

NATURAL (EXISTING) RIPARIAN AREAS

You may already have existing, at least somewhat natural, riparian areas on your property, in the form of woodlands and meadows. If you've read preceding chapters, you'll already be well aware of their potential benefits. This chapter describes their functions in greater detail, and will give you practical information on how to identify and manage them.



Some landowners have previously farmed riparian areas, such as ravines, gullies and floodplains (above). Such areas are suitable for reforestation and restoration. By planting trees and shrubs and restoring meadows and wetlands, these lands can return to their original function (right). For more information on tree, shrub and grass planting, please see pages 70–77.

RIPARIAN WOODLANDS

FUNCTIONS

Riparian woodlands cover ravine slopes, banks, shores and wetlands. In many respects, they reflect the functions and value of most woodlands in terms of protecting soil and water quality, offering habitat, and providing woodland products.

Like other woodlands, they are more effective at delivering on these when they are extensive in size, distributed evenly – without breaks along the riparian corridor – and left relatively undisturbed. However, riparian woodlands are generally more fragile than most upland woodlands. They are often on sloping lands, on shallow or erodible soils and are directly adjacent to surface waters. Care must be taken to minimize damage.

The specific functions of riparian woodlands are listed below.

Streambank and Streambed Protection

Tree roots form “living gabion baskets” around soil materials in banks and shores. This reduces erosion and sediment loss without interfering with natural channel process, such as meandering, bank shaping and stream shaping (narrower and deeper).

Trees and branches that fall in watercourses help form riffles, pools and meanders and improve aquatic habitat. However, excessive woody materials in streams and ponds can cause streambank and streambed erosion. Some of these materials should be removed.

Water Quality and Quantity

Trees, the “understory” vegetation, and layers of decaying leaves and debris filter sediment and other contaminants from runoff.

Years of root growth and organic matter additions increase infiltration rates. More runoff water and the materials it carries are “filtered” through riparian soils.

Baseflow – or groundwater moving on a downslope gradient – carries nutrients (such as nitrates) in solution. Woodland plants are particularly effective at capturing and using these nutrients before the groundwater reaches the surface water.

High organic matter levels and diverse soil life help to biologically and chemically alter contaminants into living tissue or less harmful forms.

Riparian woodlands help manage water supplies by slowing snowmelt and runoff as well as increasing water storage in woodland soils.



Like most riparian woodlands, this ravine along Shelter Valley Creek in Northumberland County provides multiple benefits in terms of environmental protection and habitat provision, not to mention natural beauty.

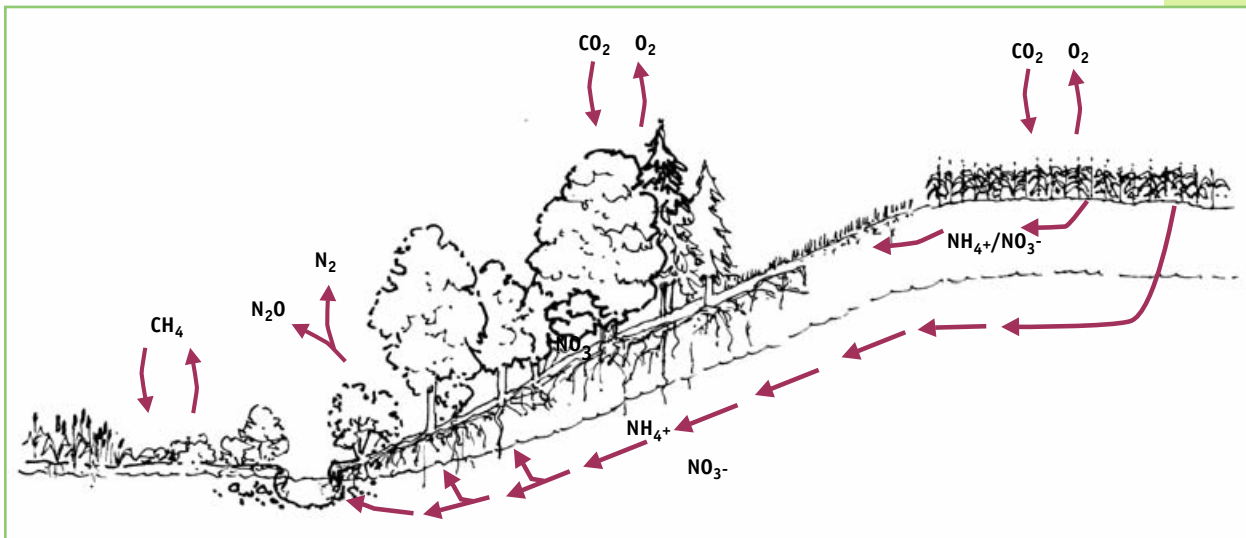
Fish and Wildlife Habitat

Surface waters shaded by riparian woodlands provide cool- and cold-water aquatic habitats for fish.

Leaf fall and other organic debris feed aquatic insects as part of the food chain in aquatic environments. Fallen trees and branches provide cover for fish and other aquatic animals.

Riparian woodlands help to fulfill habitat needs – space, cover, food and water – for many of the mammals, birds, reptiles and amphibians that live in Ontario. They're also important corridors for wildlife travel between other habitat areas.

Additional Functions



Trees and shrubs are efficient at fixing carbon (CO_2) from the atmosphere to form wood and woodland soil organic matter and, by nutrient uptake, preventing dissolved nitrate (NO_3^-) from turning into nitrous oxide (N_2O). N_2O is a very harmful greenhouse gas.



Riparian woodlands are the most effective buffers. Runoff is reduced and erosion is controlled.



For recreational activities such as hunting, fishing, hiking and trail use, they provide a diverse setting.



Riparian woodlands add beauty and diversity to the rural landscape – improving the quality of life and the value for real estate and tourism.



Woodland products such as fuelwood, timber, cedar posts and maple sugar can diversify farm and rural property income.

BMPS FOR RIPARIAN WOODLANDS



Leave them! Not all riparian forests need management. Some lowland forests and upland forests on very shallow or steep sites may be better off left alone. At the very least, consider a no-harvest zone adjacent to your watercourse, wetland or lake. With no effort at all, important habitats can be protected.

- ▶ Develop a plan for your riparian woodland. Contact the Ontario Ministry of Natural Resources or a Wetland Habitat Fund representative for a sample planning exercise. Inventory your forest resources and site limitations. Seek technical assistance where necessary. Schedule your activities. Harvest carefully. Monitor sensitive areas.
- ▶ Don't use them as landfills. Riparian woodlands can be inaccessible or hidden from view. In the past, they may have seemed like ideal dump sites. Only approved and properly managed municipal landfills are intended for the disposal of solid wastes – use them!
- ▶ Match forest management system to cover type. Use selection management systems to promote shade-tolerant trees in riparian woodlands. Other systems (e.g., shelterwood or sequenced partial-stand removal) can work for other species (e.g., pines and spruces) when not on fragile lands.
- ▶ Introduce harvesting equipment when soils are dry or frozen to minimize site damage and erosion. Use horses or equipment with high flotation tires on sensitive sites. Cables and winches should be used to harvest high value timber on severe slopes.

- ▶ Harvest to reduce felling and skidding damage to residual stand.
- ▶ Design roads and skid trails to minimize damage:
 - ▷ avoid wetlands and watercourses
 - ▷ follow contours where possible
 - ▷ rehabilitate damaged areas caused by skidding and hauling.
- ▶ If crossings are necessary, create them to minimize any sediment loadings and washouts. Use cull trees as temporary bridges and silt fences to avoid siltation. Reduce the number of crossings.
- ▶ Avoid handling hazardous products in the riparian area. Fuel up and lubricate harvest equipment a safe distance from water.
- ▶ Time operations to minimize disturbances to wildlife (e.g., nesting periods).
- ▶ Leave rock piles alone and create piles of treetops for cover.
- ▶ Create openings or plant nut (e.g., beech, oak, and hickory) and catkin trees (e.g., birch) in upland areas.
- ▶ Monitor beaver activity. Control with trapping if necessary.



Set landings as far away as possible from water. Where you can, keep all landings at the top of ravines.



Leave 5–10 “snag” trees (small, dead and dying) and fallen logs per acre for wildlife habitat.



Maintain 2–5 cavity trees per acre in remaining stand for cavity-dwelling birds and mammals.



Keep treed fencerows and plant windbreaks to connect other natural areas (e.g., woodlands, wetlands and ponds) to riparian woodland area.

RIPARIAN WETLANDS

Wetlands can be found throughout riparian areas, particularly in the broad floodplains of larger rivers and adjacent to the shores of lakes. In southern Ontario, riparian wetlands are

most often marshes and swamps. In the north, they are more often fens and to a lesser extent bogs.

While there are definite similarities between riparian and conventional wetlands, riparian wetlands are more influenced by moving surface water (flooding and high flows). They're also subjected to more flooding, erosion and sediment (plus debris) deposition than their upland counterparts.



Riparian wetlands are more influenced by flooding, erosion and deposition.



In southern Ontario, riparian wetlands are mostly marshes or swamps.

FUNCTIONS

Riparian (or “riverine”) wetlands are among the most important types of wetlands as they perform many essential functions.

WATER

- water storage for flood control, stream maintenance and plant growth

NUTRIENT

- removal of nutrients from adjacent land, base flow and from flood deposition
- nutrient cycling in wetland area
- sediment trapping in wetland
- increase of carbon in soil

HABITAT

- improved, more diversified habitat offering space, cover and food

BMPS FOR RIPARIAN WETLANDS

Remember these key principles for managing riparian wetlands.

- ▶ Avoid physical damage to soils, waterways and vegetation.
- ▶ Prevent any harmful substances from entering the wetland.
- ▶ Seek approvals and permits if you plan any changes.
- ▶ Harvest timber on a sustainable basis – ensure a long-term supply with minimal impact on habitat.
- ▶ Exclude livestock from riverine wetlands.
- ▶ Just “keeping it” is a wetland BMP.
- ▶ Establish upland buffers – wider is better.
- ▶ Consider in-stream habitat improvements – for more information, see the BMP book, *Fish and Wildlife Habitat Management*
- ▶ Don’t create barriers to fish and wildlife movement – riparian ecosystems are key travel corridors.

For wetland meadow management, please see further on in this chapter.



Manage wildlife with regulated hunting and trapping. Remove problem animals in accordance with provincial and federal laws.



Don’t dump fill or debris or discard waste in wetlands.

For Timber Harvests

- ▶ Plan your operation – inventory and identify sensitive features to avoid them.
- ▶ Seek professional assistance for your timber harvest.
- ▶ Time operations to reduce impact.
- ▶ Minimize area and duration of disturbance.
- ▶ Avoid working during high-flow periods.
- ▶ Use heavy machinery in winter and only when soil conditions are frozen.
- ▶ Use proper crossing techniques to avoid damaging and blocking the flow of any watercourses in wetlands.
- ▶ Don’t create conditions that impede the travel of wildlife.
- ▶ Don’t clear-cut vegetation – use a management-free zone around sensitive areas.

For wetland restoration and marsh management techniques, please see the BMP book, *Fish and Wildlife Habitat Management*.

RIPARIAN MEADOWS

Riparian meadows are natural grasslands, consisting largely of grass, wildflower and wetland vegetation and a few trees. While you usually find them along lakeshores and in the floodplains of large rivers, small meadows can be an important part of natural riparian areas too. And in the drier parts of ravines, such as gravelly ridges and near bedrock outcrops, you may find prairie or savannah vegetation “communities”.

In drier communities, you’ll see grass species such as big and little bluestem, Indian grass, and switchgrass. In wetter sites, look for reed canary grass, blue-joint, prairie cordgrass, sedges and rushes. A large assortment of wildflowers can be found in both wet and dry meadows.



Wet riparian meadows consist of grasses, wildflowers and wetland vegetation.



Warm-season grasses will provide cover throughout the summer season.



Cool-season grasses provide quick cover in the spring and will regrow in the fall.

FUNCTIONS

Riparian meadows perform similar functions to other riparian natural areas. However, they provide different and important habitat functions for various avian species:

- ▶ waterfowl – riparian meadows are particularly favoured for waterfowl nesting
- ▶ songbirds – meadows provide food (insects and seeds), cover for nesting and shelter from severe weather
- ▶ meadow-dependent species, such as bobolinks and Henslow’s sparrow
- ▶ gamebirds, such as woodcock, wild turkey, pheasants and quail – scrubby meadows provide nesting, brood rearing and roosting cover.



Meadows are important habitat for gamebirds such as wild turkey.

The biggest threats from agriculture to riparian meadows are:

- ▶ intensive cropping on floodplain – annual crops such as corn, soybeans and cereals are grown intensively on former riparian meadow sites
- ▶ intensive grazing – unmanaged access by grazing livestock will destroy most habitat functions, and
- ▶ runoff from cropland or livestock operations – soil, nutrients and pesticides can alter the quality of these fragile ecosystems.



PURPLE LOOSESTRIFE



PHRAGMITES

All riparian plant communities, particularly meadows, are at risk of invasion by non-native plants. Certain weeds, ground covers, forage grasses and landscape trees are more aggressive than native plants – spreading and out-competing them. These species do not necessarily perform the habitat functions that native plants do, and threaten the natural balance of plant communities that has developed over the past millennium.

Without disturbance by flooding or fire, meadows are subject to the pressures of natural succession. The natural “invasion” of shrubs and trees can lead to the ultimate loss of meadow vegetation, especially warm-season grasses and wildflowers. To maintain a meadow, judiciously remove woody trees and shrubs. This meadow is found along the lower reaches of the Ganaraska River in Northumberland County.

BMPS FOR RIPARIAN MEADOWS

For Protection

- ▶ Exclude livestock or delay graze at low densities.
- ▶ Don't intensively crop riparian meadows. If you do crop, use conservation tillage to control erosion risk.
- ▶ Establish upland buffers – wider is better.
- ▶ Don't dump waste in wetlands.
- ▶ Stay out of meadows in spring and early summer so as not to disturb bird nesting. If possible, delay haying and pasture until July 15.

For Maintenance

- ▶ Just keeping it is a reasonable strategy to manage meadows.
- ▶ With permits and approvals, well-planned, prescribed burns when woody vegetation encroaches will keep the grass component in riparian meadows.
- ▶ Practise delayed mowing, and forward-graze only one-third of the meadow each year (for habitat and sustained regeneration purposes), and rotate to a new section each year.

For Restoration

- ▶ Use prescribed burning in late fall or early spring (end of April), plus light cultivation, to prepare flatter parts of wetter meadows for replanting.
- ▶ Choose warm-season grasses or prairie grasses such as big and little bluestem, Indian grass, and switchgrass to restore the meadow, if you're interested in providing cover for wildlife
 - ▷ warm-season grasses take several years to establish but in time will be more competitive than cool-season grasses
 - ▷ wildflowers can be planted or will seed in more readily with warm-season grass stands.
- ▶ Choose cool-season grasses such as brome, orchardgrass or timothy if you wish to use the meadow for forage or pasture, and also want to provide cover for early-season nesting birds.

Wildflowers will seed in more readily into meadows with warm-season grasses.

