BMPs FOR OTHER WOODLANDS

RIPARIAN WOODLANDS

FUNCTIONS AND COVER TYPES

Other woodland types are worthy of your attention and protection, specifically: riparian areas (alongside streams and other water bodies), wetland woodlots and treed fencerows. While they may not be as financially rewarding in the short-term, these areas are rich in environmental benefits, such as protecting water quality, providing wildlife habitat, sheltering livestock, reducing wind erosion – and simply providing aesthetic beauty.

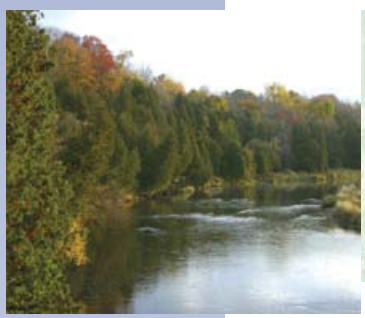
Riparian woodlands cover ravine slopes, banks, shores and wetlands. They perform the same functions as most woodlands in that they:

- ▶ protect soil and water quality
- ▶ provide habitat and woodland products.

In fact, riparian woodlands perform these functions more effectively than other woodland types assuming they are:

- ▶ extensive in size
- ▶ contiguous in shape, and
- ▶ relatively undisturbed.

Riparian woodlands are very productive sites and can produce high quality forest products.



Riparian woodlands are generally more fragile than most upland woodlands – often on sloping lands, on shallow or erodible soils, and directly adjacent to surface waters. Care must be taken when managing these areas to minimize damage.

Let's look more specifically at the functions of riparian woodlands.

Streambank and streambed protection

- Tree roots form living gabion baskets around soil materials in banks and shores – reducing erosion and sediment loss without interfering with natural channel process (meandering and bank shaping).
- Trees improve the efficiency of sediment transport in the channel by narrowing it.
- Trees and branches that fall in watercourses help form riffles, pools and meanders, and improve aquatic habitat.

Riparian forests filter and absorb dissolved nutrients from groundwater that enters watercourses in the form of baseflow.

Water quality

- Woodlands – both the trees and understory vegetation – 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 adept at using these nutrients before the groundwater reaches surface water.
- High organic matter levels and diverse soil life help to biologically and chemically alter contaminants into living tissue or less harmful forms.

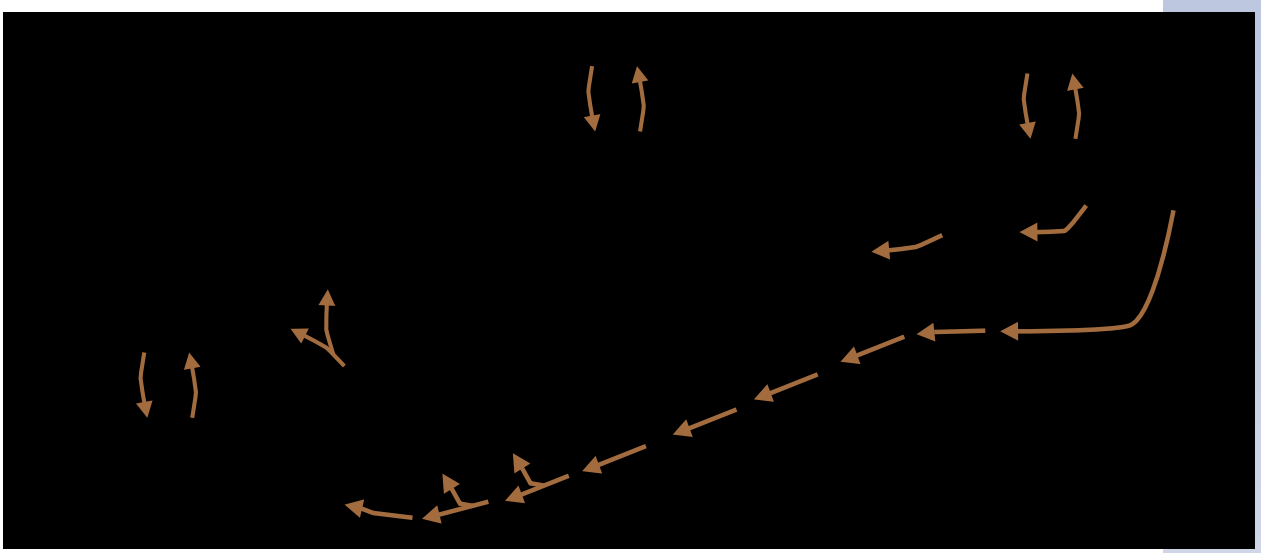
Fish and wildlife habitat

- Surface waters shaded by riparian woodlands provide cool and cold fish habitats.
- Leaves 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 provide habitat needs – space, cover, food and water – for most mammals, birds, reptiles, amphibians and insects that live in Ontario.
- Riparian woodlands are important corridors for wildlife travel between natural areas.

Deer yard and overwinter in treed stream bottomlands.

Other environmental functions

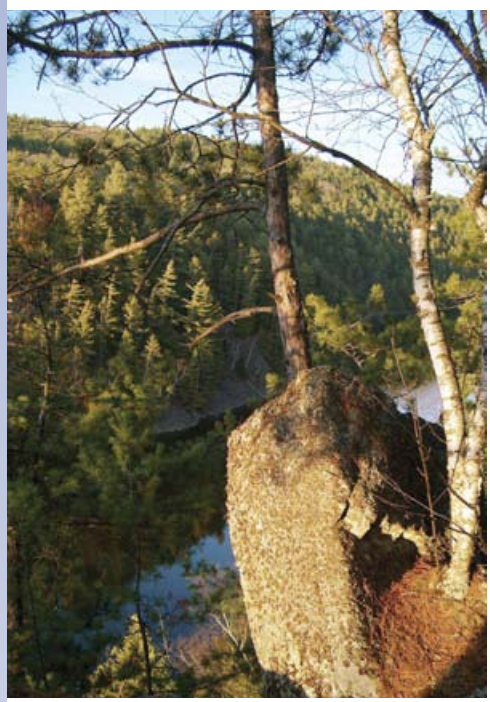
- BMPs for riparian woodlands are excellent for conserving soil. Buffers, berms and strip-cropping can reduce runoff and control erosion.
- Trees and shrubs are efficient at fixing carbon (CO_2) from the atmosphere to form wood and woodland soil organic matter. By means of nutrient uptake, they also prevent dissolved nitrate (NO_3^-) from turning into nitrous oxide (N_20), a harmful greenhouse gas.
- Riparian woodlands help manage water supply by slowing snowmelt and runoff as well as increasing water storage in woodland soils.



Riparian forests reduce agriculture's impact on climate change. Plants and soils sequester some key greenhouse gases, such as carbon dioxide. Methane can also be fixed by riparian soils. Emissions of nitrous oxide can be reduced when riparian vegetation intercepts cropland nitrates and ammonium as they move with groundwater to watercourses.

Other functions

- Riparian woodlands add beauty and diversity to the rural landscape – good for quality of life and the value of real estate and tourism.
- Riparian woodlands provide diverse settings for recreational activities such as hunting, fishing, hiking and trail use.
- Woodland products such as fuelwood, timber, maple products and alternative products can diversify farm and rural property income.



It is hard to place a dollar value on the aesthetic beauty of mature riparian woodlands.

FOUR RIPARIAN WOODLAND COVER TYPES

TYPE	DESCRIPTION	DOMINANT TREE SPECIES
UPLAND HARDWOODS	• Similar to non-riparian hardwood woodlots • Suited to selection management • Prone to erosion on steep slopes	• Sugar Maple, Beech, White Ash, Hickory, Ash, Oak, Black Cherry, Basswood (south) • Poplar–Birch (north)
UPLAND MIXEDWOODS	• Diverse habitats important to numerous wildlife • Selection management is most suitable • Difficult to keep mixedwood components on some sites	• Hemlock–White Pine–Sugar Maple; White Pine–Red Oak (south) • White Birch–Poplar–White Spruce (north)
LOWLAND HARDWOODS	• Level to hummocky topography • Temporary pools hold floodwaters, thereby reducing flooding and windthrow	• Silver Maple; Soft Maple–Green Ash; Bur Oak–Shagbark Hickory–White Ash (south); • Black Ash; Balsam Poplar–White Birch (north)
LOWLAND MIXEDWOODS	• Located in floodplain and adjacent to riparian woodlands • Organic surface soil layer is common • Minimal understory vegetation prone to flooding and windthrow	• Cedar–Tamarack–Balsam Fir–Birch–Poplar (north and south) • Red Maple–Hemlock–White Pine–Yellow Birch (south)

Riparian forests store floodwaters and runoff – helping watercourses maintain flow throughout the year.

BMPs FOR RIPARIAN WOODLANDS

✔ Develop a plan for your riparian woodland. Inventory your forest resources and site limitations. Seek technical assistance where necessary. Schedule your activities according to your goals and season. Harvest with water quality in mind, and monitor sensitive areas.

✔ Leave it! 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.

In the treed buffer design, each zone has its distinct place and function. The trees in Zone 1 shade the water and stabilize the banks. Zone 2 soils and vegetation help to filter sediments, and promote infiltration and floodwater storage. Zone 3 filters cropland runoff and serves as a field buffer.

✔ Don't use them as dumps. Riparian woodlands can be inaccessible or hidden from view. In the past, they've been used as "ideal" dump sites. 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) can work for other species (e.g., Pine and Spruce) 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.

Conifers in riparian woodlands provide excellent cover for wildlife.

Set landings away from water to minimize the impact of logging operations.

- ✔ 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
- ✔ Set landings as far away as possible from water.
- ✔ Create crossings to eliminate any sediment loadings and washouts. Use cull trees as 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 away from water.
- ✔ Time operations to minimize wildlife disturbance (e.g., avoid nesting periods).
- ✔ Leave 4–6 snag trees per hectare (10–15 ac) and fallen logs for wildlife habitat.
- ✔ Maintain 1–2 cavity trees per hectare (2–5 ac) in remaining stand for cavity-dwelling birds and mammals.
- ✔ Leave rockpiles alone and create piles of treetops for cover.
- ✔ Create openings or plant nut (e.g., Beech, Oak, Hickory) and catkin trees (e.g., Birch) in upland areas.
- ✔ Plant additional trees on adjacent fragile and marginal lands to expand the width and area of the riparian woodland.
- ✔ Keep treed fencerows and plant windbreaks to connect other natural areas (e.g., woodlands, wetlands and ponds) to riparian woodland area.

Keep cavity trees for nesting wildlife in riparian forests.

Use treed buffer strips and treed fencerows to connect woodlots with wetlands and riparian areas.

WOODED WETLANDS

Wetlands can be found throughout farm landscapes in Ontario. In the south, wetlands are most often marshes and swamps. In the north, wetlands tend to be bogs and to a lesser extent fens.

Wetlands store water, keep water tables high, remove nutrients and provide habitat. They should be protected and managed with extreme caution.

Shallow water tables and flooding lead to an accumulation of downed and dead woody materials on the forest floor. This is critical habitat for amphibians and reptiles.

BMPs FOR WOODED WETLANDS

Before you undertake any work, familiarize yourself with four key principles for managing wooded wetlands.

1. Avoid physical damage to soils, waterways and vegetation.
2. Prevent any deleterious substances from entering the wetland.
3. Seek approvals and permits if you plan any changes.
4. Harvest on a sustainable basis to ensure a long-term supply with minimal impact on habitat.

Riparian wetlands store and release floodwaters.

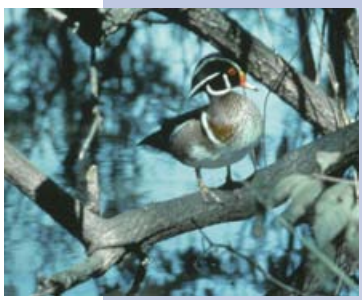
Wetland management

✔ Exclude livestock from wetlands. If drinking water is needed, install an alternative watering device. Don't draw down water during critical times, such as nesting.

✔ Leave it alone: just keeping it is a BMP.

✔ Establish upland buffers: wider is better. A 16-metre (52-ft) buffer is optimal.

✔ Don't dump in wetlands.



Riparian swamps are important nesting habitat for waterfowl.

Wetland timber harvests

✔ Plan your operation:

- ▶ do an inventory, and identify sensitive features
- ▶ seek professional assistance for your timber harvest
- ▶ time operation to reduce impact.

✔ Minimize area and duration of disturbance.

✔ Avoid working during high-flow periods.

✔ Use 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.

✔ Do not create conditions that impede wildlife movement.

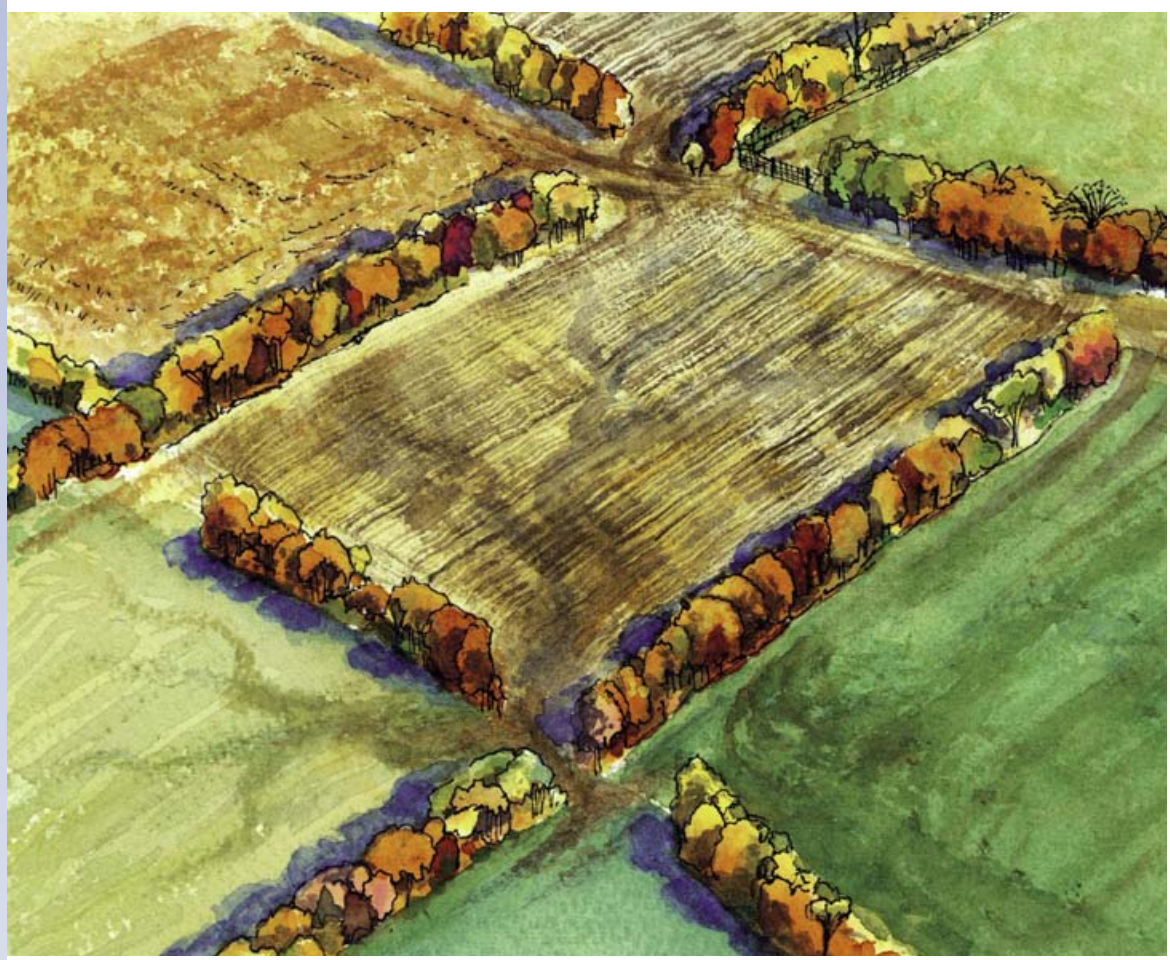
✔ Do not clearcut vegetation. Use a management-free zone around sensitive areas.

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

Many Deer yards in southern Ontario are found in riparian swamps.

TREED FENCEROWS

Field management in Ontario has resulted in the removal of many kilometres of treed fencerows. While their removal made possible the use of larger farm machinery and extended crop area, the many benefits of treed fencerows were lost.



Treed fencerows are prevalent in eastern and central Ontario. Here, producers use them for fuelwood, maple syrup production, and as protection for grazing livestock.

Treed fencerows can be managed for wind protection and fuelwood.

Treed fencerows are common in certain parts of the province. Most were established naturally, and contain species of trees and shrubs that can contribute to the productivity, diversity and income of farms.

Treed fencerows commonly follow the boundaries of farm fields, roadsides and property boundaries. Open spaces within the fencerow can be planted with local trees and shrubs.

They serve as natural shelterbelts and windbreaks by reducing the effects of wind erosion, water erosion and runoff. Treed fencerows are also important travel corridors for wildlife: the wider and more diverse the better. Often overlooked, treed fencerows can produce woodland crops and products for sale or in-kind use on the farm. Treed fencerows are a source of:

- fuelwood
- timber
- fenceposts
- maple syrup
- shelter for livestock
- habitat for insect-eating birds
- nectar and habitat for pollinators.

Roadside Maples and other hardwoods can still be seen in rural Ontario.

BMPs FOR TREED FENCEROWS

- ✔ Prune branches that interfere with field operations, but keep fencerow area as wide as possible.
- ✔ Select and prune crop trees.
- ✔ Remove dead limbs and thin poor quality trees for fuelwood. Leave roost trees for raptors.
- ✔ Manage coppices from stumps.
- ✔ Consider pollard trees for sustained fuelwood harvests.
- ✔ Promote sugar-producing trees if Maple is dominant species.
- ✔ Plant or transplant valuable hardwoods for timber production.
- ✔ Plant Sugar and Black Maples for sugar production.
- ✔ Encourage Basswood and other important nectar species.
- ✔ Leave woody plants, as well as snags, downed and dead wood, cavities and mast trees. They're all important for wildlife.
- ✔ Leave piles of stones and branches for wildlife.

Treed fencerows provide critical habitat for beneficial wildlife such as Weasels and other predators.