islands are ecologically unique within Canada. A diversity of plants, plant communities and animals – many of them rare – thrive in the area's Mediterranean-type climate and long growing season.

Not surprisingly, the warm, sunny climate has made the region a popular place for human habitation, too. Almost 600,000 people currently live in this narrow strip of land, and that number is growing faster than in most other areas of British Columbia.

A hundred years ago, a rich mosaic of ecosystems covered these coastal lowlands and islands. Forests and woodlands were interspersed with coastal bluffs, grasslands, rock outcrops, floodplains, watercourses and wetlands.

Today, human activities have altered more than 90 percent of the original landscape, leaving only fragments of such ecosystems in a relatively natural state. These rare and fragile remnants are called *sensitive ecosystems*.

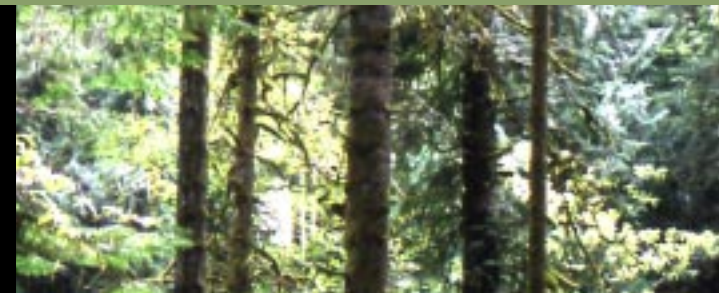
Sensitive ecosystems are acutely in need of preservation and protection, not only for their own intrinsic values, but for the significant role they play in creating healthy and attractive communities for people. Wetlands purify drinking water and help provide protection from flooding. Forests clean the air, refresh the spirit and provide visual relief from urban settings. Riparian forests are cool, moist havens during hot, dry summers. Open hilltop meadows – especially when carpeted with spring wildflowers – present spectacular views and resting places.

The Sensitive Ecosystems Inventory has identified and mapped the ecosystem remnants in this region – the first step in protecting them.



be part of the solution

many organizations and individuals are already working hard to protect sensitive ecosystems. You, too, can be part of the solution.



many types of sensitive ecosystems

The Sensitive Ecosystems Inventory mapped seven types of sensitive ecosystem on east Vancouver Island and adjacent Gulf Islands

coastal bluff



ecosystems include vegetated rocky islets, rocky shorelines with grasses and mosses, and coastal cliffs with pockets of grasses and wildflowers. These ecosystems are strongly influenced by exposed bedrock, exposure to tidal waters, strong ocean currents, and prevailing winds. Specialized habitats within these sites – such as vernal pools, crevices, and seepage areas – support numerous rare plant and animal species.

sparsely vegetated



ecosystems include sand dunes, sand and gravel spits, and inland cliffs with patchy vegetation. Plants and animals that live in these areas are adapted to harsh environmental conditions such as salt spray, winds, shifting sands and heat. Spits and dunes are important resting, feeding and nesting areas for migrating shorebirds and waterbirds, and inland cliffs provide habitat for species such as the Turkey Vulture, songbirds, bats, over-wintering snakes and lizards.

terrestrial herbaceous



ecosystems include natural grasslands as well as grass- and moss-covered rock outcrops. Few trees survive on the shallow soils, but spring wildflowers – such as blue camas, buttercups, and white fawn lilies – thrive, forming a rich tapestry of colour. Included in these ecosystems are highly specialized habitats that support rare species such as the Edith's checkerspot butterfly. Some of these are "micro-habitats," and may be as small as a few centimetres square.

wetland



ecosystems form where water remains at or near the land surface. Different kinds of wetland – bogs, fens, marshes, swamps, wet meadows, or shallow water wetlands – develop according to the soil and drainage conditions. Wetlands are among the world's most productive ecosystems, providing essential feeding and breeding sites for ducks, songbirds, amphibians, and invertebrates.

we are all responsible
for conservation

Learn more about sensitive ecosystems in your area and how they contribute to your community.





riparian



ecosystems form beside lakes, streams, and rivers where soil moisture and light conditions support plants that are distinct from surrounding land areas. These rich and productive ecosystems supply the three critical habitat components for wildlife: food, cover, and water. As a result, they support exceptionally high numbers of plants and animals. Riparian vegetation helps to maintain the water quality and health of streams and rivers and reduces erosion.

dead trees, fallen logs, and large live trees. They support a large number of plant and animal species, some of which depend on habitat features found only in these ecosystems, such as the hollow centres and bark flakes of large old trees.

The Sensitive Ecosystems Inventory includes two other types of ecosystem that make important contributions to biological diversity

woodland



ecosystems are open forested areas composed of pure stands of Garry oak (the only native oak species in western Canada) and mixed stands of Douglas-fir/Garry oak, arbutus/Garry oak, and arbutus/Douglas-fir. These ecosystems support a rich assemblage of plants, insects, reptiles, and birds. Garry oak woodlands boast an exceptionally high number of plant species.

older second growth forest

Large stands of older second growth forest between 60 and 100 years old serve as important buffers for adjacent sensitive ecosystems and provide vital links between habitat patches. If allowed to mature, these forests will become biologically rich older forests.

older forest



ecosystems are mainly coniferous, with an average tree age of 100 years or more. The primary tree species in this region are Douglas-fir, western hemlock, grand fir, and western red cedar. Older forests include standing

seasonally flooded agricultural field

Seasonally flooded agricultural fields have been modified for agricultural use, yet continue to flood in the winter and spring. The region is a critical wintering and stopover area for many migratory birds using the Pacific Flyway, and these flooded fields have become an important supplement to the dwindling natural wetland and riparian habitats upon which these species depend.

sensitive ecosystems are priceless natural assets

Sensitive Ecosystems:

Are rare

Loss of natural ecosystems in the Georgia Basin is of national concern. Garry oak woodlands are one of the four most endangered ecosystems in Canada, and more than half of the wetlands in the Nanaimo and Cowichan estuaries are gone.

Represent a living historical record of our landscape

As human activities transform more and more of the landscape, sensitive ecosystems are increasingly valuable as pieces of living history.

Protect biodiversity

Conserving sensitive ecosystems protects the biological diversity of our region for future generations. We depend on biological diversity for our foods, medicines, and the raw materials with which we manufacture industrial products such as fibres for clothing, lumber, or pulp.

Provide homes for native species

Sensitive ecosystems are important habitat for plants and animals, including many rare and threatened species.

Contain specialized habitats

Many plants and animals are found only in a specific ecosystem. For example, the rare Macoun's meadowfoam plant grows only in British Columbia's coastal bluff ecosystems, and the Propertius Dusky Wing butterfly occurs only in Garry oak woodlands.

Contribute to wildlife corridors

Birds and animals need to move between different habitats. Woodlands, riparian areas, older forests, and older second growth forests provide important corridors for wildlife travel.



british columbians spend

an average of \$747 each year on nature-related activities.





Bring nature into communities

Public greenspaces give residents a chance to observe plants, birds, animals, and ecological processes in their natural environment. Sensitive ecosystems can serve as urban greenways that form the backbone of linear park systems.

Provide learning opportunities

Some schools are involved in projects to create native plant communities and restore wildlife habitats. Children and their families are learning how to care for the environment through nature centres and hands-on workshops.

Provide recreational opportunities

Some sensitive ecosystems are ideal for low-impact recreation such as walking, bird-watching, photography, and painting and sketching. Wildlife provides us with countless hours of enjoyment through activities such as gardening and eco-tourism.

Create economic benefits

Natural ecosystems and wildlife are part of “Super, Natural British Columbia” and are critical to the tourism industry. Greenway corridors increase the value of adjacent properties and add to local tax revenues. Special events that focus on nature – such as the Brant Festival in Parksville/Qualicum – contribute to the local economy.

Support life

Ecosystems regulate our climate, clean our fresh water, regulate and clean atmospheric gases, treat our wastes, generate and clean our soils, maintain genetic diversity, sustain the water cycle, recycle nutrients, and pollinate our crops. Simply put, at no cost to us, ecosystems provide the services that allow us to live on Earth.

going, going... gone?



Urban development, road building, logging, agriculture, fire suppression, and recreational use have dramatically changed the landscape. Other changes may be less obvious, such as altered drainage patterns or the spread of invasive plant species, but the effects can be just as serious.

Impacts include:

Loss of habitat

Some types of habitat are disappearing completely. Garry oak meadows, for instance, cover less than five percent of their original range on southern Vancouver Island. Older forests, which once dominated the landscape, now cover less than three percent of the coastal lowlands.

Fragmentation and loss of wildlife corridors

Landscape fragmentation reduces the amount of land available to support functioning ecosystems. It also creates smaller, unconnected habitat patches. Many wildlife species need large home ranges or the ability to migrate to new ranges when the season changes. Without wildlife corridors, they cannot survive in the smaller habitat patches.

Loss of biological diversity

The sensitive ecosystems in this region are home to many rare plant and animal species. Most of the plant community types identified in the study area are considered rare or endangered ("red-listed") or vulnerable ("blue-listed").



less than eight percent

of east Vancouver Island and adjacent Gulf Islands remains in a relatively natural state.





Introduction of non-native plants and animals

Non-native plants and animals are one of the greatest threats to sensitive ecosystems.

Of particular concern are invasive species that can displace native plants and animals.

Scotch broom, for example, has taken over large areas of woodland and terrestrial herbaceous ecosystems, and purple loosestrife is displacing native wetland plants. Dogs, cats, sheep and other domestic animals can alter ecosystems significantly. Even introduced slugs are destroying wildflower species in some oak woodlands.

Altered patterns of natural disturbances

Natural cycles within an ecosystem often depend on processes such as fire and floods.

For example, wildfires help to thin out competing species of evergreens and shrubs, return nutrients to the soil, release and scarify seeds, and keep the woodland canopy open for sunlight to enter. Fire suppression has changed the open nature of Garry oak woodlands by allowing Douglas-fir and shrubs to become established. Wetlands depend on fluctuations in water levels such as spring flooding, and changing drainage patterns can easily upset the ecosystem's natural balance.

if you are...

a property owner learn more about the natural values of your land, including the location of any sensitive ecosystems. Find out how to protect natural values, and consider using covenants or other measures to make sure those values remain for the future.

a developer consider a design for your project that is creative and flexible enough to protect and enhance sensitive ecosystems. Treed properties and neighbourhood greenspaces add to the value and livability of the development.

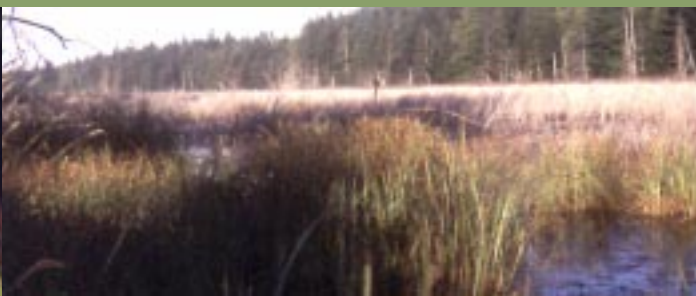
a planner ensure that conservation is given as high a priority as other community programs such as housing, transportation, recreation, employment, public works, and community services.

a decision-maker (such as a politician or government manager), support plans and programs that will help protect sensitive ecosystems. Conserve sensitive ecosystems by using the many legal and planning tools available, such as development permit areas, tree protection by-laws, and conservation covenants.

a member of an advocacy group contribute your time and expertise to help protect sensitive ecosystems. For example, ratepayers' groups, service organizations, naturalist clubs, land trusts, and conservancies often provide a link between local landowners and voluntary stewardship programs. As a member of one of these groups, you can also help convince local governments to make decisions that protect sensitive ecosystems.

a volunteer participate in educational programs, conservation fundraising, or in programs to remove invasive species (such as "broom-bashing" events).

an ecologist, biologist or scientist use your expertise to help identify sensitive ecosystems, define issues that need to be addressed, formulate conservation plans, and contribute to the design of management strategies.





For further information, contact:

Peggy Ward
Canadian Wildlife Service
Environment Canada
Tel and Fax: (250) 752-9611
e-mail: Peggy.Ward@ec.gc.ca
web site: www.pyr.ec.gc.ca/wildlife

Jan Kirkby
B.C. Ministry of Environment, Lands and Parks,
Conservation Data Centre, Victoria
Tel: (250) 387-0732 • Fax: (250) 387-2733
e-mail: Jan.Kirkby@gems9.gov.bc.ca
web site: www.elp.gov.bc.ca/rib/wis/cdc

Marlene Caskey or Trudy Chatwin
B.C. Ministry of Environment, Lands and Parks,
Vancouver Island Region, Nanaimo
Tel: (250) 751-3100 • Fax: (250) 751-3103
e-mail: mcaskey@nanaimo.env.gov.bc.ca
tachatwn@nanaimo.env.gov.bc.ca

To order maps, contact
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sei website:
www.elp.gov.bc.ca/rib/wis/cdc/sei

A technical report (*Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993-1997, Volume 1*) describes the SEI ecosystems and inventory methods and provides a summary and analysis of the data. A conservation manual (*Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands, Volume 2*) provides information for local governments, developers, landowners and conservation agencies to encourage participation in the conservation of sensitive ecosystems. To order copies of the technical report or conservation manual, please contact the Queen's Printer at Tel: (250) 387-0371 or www.publications.gov.bc.ca.

PHOTO CREDITS: Mark Kaarremaa
Trudy Chatwin



sensitive ecosystems inventory



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FOR THE
GEORGIA BASIN
AU TRAVAIL
POUR LE
BASSIN DE GEORGIA

east vancouver island and gulf islands

