

# Biodiversity and Riparian Areas

life in the green zone

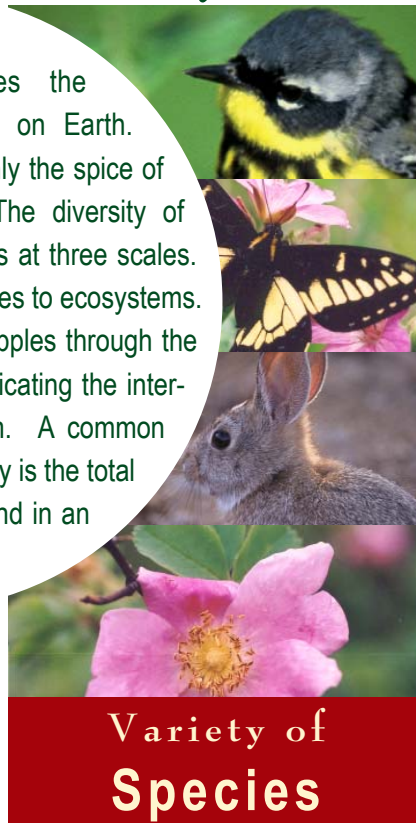


## What is Biodiversity?

Biodiversity describes the variety and array of life on Earth. Variety (or diversity) is not only the spice of life, it is essential to life. The diversity of biological life (biodiversity) exists at three scales. These range from genes to species to ecosystems. Loss at any point in the scale ripples through the other scales of biodiversity, indicating the inter-related nature of the system. A common measurement of biodiversity is the total number of species found in an area.



Variety of Genes



Variety of Species



Variety of Ecosystems

# Biodiversity

## Why is Biodiversity Important?

- ◆ Biodiversity refers to the living pieces that shouldn't be discarded since we use the earth's resources to sustain us. Experience suggests to us that the first rule of intelligent tinkering is to keep all of the pieces. Because of the interconnected nature of ecosystems, the loss or addition of one species has the potential to change an ecosystem.
- ◆ High levels of biodiversity are associated with greater ecosystem stability. The more diverse a system is, the better able it is to cope with environmental stressors, such as floods or drought. Biodiversity gives us choices, options and flexibility to help us cope with variability, including long-term habitat changes.
- ◆ When a system is simplified, such as having only one species of crop or type of grass, it increases the odds that environmental stressors will have a more pronounced impact or that a disease or pest will be able to spread rapidly. Animal and plant populations with low genetic diversity are much more susceptible to stress and vulnerable to extinction.
- ◆ We all rely on the tremendous variety of species, genes and ecosystems in our world and the many benefits we receive from them - they deserve our respect and conservation.

# Riparian Areas Overflowing with Biodiversity!

## Biodiversity and Riparian Areas

Riparian describes the land immediately surrounding water sources where water strongly influences the immediate ecosystem. Examples of riparian areas include the dense cattails around a wetland and the cottonwood forests along a prairie river.

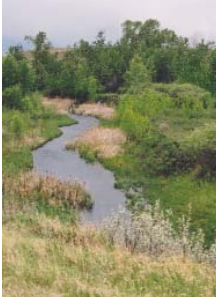
Riparian areas, especially those in prairie environments, support high levels of natural biodiversity. The combination of water, lush vegetation and connections to other landscapes provides opportunities for many species. Prairie riparian zones have been found to contain up to seven times more bird species than surrounding grassland communities.

Riparian areas create important corridors that link a variety of ecosystems together. Species and genetic material travel easily through these small, but unique, pieces of the landscape. Riparian corridors act like a network or web across the landscape, joining distant areas together.



## Complex Plant Communities

As well as containing many different types of plants, riparian areas are often structurally very complex. That is, there are several layers of vegetation - often a low ground cover, several different shrub layers and a tree canopy. This structural diversity is one of the aspects of riparian areas that makes them attractive to so many wildlife species.



## Mammals

Deer, cottontail rabbits and porcupines are just a few of the many mammals attracted to riparian areas. Riparian zones have been found to be critical roosting and foraging habitat for bats.

## Reptiles & Amphibians

All frogs, salamanders and most toads rely on riparian areas for reproduction, shelter and food. Many snakes, such as bull snakes and garter snakes do most of their hunting in riparian areas.





# Riparian Areas Overflowing with Biodiversity!

## Fish

Healthy riparian areas are critical to fish. Fish spend considerably more of their time along streambanks and shores than in the middle of waterbodies. Well-vegetated shores and banks provide cover, shade, clear water, a place for egg-laying and feeding opportunities.



## Invertebrates

When we think of riparian insects, mosquitoes tend to come to mind! However these are a small part of overall insect diversity. Dragonflies, damselflies, caddisflies, as well as many butterflies and moths also depend on riparian areas.



## Birds

Do you want to see a lot of different birds in a short time period? Visit a riparian area! Riparian areas, especially cottonwood forests, support the highest breeding bird densities and diversities in North America. Over 80% of Alberta's bird species rely on riparian forests for all or part of their lifecycle. Riparian areas are particularly critical for forest birds as they migrate across the prairies; without riparian areas, where would they stop for rest and re-fuelling?



## Rare Species

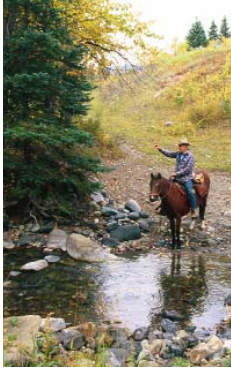
Almost two-thirds of Canada's rare and endangered species rely on riparian areas for at least part of their life cycle. An example is the Western Blue Flag Iris, a threatened species that is found only in riparian areas around lakes and large wetlands in southern Alberta.

Riparian areas contribute to the overall diversity of ecosystems. Here are just a few of the types of riparian ecosystems in Alberta:

- ◆ alder-lined mountain streams;
- ◆ cattail-rimmed wetlands and sloughs;
- ◆ spruce and shrubs along boreal creeks;
- ◆ lush cottonwood forests along prairie rivers;
- ◆ parkland potholes surrounded by aspen groves; and
- ◆ sedge and willow habitats bordering foothill creeks.



# People and Riparian Biodiversity



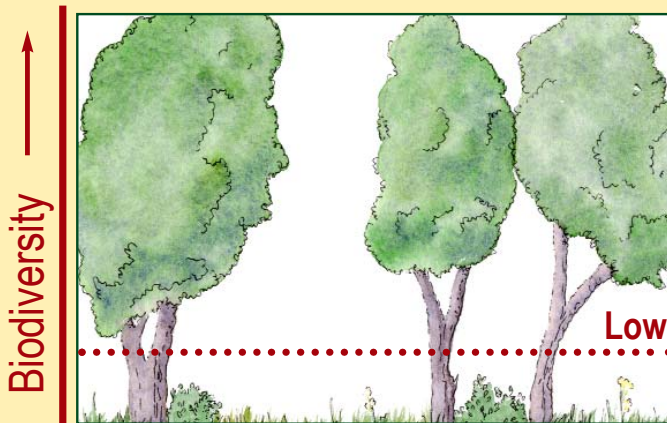
Riparian areas not only attract biodiversity, they also attract people. Historically, riparian areas were important for native peoples and early settlements. Typical disturbances included logging and along some river valleys, roads, highways, coal and gravel mining. Today, riparian areas attract a variety of urban, recreational, industrial and agricultural activities. The cumulative nature of these land uses affects biodiversity.

Recreational activities can impact riparian biodiversity in several ways. Intensive recreational facilities, such as campgrounds, often result in the removal of the riparian vegetation. Reduced vegetation diversity then leads to reduced wildlife abundance and a drop in the total number of species. Human noise and activity can result in reduced numbers of some sensitive wildlife species.

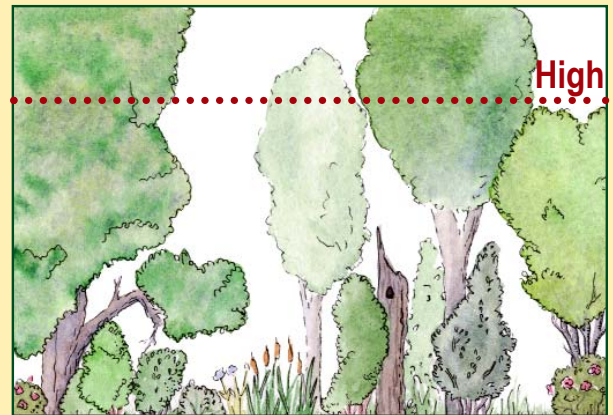


Recreational activities can result in the loss of understorey vegetation

Cattle grazing can also affect riparian biodiversity, depending on the intensity and duration of use. In heavily pastured riparian areas, vegetation becomes trampled and reduced by foraging livestock. Shrubs seem to be especially vulnerable. Several studies in Alberta have shown that there are fewer birds and fewer bird species in riparian areas that are intensively grazed by livestock through the entire growing season.



Although an **unhealthy riparian zone** may still support trees, there is usually a lack of structural diversity (i.e. few shrub layers). The result is lower biodiversity. Different management may restore this area and improve biodiversity.



A **healthy riparian zone** is a tangle of shrubs, trees and other lush vegetation. It is a structurally diverse community. Biodiversity is extremely high in healthy riparian areas.

Healthy riparian areas harbor much higher levels of natural biodiversity than unhealthy riparian areas. When riparian areas are properly cared for, their ability to support more species, or higher levels of biodiversity, is increased. Healthy biodiversity is in everyone's best interest as it means stability, productivity and reliability for the users and stewards of riparian areas.

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Working with producers and communities on riparian awareness

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Printed in Canada 02/02

## Cows and Fish Partners

Producers & Community Groups, Alberta Cattle Commission, Trout Unlimited Canada, Canadian Cattlemen's Association, Alberta Agriculture, Food & Rural Development, Alberta Sustainable Resource Development, Alberta Environment, Department of Fisheries & Oceans, Prairie Farm Rehabilitation Administration, Alberta Conservation Association

## Funding Associates include

AESA, CARDF, CABIDF, Habitat Stewardship Program