SAVING SENSITIVE ECOSYSTEMS

WETLAND ECOSYSTEMS

EAST VANCOUVER ISLAND AND GULF ISLANDS

WHAT ARE WETLAND ECOSYSTEMS?

Wet soils and moisture dependent plants

Wetland ecosystems have wet soils and moisture dependent plants. They develop where there is daily, seasonal or year-round water that lies at or above the surface, or within the root zone of plants.

The type of wetland depends on the degree of flooding (and therefore the wetness of the soil), the type of substrate on which it develops, and the nutrients available. There are six types of wetland on east Vancouver Island and Gulf Islands: bog, fen, marsh, shallow water, swamp and wet meadow.

Bogs and **fens** develop on continuously wet peaty soils. Bogs are generally acidic and low in nutrients, supporting shrubs such as Labrador tea, bog-rosemary, bog cranberry and various species of *Sphagnum* moss. Fens are fed by water enriched with minerals from upslope drainage, and support a higher diversity of plants, including hardhack, a variety of sedges, rushes and reedgrasses.

Marshes include freshwater, brackish and salt-water marshes that are inundated daily, seasonally or permanently, and are characterized by a variety of sedges, rushes, grasses and reeds. **Shallow water** wetlands feature submerged and floating plants such as yellow pond-lily. **Swamps** include flood-tolerant trees such as western redcedar, pacific crab apple and willow as well as hardhack, horsetail and skunk cabbage. **Wet meadows** are rare, with a grassy appearance provided by flood-tolerant grasses, low sedges and rushes.

Many wetlands include a mosaic of these different wetland types.

TYPICAL PLANTS

Labrador tea
sphagnum moss
common sedge
hardhack
reedgrasses
salmonberry

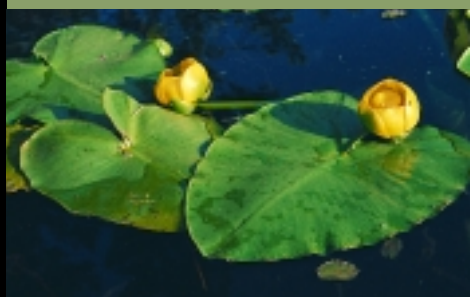
TYPICAL ANIMALS

frogs and salamanders
dragonflies and damselflies
hawks, falcons, Osprey and Bald Eagles
Marsh Wrens, Yellow Warblers,
Red-winged Blackbirds
ducks, geese and swans

SEASONALLY FLOODED AGRICULTURAL FIELD ECOSYSTEMS

ARE AGRICULTURAL LANDS THAT FLOOD DURING THE WINTER MONTHS. THESE FLOODED FIELDS WERE ONCE WETLANDS. THESE FIELDS PROVIDE IMPORTANT WILDLIFE HABITAT FOR MANY SPECIES OF WATERFOWL, SHOREBIRDS AND BIRDS OF PREY DURING SPECIFIC TIMES OF YEAR.

THEY CONTINUE TO PROVIDE EXTREMELY IMPORTANT WINTERING HABITAT FOR WATERFOWL, PARTICULARLY AS THE NUMBER OF NATURAL WETLANDS DIMINISH.



How much wetland is left?

1.7% of the landscape

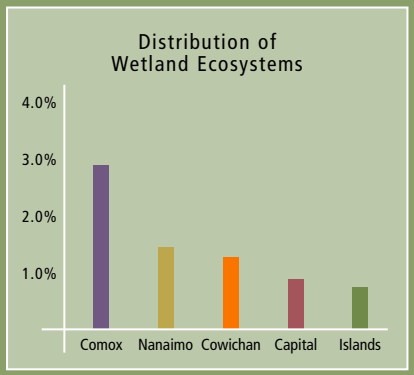
Wetland ecosystems account for 1.7% (7,054 ha) of the east coast of Vancouver Island and adjacent Gulf Islands. The most common wetland types are swamps and marsh; bogs and wet meadows are the least common in this area. South of Duncan, where the climate is drier, wetlands cover less than 1% of the land surface, compared to about 3% in the cooler and wetter Comox-Strathcona region.

Over the past 150 years, many wetlands have been converted to 'more productive' uses such as agriculture or forestry, without recognition of their economic, cultural or ecological values.

Salt and estuarine marshes on east Vancouver Island have declined to an estimated 32% of their extent in the early 1900s, because of coastal dyking and conversion of marshes to agriculture. More recently, impacts have occurred from activities such as log handling and marina construction.

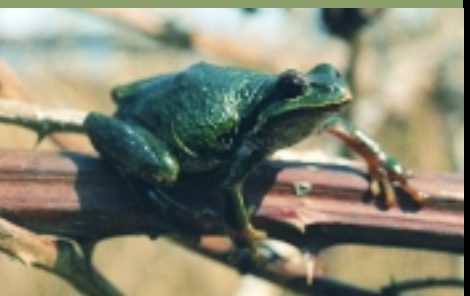
Only fragments remain

A better understanding of the economic and ecological values of wetlands has led to greater protection for wetlands in recent years.



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 WETLAND ECOSYSTEMS IMPORTANT?

WET ECOSYSTEMS ARE ESPECIALLY IMPORTANT IN THIS RELATIVELY DRY REGION

Most wetlands are nodes of high biological diversity and support a large number of species and plant communities. They are extremely productive as breeding and feeding areas for wildlife and offer a variety of habitat niches. For example, a typical wetland might have a central area of open water that supports ducks and geese, a marsh fringe where herons feed on threespine stickleback and northwestern salamanders lay their eggs, and a forested swamp margin where black bears feed on skunk cabbage roots in the spring. Treed wetlands provide nesting sites for species such as woodpeckers and some species of owls.

Wetlands and seasonally flooded agricultural fields in the Courtenay area bring an annual migration of Trumpeter Swans, together with a large number of human visitors who contribute the local economy through the purchase of equipment, food and accommodation during the annual Trumpeter Swan Festival.

Estuarine wetlands are one of the most productive habitats in the world. They provide critical habitat for thousands of wintering waterbirds, and Pacific salmon depend on them to adjust to changing levels of salinity when they leave the rivers as smolts and return as adults to spawn.

Wetlands help to reduce the levels of sediments, nutrients and toxic chemicals in the water. Learning from natural wetlands, many communities now use biofiltration wetlands to remove urban and agricultural contaminants before they enter streams.

The economic value of wetlands has been estimated at more than $22,000 per hectare per year for the hydrological, water quality, habitat and other functions they provide and estuaries are valued at $34,000 per hectare per year.

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 wetland ecosystems?

Avoid direct and indirect impacts

Create a vegetated buffer around the wetland and its associated riparian ecosystem. Wetlands are very sensitive to adjacent land uses, which can affect the hydrology of the ecosystem.

Allow natural ecological processes to occur. Wetland processes are highly complex and include surface and subsurface drainage as well as seasonal or daily flooding. Avoid drainage or ditching within the area that supplies the wetland. Maintain water quality by preventing inflows from urban storm drainage, nutrient-rich agricultural runoff, and sediment from road building and forest harvesting. Protect natural features such as beaver dams. Minimize effects of impervious area coverage on groundwater infiltration.

Restrict recreational, livestock, pet and feral animal access. Use fences, railings and signs to manage recreational and other human access. Restrict livestock access by installing permanent or temporary fences.

Horseback riding, mountain biking, ATVs and trails are inappropriate in wetlands. Depending on the sensitivity of the wetland, certain types of water-based recreation may also have to be controlled or even excluded.

Control introduction or spread of invasive plant species such as purple loosestrife, reed canary grass and yellow-flag iris. Control methods include hand clearing, pruning, mowing, excavation and planting appropriate native species. Consult experts about the best techniques and timing for controlling individual species.

Prevent disturbance of nesting or breeding areas, especially between early March and early August, which is prime nesting season for many coastal wetland birds. The activities of humans and their pets may impact nesting waterbirds such as grebes, Mallards, Wood Ducks, and teal, and amphibians such as newts, salamanders, frogs and toads that lay their eggs in the early spring.

If development is the only option – develop carefully!

Conduct an ecological inventory before any development takes place, ideally throughout the seasons of a year. Identify the existing flora and fauna to 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 wetland ecosystem. A qualified professional can interpret ecological inventory data and work to incorporate designs that are sensitive to the natural ecosystem. Trails should avoid sensitive or unique vegetation, soil compaction, and intrusion into wet zones. Elevated boardwalks, viewing platforms, fences, seasonal trail closures, and signs can reduce access-related impacts.

A variety of conservation tools

are available to protect wetland ecosystems, such as Official Community Plans, other bylaws, conservation covenants and stewardship agreements.

Check the Conservation Manual for more information (see back page).



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
OR WWW.PYR.EC.GC.CA/WILDLIFE/SEI

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Habitat Conservation Trust Fund

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