SAVING SENSITIVE ECOSYSTEMS

RIPARIAN ECOSYSTEMS

EAST VANCOUVER ISLAND AND GULF ISLANDS

WHAT ARE RIPARIAN ECOSYSTEMS?

HIGHLY DYNAMIC

Riparian ecosystems are found on the margins of rivers, streams, lakes and marshes, as well as the floodplains of large rivers and small streams, and in gullies. In these areas, moist soils support plant communities that are quite distinct from those of the surrounding upland areas. Riparian ecosystems can vary in width from just a few metres next to small streams with steep banks, to more than 100 metres near large rivers.

Riparian ecosystems are highly dynamic. Natural disturbances such as periodic flooding, blowdown of shallow-rooted trees and channel shifts that undercut the banks, combine to create a variety of habitat types that contribute to high levels of biodiversity. In mature riparian ecosystems, tree growth is rapid and the understorey lush and diverse.

Riparian ecosystems vary enormously. They can be divided into different 'structural stages' according to the age and form of the vegetation, ranging from gravel bars with almost no vegetation (stage 1), to old forests (stage 7). The structural stage changes over time, as gravel bars are gradually invaded by herbs and grasses, then shrubs, and finally trees that are tolerant of seasonal inundation and flood scouring – unless a major flood removes the vegetation, leaving a bare gravel bar once more.

TYPICAL ANIMALS

muskrat, river otter, mink
water shrew (endangered)
Belted Kingfisher, Common Merganser, Yellow Warbler, Great Blue Heron, Bald Eagle
frogs, salamanders, snakes
numerous invertebrates that need water for one or more stages of their development

RARE PLANTS

Smith's fairybells
semaphore grass
giant chain fern

TYPICAL PLANTS

FREQUENTLY FLOODED AREAS

lady fern
salmonberry
devil's club
cottonwood

INFREQUENTLY FLOODED AREAS

foamflower
Menzies' tree moss
western redcedar
Sitka spruce
western hemlock

RIPARIAN ECOSYSTEMS

VARY IN WIDTH AND ARE DEFINED BY THE SPECIFIC VEGETATION, SOIL AND TOPOGRAPHY OF THE SITE. 'RIPARIAN ZONE' IS A TERM USED TO DESCRIBE A FIXED-WIDTH MANAGEMENT AREA SURROUNDING STREAMS AND WETLANDS.

How much riparian ecosystem is left?

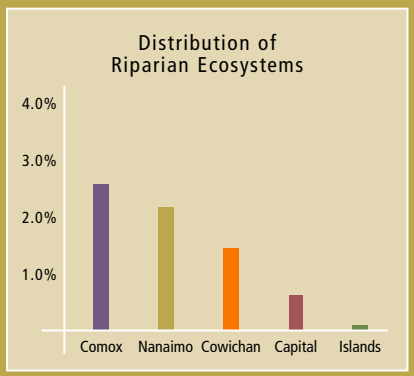
Only 1.6% in a relatively natural state

Human activity has dramatically changed riparian ecosystems in this region. Only patches of intact riparian ecosystems now border many lakes, rivers, and streams. The loss of riparian vegetation has had an enormous impact on these watercourses, reducing the numbers of fish and other wildlife they can support.

Riparian ecosystems that remain in a relatively natural state occupy only 1.6% (about 6,700 ha) of the east coast of Vancouver Island and adjacent Gulf Islands. Most occur north of the Malahat. Many of these riparian ecosystems are associated with the floodplains of larger rivers such as the Cowichan, Little Qualicum, Nanaimo and Tsolum.

Further south and on the Gulf Islands, the mountains are lower and less extensive, and the climate is drier. This has restricted the development of large rivers, resulting in fewer and smaller river systems.

About 20% of riparian ecosystems are unvegetated or shrubby gravel bars. Over half are immature or young forest, while another 22% are mature forests. Only 12 sites are old floodplain forests.



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 RIPARIAN ECOSYSTEMS IMPORTANT?

WET ECOSYSTEMS ARE ESPECIALLY IMPORTANT IN THIS RELATIVELY DRY REGION

Riparian ecosystems boast an exceptionally high number of species for the area that they occupy. This is because they include the three critical habitat components for wildlife – water, cover and food – together with a variety of habitats found in snags, fallen logs and dense cover. The rich insect life provides food for birds, mammals, amphibians, reptiles and fish. In addition, the elongated shape of most riparian ecosystems maximises the amount of 'edge' habitat that creates diverse and productive environments for many species. For example, waterfowl nest along river banks and songbirds depend on riparian habitats for nesting, cover and wintering.

HIGH BIODIVERSITY, WILDLIFE HABITAT

Healthy riparian ecosystems around streams and rivers help to protect habitat for fish and other aquatic species. Trees and shrubs provide shading to keep the water cool and increase bank stability. Logs, branches and leaves falling into the water provide fish with both a food source and places to hide.

Riparian areas help to regulate the flow of water, reducing peak storm flows by slowing or storing run-off. The soils and vegetation filter the water entering the stream, preventing excess nutrients, water-borne sediments and toxic material from reaching the water. In some areas, infilling of floodplain areas has reduced water storage capacity and removed vegetation, resulting in flash flooding, increased water velocity and scouring. Where vegetation has been removed from stream banks, the banks are prone to slumping and undercutting because there is no longer dense root growth to provide bank stability.

The linear nature of some riparian ecosystems makes them valuable wildlife corridors, allowing animals such as mink, otter and deer to move between different types of habitat. Increasingly, they are also being valued as travel corridors for humans as well, with many parks and trail systems following these areas of remnant natural vegetation.

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 riparian ecosystems?

Avoid direct and indirect impacts

Create a vegetated buffer that is large enough to protect the riparian ecosystem from edge effects such as increased light, temperature, noise and invasion by non-native species. Microclimatic conditions are critical to many animals that use these areas for feeding, breeding and nesting.

Control access to reduce damage to riparian soils, vegetation and groundwater. Prevent intrusion into wet areas and use fences, railings and signs to manage recreational and other human access. Restrict livestock access by installing permanent or temporary fences. If trail construction is considered, see *Develop Carefully* below.

Control invasive species that spread from adjacent residential areas, roadsides, or clear-cuts, as they can severely disrupt riparian plant communities. Examples of invasive plants are giant knotweed, reed canary grass, Himalayan blackberry, English ivy, Daphne-laurel and English holly. Nearby homeowners and developers could plant native tree and herb species to help create a natural buffer to the riparian ecosystem.

Allow natural disturbances to occur. Minimize bank or flood protection and maintain natural flow regimes. Flooding, blowdown of trees, channel changes, slope failures and debris flows are important in the creation and maintenance of high diversity riparian habitats. Retain features such as snags, logs and downed trees as they provide important habitat for fish and other species.

Prevent disturbance of nesting or breeding areas, especially between early March and early August, which is prime nesting season for many birds.

If development is the only option – develop carefully!

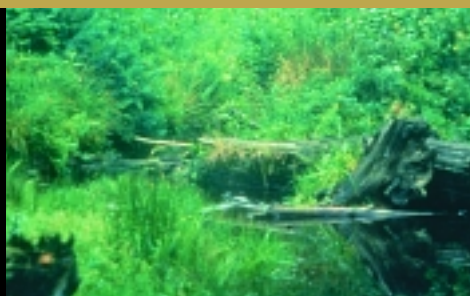
Conduct an ecological inventory before any development takes place, ideally through the seasons over a period of a year. Identify the existing flora and fauna, and in particular, distinguish any threatened or endangered species or plant communities and habitat features needing protection.

Plan and implement all development activities (including road crossings, utility rights-of-way, or trails) in a manner that will not adversely affect or disturb the riparian ecosystem. A qualified professional can interpret ecological inventory data and work to incorporate designs that are sensitive to the natural ecosystem. All linear corridors should be narrow, perpendicular to the riparian ecosystem, and elevated or bridged to maintain wildlife connections. Trails should also provide the most direct route to viewing areas and avoid sensitive vegetation, soil compaction, and intrusion into wet zones.

A variety of conservation tools

are available to protect riparian 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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