Shoreline Habitat Creation Manual

Protecting our Biodiversity

The Natural Edge

Restoring the Ribbon of Life

Habitat Creation Manual

This manual is intended for landowners wanting to ecologically enhance their property and create essential habitat for fish and wildlife species.

With an increase in waterfront development and the removal of vegetation, many of our fish and wildlife species have experienced a loss of critical habitat. Unfortunately, many of our native wildlife populations are declining because of this habitat loss. However, there are many ways that waterfront property owners can preserve or create habitat to co-exist with fish and wildlife species.

Shoreline ecosystems, or riparian zones, are especially valuable habitat for terrestrial and aquatic wildlife. The shoreline area includes the first 30 metres of land around a lake or river. It is considered the "ribbon of life" because it supports 70% of land-based wildlife and 90% of aquatic species at some point in their lifetime. Native wildlife like birds, mammals, insects, fish, reptiles, and amphibians depend on shoreline habitat for food, water, shelter, and breeding.

Shoreline Habitat

There are many ways landowners can help to protect shoreline habitat for fish, amphibians, birds, and mammals.

1. Plant native trees and shrubs along your shoreline.

As plants along the shoreline grow, the overhanging and fallen branches create habitat which small fish use for protection from predators. The shaded area also protects them from the sun and any birds that may be preying overhead. As well, overhanging plants provide a source of food as insects will often fall into the water for fish to eat.

Choosing native shrubs that produce flowers and berries are great for creating habitat for birds, pollinators, and small mammals as it provides them with a reliable source of food throughout the year (Black Elderberry pictured, right).

See page 7 for instructions on how to naturalize your shoreline.

2. Leave aquatic vegetation.

Aquatic vegetation, such as Canadian Waterweed and Yellow Water Lilies, are another key habitat feature for aquatic life. Unfortunately, many shoreline landowners remove these "weeds" to increase their swimming area, and in the process inadvertently destroy habitat. In addition, when native plants are removed, the area becomes available for harmful invasive plants like Eurasian Milfoil. Invasive species can have additional negative impacts on native species, are more aggressive and unpleasant for people, and are often more challenging to manage or remove. The best way to access your lake is to clear a small area through the existing vegetation to get to deep water and leave the rest untouched.

3. Leave downed trees. Trees and branches that have fallen into the water or along the shoreline should be left alone.

In addition to creating cover for small fish, these logs create an easy transition from land to water for frogs and turtles. Turtles often bask on downed trees to warm themselves. Any insects that were living on the tree before it fell are now a source of food. Waterfowl like ducks or herons use partially submerged logs as resting spots and food sources.

4. Create a no-mowing zone. Manicured lawns are very poor habitat which are typically avoided by wildlife. The exception is Canadian Geese who prefer open visibility and easy access to water to escape predators.

In addition to being poor habitat, turf grass has a very short root system and does not bind to soil as well as trees and shrubs, causing increased risk of erosion and surface runoff. Surface runoff contains pollutants and nutrients that negatively affect water quality and promotes the growth of unwanted aquatic vegetation and algae. By creating a no-mow zone and allowing the shoreline to naturalize, you not only begin to create vital wildlife habitat but also provide a buffer to filter out pollutants and excess nutrients.

5. Brush piles.

Brush piles are an excellent way for landowners to create wildlife habitat while also re-purposing "waste". These structures can provide birds and small mammals shelter from predators or a potential place to nest or hibernate. Brush piles can be constructed using the cut waste materials from pruning, trail clearing, or woodlot management. Pile the brush waist-high on a stump, log, or boulder so that there are open spaces between the branches. For added benefit, train climbing vines, such as Virginia Creeper, onto the brush pile.

6. Leave dead standing trees and woody debris in place.

Cavity trees: Cavity trees are trees with holes in the trunk or main branches. Many species of birds and mammals depend on these trees for nesting, roosting, storing food, rearing young, escaping predators, feeding, and hibernating. As long as these trees are not a hazard to your property or yourself, it is best to leave cavity trees and dead standing trees in place.

Fallen terrestrial logs and fallen leaves: Fallen logs are essential for species like moles, woodpeckers, toads, and many insects. As the log rots, reptiles and amphibians lay their eggs in the moist wood. In the fall, the leaves that drop off nearby trees add insulation and shelter before the winter, as well as decaying organic matter and nutrients to the soil.

7. Create pathways. Often when people do not have defined pathways, they take the shortest route to the water, which is usually a direct downward route. This encourages erosion since foot traffic loosens the soil. A better option is to have a defined pathway that follows the contours of the slope in an "S" curve pattern. You can also cover pathways with wood chips, mulch, or pine needles.

8. Reduce light pollution. Bright lights from your property can affect wildlife by changing foraging, mating, hibernation, and migration patterns. Light pollution occurs when excessive amounts of undirected light are present or when light levels exceed your viewing needs, creating glare and dark shadows.

Reduce undirected lighting by placing lights closer to their intended location, such as low-voltage garden path lights. Avoid letting light shine upwards or sideways by using shielded fixtures and aiming the light where you need it. You can also use motion detectors that turn lights on and off as needed.

PLANT NATIVE VEGETATION

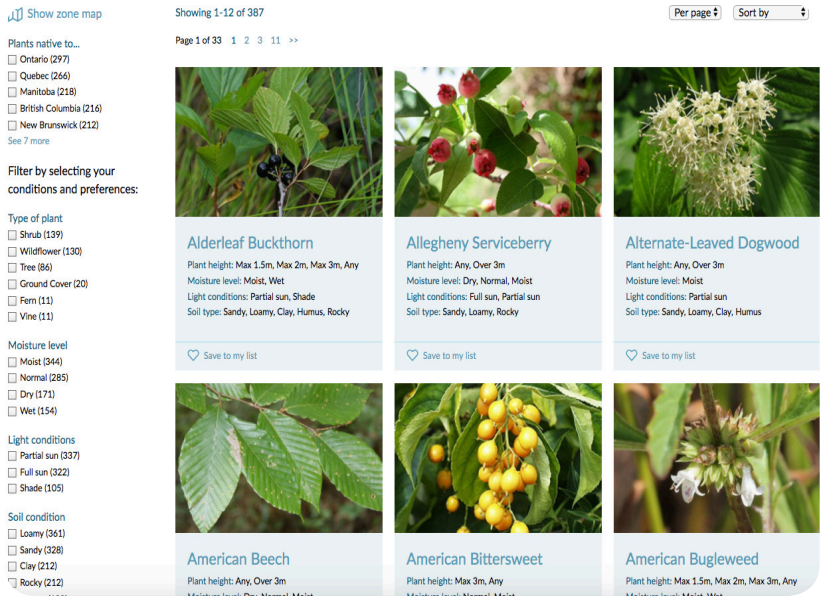
The best way to create wildlife habitat is to plant native trees, shrubs, and wildflowers along your shoreline.

Plants directly benefit wildlife by providing food like nectar and berries, as well as shelter. They also have indirect benefits for wildlife species by filtering contaminants, improving water quality, reducing erosion, and providing shade for fish and amphibians. By planting native vegetation, you can directly benefit wildlife while protecting your property from erosion. Native vegetation has an extensive root system that holds soil in place, preventing shorelines from washing away.

Planting native species means less maintenance as plants are suited to local conditions, reproduce on their own, and require no fertilizer or pesticides. If you have already participated in the Natural Edge Program and have done shoreline planting, you have taken the first and most important step to restoring wildlife habitat!

Choosing Plants

When choosing appropriate plants for your shoreline it is important to consider your site conditions, preferences, and goals of the planting. If waterfront views are important to you, several plant options available are low growing but will also provide wildlife habitat. Sunlight availability, soil type, and moisture levels are all important factors of your site to consider as ideal growing conditions vary depending on plant species. Find native plants that are suitable to your shoreline conditions by referencing the Natural Edge Native Plant Database (https://naturaledge.watersheds.ca/plant-database/).



Trees, shrubs, and wildflowers each have different benefits to your property and the wildlife species around it. For example, trees and shrubs have the largest root systems for preventing erosion, and provide nesting habitat and a food source for birds and small mammals. Wildflowers are highly beneficial for pollinator species like bees and butterflies. Plant a combination of trees, shrubs, and wildflowers for more benefits to wildlife.

How to Plant

- Dig a hole about an inch or two wider and deeper than the pot (enough space for the roots to fit without damaging them).
- Gently remove the plant from the pot by lifting the root ball and stem base. Squeeze the pot to loosen up the soil, or simply cut the pot open.
- Once the plant is out of the pot, use your fingers to massage the root ball and loosen up the soil. This will allow the roots to spread once in the ground. Do not remove all the soil off the roots because too much air exposure can stress the plant.
- Place the root ball into the center of the hole, making sure the roots are pointing down and the stem is straight up. If planting bare root stocks, be sure not to bend or "J" root the plants as this will cause stress.
- Fill the hole with soil making sure that the soil is level with the root crown (the colour change where the trunk meets the root). Firmly press the soil down around the base of the plant to remove air pockets in the hole and top up with soil, if needed.
- Add a layer of natural mulch around wildflowers and place coconut fibre mats around trees and shrubs (pictured, right).

- Mulch can also be used around trees and shrubs. Place it in a circular "doughnut" shape. Mulch should be thicker towards the outer edge of the circle and thinner in the centre to prevent the plant stem from rotting.
- Finally, water plants generously right after planting. This will further remove air pockets in the hole and give each plant a good start to grow.

Habitat Structures

General disclaimer: the need for permits for work in or near water and the governing body responsible for those permits varies from region to region. Be sure to check with your local municipality, conservation authority (if applicable), appropriate provincial ministry and/or appropriate federal department for the permits to do work in or around water.

Bat Boxes: Bat species are great for reducing pests since they consume their own body weight in insects every night - the more bats you have on your property, the fewer mosquitos you will have! Unfortunately, bat populations are declining as a result of habitat loss. Installing a bat box will provide a safe shelter for females to raise their young, helping local bat populations recover.

Turtle Nest Protection Cage: Many turtle species are considered at-risk due to habitat loss, development of wetlands, road mortality, and low survival rates of eggs. These reptiles are important for their role in maintaining wetlands, cleaning freshwater habitat, and spreading seeds. To help create turtle habitat, you can plant native vegetation, leave aquatic logs, and leave natural upland areas with sand or gravel that may be a suitable nesting area.

If you see that turtles have laid eggs on your property, place a turtle egg protection cage around the area to prevent other animals like raccoons or foxes from eating them before they hatch. If your cage does not have openings, make sure you remove the cage before the eggs hatch so the hatchlings can make it to the water.

You can also install a small ramp on your dock so turtles can access this prime sun basking area. If you have a hardened retaining wall or shoreline structure that may impede wildlife, consider creating a ramp or a more gradual slope in a few sections to act as a ladder for wildlife to go to and from the water.

Bird Houses

Bird houses are an easy way you can help protect and enjoy your local bird populations. A successful bird house is one that is well constructed.

Birds are ecologically important because of their role in controlling pests and insects, spreading seeds, and pollinating. By simply building and/or installing a birdhouse, you can create habitat for local birds to raise their young. Birdhouses can be installed at any height on posts or in trees. Here are a few key points to consider when building your own:

1.) Untreated wood. Treated wood can leach toxins into birds and their eggs. Therefore, natural wood like cedar or pine is best.

2.) Sloped, overhanging roof. The sloped roof allows rain to runoff while the overhang prevents water from entering the house. It should overhang 2 inches off the sides and even more along the front.

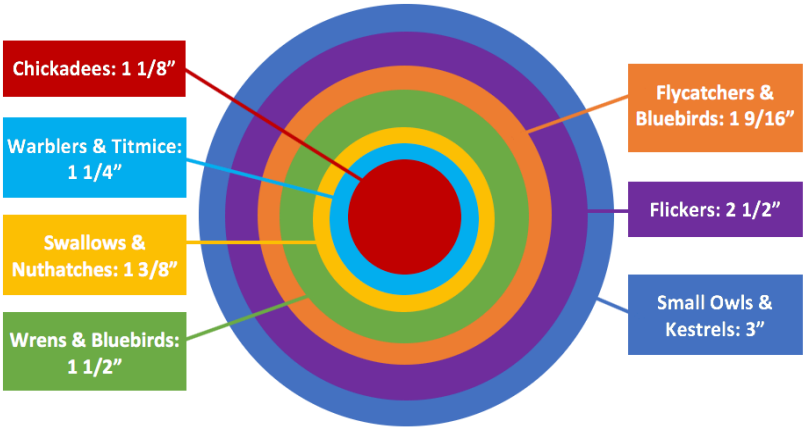
3.) Raised floor. The floor should be raised a 1/4 inch above the sides of the box. It should also have four drainage holes that are 1/4 inch in diameter to let any possible water drain out and keep the nest dry.

4.) Ventilation holes. Bird houses can get hot, therefore two holes, 5/8 inch in diameter should be drilled at the top of the box on either side. This allows for the best exchange of hot and cold air in the box.

5.) Fledgling-friendly. Young birds need a rough surface to grab onto when climbing out of the bird house, therefore a wire mesh should be place on the inside of the wood.

6.) Hinged roof or front. You should build your bird house with either a hinged roof or front. This allows you to open the bird house and clean out old nests, allowing new birds to move in.

7.) The right hole. Birds can be picky when choosing a house as different species prefer different sized holes. The diameters are:



Duck Nest Box

Many duck species, like Wood ducks, Mergansers, and Buffleheads, are cavity nesters, meaning they use dead standing trees and cavity trees to build shelter for their young. Habitat loss and removal of dead standing trees on shorelines is threatening these areas. By building and installing a duck nest box, you can help replace these cavity trees by providing a secure place for duck species to lay their eggs.

Field Notes

The NATURAL Edge
Restoring the Ribbon of Life

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CANADA

Watersheds Canada is a federally incorporated non-profit organization and registered Canadian charity. We are committed to providing programs in communities across the country to engage and help shoreline owners enhance and protect the health of lakes and rivers.

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