Living in Nature Series

THE VALUE OF RIPARIAN HABITAT AND HOW TO CARE FOR

This fact sheet provides information on the essential functions of riparian habitat and suggests ways to improve stream and riparian health.

What is Riparian Habitat?

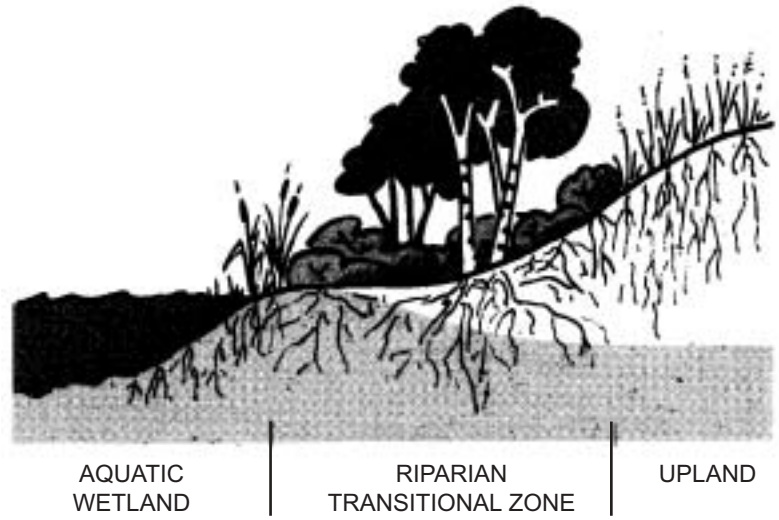
Along the shores of lakes, wetlands, and streams there is a fringe of vegetation that is referred to as "riparian". This area is a transition zone between the aquatic environment and the drier upland environment. Riparian zones support moisture-loving plants that are distinctly different from aquatic vegetation and from plants growing in drier grasslands and open forests. Riparian vegetation often consists of deciduous species such as aspen, cottonwood, willow, red-osier dogwood and wild rose, or lush zones of water-tolerant sedge, rush and grass species. In a forest environment, riparian vegetation often includes mature stands of conifers.

Why is Riparian Habitat Important?

Although riparian areas cover only a small portion of a watershed, they function as part of a much larger complex of interacting natural systems.

Riparian vegetation helps to keep water clean by trapping sediment and pollutants.

The roots of riparian trees and shrubs help stabilize streambanks, as well as slow and dissipate floodwaters during high stream flows. This prevents erosion that can damage fish and aquatic insect habitat or result in a loss of land. Riparian vegetation also reduces pollutants, such as phosphorus and nitrates, by filtering these compounds and binding them to the soil.



An example of a riparian habitat, showing the transition from the aquatic environment to the drier upland environment.

Courtesy of Ducks Unlimited

Not only is riparian vegetation essential to water quality and soil conservation, it also provides important fish and wildlife habitat. Approximately 60% of British Columbia's terrestrial vertebrates at risk use riparian areas during some part of their life cycle.

The multi-layered canopy, thick underbrush, and diversity of trees and shrubs provide food, nesting sites, shelter and escape cover for a variety of mammals, birds, amphibians, and reptiles.

Approximately 60% of BC's terrestrial vertebrates at risk use riparian areas for all or part of their habitat needs.

Fallen and decayed leaves provide a rich source of nutrients for insects which are, in turn, an important source of food for fish and other aquatic species. Logs provide in-stream fish habitat by creating cover, forming pools, shaping the channel, retaining nutrients and improving bank stability. Trees and large shrubs shield streams, from summer and winter temperature extremes that may be very stressful, or even fatal, to fish and other aquatic life. Cooler, shaded streams have less algae and are able to hold more dissolved oxygen, which fish and other aquatic species need to breathe.

Why Conserve Riparian Habitat?

Unfortunately, riparian areas are susceptible to severe disturbance because they are relatively small and located in depressions and valley bottoms where pollutants accumulate and people like to live. Residential and commercial construction, agriculture, road building and logging can alter or eliminate riparian habitat. Removal and destruction of riparian vegetation often:

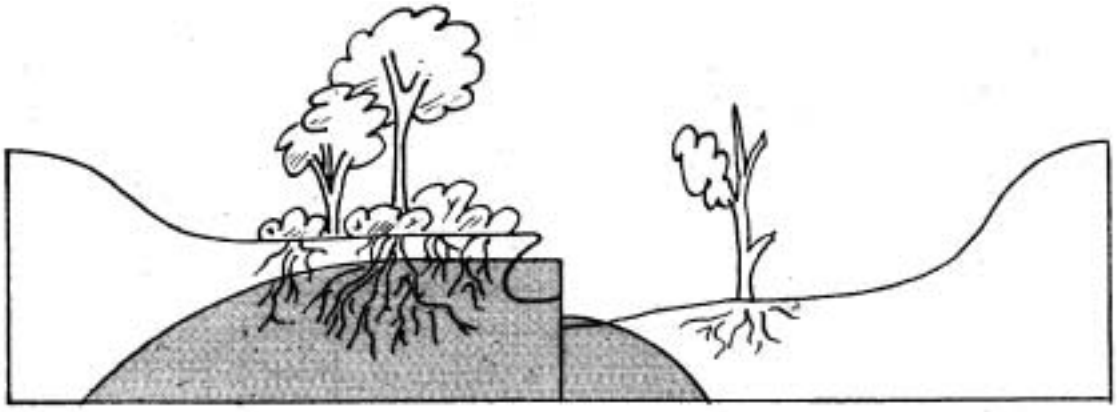
- results in high stormwater runoff which reduces water quality;
- increases the likelihood of land erosion;
- deteriorates fish and wildlife habitat;
- lowers the aesthetic appeal; and
- increases economic losses to landowners.

The conservation of riparian areas is essential to maintaining healthy, natural landscapes and providing economic sustainability. Effective conservation requires developing management plans to protect and enhance remaining, riparian habitat. Re-establishing a properly functioning riparian system can be an inexpensive and rewarding experience.

Problems that may be encountered while planning a riparian restoration project and potential solutions are outlined in the following table.

PROBLEM	*POTENTIAL SOLUTIONS*
Damaged vegetation due to uncontrolled access by livestock	• complete livestock exclusion - fence off the riparian zone and provide an alternative watering facility[1] • improve livestock distribution - maintain groves of trees or a roofed shelter beyond the riparian zone; develop a watering site in the uplands; locate feed and supplements as far away from riparian areas as possible • develop riparian pastures with separate management objectives and strategies, as part of a planned grazing system • plant native riparian trees and shrubs in degraded areas
Unstable banks that are actively eroding	• stabilize the lower portion of eroding banks with bioengineered bank stabilization methods such as tree revetments, to prevent undercutting and collapse during high water events [2, 3] • plant native riparian trees and shrubs in degraded areas
Few or no wildlife trees	• install bird houses, bat boxes and raptor nesting platforms to provide nesting, roosting and perching locations • allow a new generation of trees to mature
Weed invasion	• remove invasive non-native plants to allow for some natural revegetation and reduce competition with any new plantings • plant native riparian trees and shrubs in areas impacted by weeds • monitor recovery of native species and remove any new weeds immediately • encourage adjacent property owners to participate in a cooperative long-term weed control program

It is important to remember that Canada's fisheries habitat protection laws and provincial legislation could affect riparian restoration plans. The Ministry of Water, Land and Air Protection and Fisheries and Oceans Canada should be contacted before any work in or near water is conducted, to determine the project's impact on fisheries.



Water tables in well-vegetated riparian areas are higher and allow plants to keep their roots wet. Forage production is high.

Water tables are low in poorly-vegetated riparian areas. Existing plants struggle to extract enough moisture. The amount of forage is reduced.

[1]See Interior Wetland's Factsheet on Alternative Livestock Watering Facilities for more information.

[2]The Ministry of Water, Land and Air Protection and Fisheries and Oceans Canada should be contacted before this work is conducted.

[3]Use small equipment on-site: large, machinery can compact soil and restrict root penetration.

Determining the Health of a Riparian Zone

In order to determine the health of a riparian zone, specific information should be gathered from a riparian site that is representative of the whole stream, lake or wetland. The following checklist1 includes some obvious signs to watch for that may indicate problems in a riparian area. Answer yes or no to the following statements:

Stream Channel	Yes	No
• active downcutting evident	❑	❑
• stream channel becoming wide and flat (except estuaries and deltas)	❑	❑
• stream channel actively moving and eroding banks and floodplain	❑	❑
• many new sand/gravel bars appearing	❑	❑
• increased sediment on stream bottom	❑	❑
• stream unable to overflow its banks during annual spring runoff	❑	❑
• increased stream width and decreased stream depth	❑	❑

Stream Banks	Yes	No
• stream bank shear damage by livestock	❑	❑
• active stream bank erosion from exposed soils	❑	❑
• bank caving from weight of animals	❑	❑
• reduction in stream bank undercuts	❑	❑

Floodplain	Yes	No
• drainage of wet meadows or lowering of water tables	❑	❑
• unusual changes in the timing and magnitude of floods	❑	❑

Vegetation	Yes	No
• reduction in streambank vegetation	❑	❑
• poor plant vigour; few large, desirable forage plants	❑	❑
• declining forage production	❑	❑
• change in plant species to drier upland types	❑	❑
• trees and shrubs are hedged	❑	❑
• reduction in overhanging vegetation into stream channel	❑	❑
• all trees and tall shrubs are old; no young trees, saplings or sprouts	❑	❑
• no trees or shrubs	❑	❑
• weed invasion	❑	❑

Wildlife	Yes	No
• fish are no longer abundant or have disappeared	❑	❑
• numbers of nesting songbirds are low	❑	❑
• wildlife species rarely observed	❑	❑

If you answered yes to the majority of these statements, you may want to consider some management changes. The following section will assist you with improving riparian area management.

1 adapted from Adams, B. and L. Fitch. 1995. Caring for the green zone: riparian areas and grazing management. Produced by the Cows and Fish Partners. 37pp.

Riparian Area Management: Where to Begin

The following information is a guide on how to get started in improving riparian area management. Good planning can prevent or reverse damage to fish and wildlife habitat, and improve water quality.

Conduct a site inventory. An inventory of existing riparian vegetation and a list of on-site conditions that may limit plant growth is essential. Preparing a base map of existing conditions will help to identify factors that determine the capability and sensitivity of the site. A site inventory should consider all of the features outlined in the following table.

FEATURE	*SPECIFICS*
vegetation (on the project location and adjacent sites)	• document the assemblage of native plants present • identify any weeds • note the width and condition of the riparian zone
natural habitats	• note existing wildlife features such as tree cavities, downed wood, nesting areas, perches, feeding sites and travel corridors
topography	• identify erosion prone areas (steep slopes) • identify the direction of existing drainage
soils	• determine soil characteristics (pH, texture, drainage, moisture and depth)

Good planning can prevent or reverse damage to fish and wildlife habitat, and improve water quality. It is strongly recommended that you contact the Ministry of Water, Land and Air Protection or Fisheries and Oceans Canada for site-specific advice.

Highlight problem areas. Identify those riparian. areas that require special or immediate action, and deserve the highest priority for improvement.

Identify the cause of site degradation. Determining the cause of site deterioration and designing methods of treatment will help to ensure that riparian area health has a greater chance for improvement.

Prioritize management objectives and strategies. Objectives should address soil, water and vegetation requirements. Various publications and agencies may be able to assist you in developing realistic and attainable strategies. Sources of information are listed on the back page of this brochure.

Identify problems and solutions. Any potential problems identified during the site inventory need to be addressed before a project is initiated. Encouraging natural recovery by reducing or eliminating the causes of degradation should be the aim of all riparian rehabilitation efforts. Generally, a riparian setback of at least 30m in width on both sides of a watercourse is recommended for streams up to 20m in width. Streams larger than 20m in width generally require a riparian setback of at least 50m in width on both sides of a watercourse. Consideration must also be given to protecting seasonally flooded side and off channel areas which can contain critical fish habitats. A narrower leave strip may not protect streambanks from erosion and will be less effective at filtering runoff.

For Further Information on Riparian Area Management...

CONTACTS

Agency	Information or Assistance Provided
Ducks Unlimited www.ducks.ca	rehabilitation or enhancement of damaged wetlands and riparian areas
Fisheries and Oceans Canada www.pac.dfo-mpo.gc.ca	fish or habitat concerns (particularly migratory salmon)
Ministry of Water, Land and Air Protection www.gov.bc.ca/wlap/	fish or habitat concerns; septic and water quality issues

RECOMMENDED READING

Adams, B. and L. Fitch. 1995. ***Caring for the green zone: riparian areas and grazing management***. Produced by the Cows and Fish Partners. 37pp. Available through the Alberta Cattle Commission, Calgary, Alberta.

Chilibeck, B., G. Chislett and G. Norris. 1992. ***Land development guidelines for the protection of aquatic habitat***. Produced by the Department of Fisheries and Oceans and BC Environment. 128pp.

The Stewardship Series: a group of BC publications describing stewardship activities. The series is funded by federal and provincial governments in partnership with non-government organizations.

Access Near Aquatic Areas: A Guide to Sensitive Planning, Design and Management. 1997. BC Environment or Department of Fisheries and Oceans.

Naturescape British Columbia: Caring for Wildlife Habitat at Home. 1997. Ministry of Water, Land and Air Protection. Phone 1-800-387-9853.

Streamkeepers Handbook: A Practical Guide to Stream and Wetland Care for Community Groups. 1995. Department of Fisheries and Oceans.

Watershed Stewardship: A Guide for Agriculture. 1997. BC Environment or Department of Fisheries and Oceans.

Wetlandkeepers Handbook: A Practical Guide to Wetland Care. 1996. Available from the BC Wildlife Federation.

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