



Shoreland Restoration

Why restore your shoreline?

The vegetated area of land adjacent to lakes and rivers is often referred to as a shoreland or riparian buffer zone. This land serves as a bridge between aquatic and terrestrial ecosystems and performs many important functions. Studies performed by scientists and conservation groups across the country have shown that these vegetated areas protect water quality, serve as wildlife habitat and corridors and provide valuable social functions. These attributes take on greater importance as lakeshore and riverfront development increases. Increasingly, State and local ordinances are requiring that these vegetated tracts of land be preserved or restored with appropriate native vegetation.

As these governmental units design ordinances, the question of how wide riparian buffer zones should be often arises. There is no one answer to this question though. The Wisconsin Shoreland Management Program defines what they call a vegetative protection area from the Ordinary High Water Mark extending inland 35 feet. Some counties, however, have passed shoreland zoning ordinances that require shoreland buffer zones wider than this. In Adams County, it is defined as 35 feet.

Protecting Water Quality: One of the primary functions of a shoreland buffer zone is filtration of sediments from run-off waters. The addition of sediments to a river or lake can block light needed for plant photosynthesis and can smother life on the bottom, such as fish eggs, clams and insects that are a crucial component of the food web. Sediments can carry contaminants such as phosphorous and agricultural chemicals to surface waters. Native vegetation within shoreland buffer zones act as a natural filter to trap sediments contained in run-off waters before they reach lakes and rivers.

In addition to filtering sediments, shoreland buffer zones also serve to stabilize shoreland banks, reducing bank erosion. The roots of the trees, shrubs and ground cover plants help stabilize shorelines. These roots add structure to soils as well as increase water infiltration. The net result is a reduction in bank erosion and an increase in water quality. The vegetation also aids in slowing down the speed of the run-off water. By slowing down the velocity of run-off water, the coarser sediment particles settle out on land prior to reaching the water.

Aquatic and wildlife habitat: Shoreland buffer zones enhance this habitat through the deposition of woody debris and leaf litter. For the avid fisherman, shoreland buffer zones extending into the water are great habitat for fish. Aquatic plants not only help stabilize bottom sediments, but along with woody debris, they provide structure for insects, snails and other critters that small fish feed on. Larger game fish, the ones we enjoy catching and eating, feed on the small fish and seek refuge amongst the underwater structure. Trees along the water's edge also help stabilize temperatures by shading shallow water and cooling headwaters. Increases in water temperature can have a major negative impact on fish populations.

Shoreland buffer areas are also an extremely important habitat for many species of wildlife. Birds, mammals, frogs, fish and turtles spend some or all of their life cycle in or around the water. Many

species depend on this habitat for breeding, foraging, hunting, fishing and other essential uses. Trees and shrubs along the shoreline are important feeding, nesting and perching areas for songbirds. Standing dead trees, or snags, also provide habitat for those species that use cavities for nesting, such as the woodpeckers, black-capped chickadees, nuthatches, wood ducks, mergansers, tree swallows and saw-whet owls. Fallen tree branches and logs provide habitat for fish, turtles and numerous other critters.

Social values: Shoreland buffer zones also serve several important cultural functions. These areas enhance the aesthetics of the lake environment by providing the natural appearance of lakeshores. Survey after survey shows that aesthetics rank as one of the top reasons people come to live and visit the northwoods region of Wisconsin. Shoreland buffer zones also provide visual and acoustic privacy for homeowners from other neighbors and from lake users. The vegetation screens noise from watercraft engines, lawn mowers, music and conversations. As a result, homeowners gain privacy from neighbors and lake users and lake users are able to enjoy the natural sites they desire to see.

WHAT CAN I DO?

Where to start: It is important to recognize that re-planting of a shoreland area is only necessary if native plants have been depleted or bare soils are exposed. If you are developing or building on a lot that has not yet been cleared, consider making the smallest possible footprint on the landscape. This can be done by minimizing the size of the area to be cleared, using green building techniques and by removing only single trees or branches to allow views of the lake. If native plants are missing from your shoreland, you can begin to restore your shoreland or portions of it by planting appropriate native species for your particular site.

Strategies for Restoration:

Passive Restoration: The easiest approach to restoring your shoreland is the “no-mow” approach. Simply allow the existing plants to grow in a strip along the shore. Seeds of native plants often lie dormant in the soil for years. By not mowing, you allow these seeds to germinate and grow. Removal of undesirable, aggressive plants in this zone will speed the process. A list of non-native invasive species is available in this site. Plants growing in this undisturbed buffer area will trap nutrients and other run-off from the upland and provide wildlife habitat.

Active Restoration: the second strategy for promoting a native shoreland buffer strip is to actively plant species that are appropriate to one’s particular shoreland site. Prior to planting, it is important to consider the following general steps. These will guide you through the planning phase and into planting and maintenance.

Before you break ground:

Examine existing conditions: This task involves examining your shoreland buffer area not only to map its current condition, but also with an eye to its future condition. Do you have any signs of erosion? Where are your house, pier and other structures located? Where are the existing trees, shrubs and other native plants? Where is the view you enjoy? Where is your access to the lake? These topics are addressed in detail, below.

1. Surface water run-off and discharge from gutters can carry soil particles (sediment) into the lake, uproot plants and destroy wildlife habitat.
 - Are any areas eroding or forming gullies in the buffer zone?
 - Are areas below gutters or downspouts showing signs of erosion?
 - Can you divert run-off into vegetation so that it seeps into the ground instead of running directly into the lake?

2. Plants that overhang the shoreline provide wildlife habitat and help moderate shallow water temperatures. Coarse woody debris (dead branches and logs) provide habitat for wildlife and can help divert run-off.
 - Do any shrubs or trees overhang the shoreline? Is coarse woody debris present on the shore or in the water?
3. Curving a path to the lakeshore increases the chance that surface water run-off will be intercepted and will percolate into the ground before it reaches the lake. This is particularly important on shores that slope to the lake. The path should be made of material(s) that allow rain and run-off to seep into the ground.
 - If the existing path is straight, can it be laid out in a curve to intercept run-off?
 - If the path's surface is made of impervious material, such as concrete or black-top, can it be changed to a surface such as gravel or woodchips that will allow rain and run-off to seep into the ground?
4. Existing native trees and shrubs in the buffer area can frame your view of the water. They will also screen the view of structures on your land when your property is seen from the lake. This will give you a sense of privacy and help your property blend in with the natural shoreline.
 - Where is your view of the lake?
 - Can you prune a few limbs from existing trees to frame your view, rather than cutting down trees or shrubs?
 - Can the access path also serve as the view of the water?
5. This is a good time to look critically at the number and position of structures within the shoreland buffer and make necessary changes.
 - Do structures along the shoreline and within the buffer meet current zoning regulations?
 - Can you move structures within the buffer to other areas of your property to restore a more natural shoreland view from the lake and conform to zoning regulations?
 - Where do you want to locate the pier?

Preparing a site plan: Keeping in mind the ordinances that regulate shoreland buffer areas, the location of existing native plants and identifying the site conditions you would like to change, you are now ready to plan your shoreland restoration design!

Concept Design: Sketch out the shoreland buffer area on paper. Include the house and any other structures; current view of the lake and lake access; existing native trees, shrubs, downed limbs, logs and snags; area(s) of bare ground and/or erosion; location of the pier and area(s) where non-native vegetation will be removed prior to restoration.

Determine Site Type/Choose Plants:

- Select native plantings that add a variety of vertical structure from low ground cover plants to shrubs and trees. All of these forest layers are extremely important for wildlife and for protecting water quality. Of course, it takes time for trees to reach sub-canopy or canopy height, but you can plan for the future now by incorporating them into your design.
- Include some pieces of coarse woody debris to add variety in landscape aesthetics and for wildlife habitat.
- Shape the access path to the lake in a curved design and cover it with material that will intercept and percolate run-off water, such as gravel or wood chips.
- Re-locate structures from the buffer area to enhance your efforts and meet current zoning codes.
- Control erosion directly into the lake and retain soils from burying desirable vegetation. A variety of options are available for use in different locations. Logs,

half-logs, bio-mat or bio-logs can be used to prevent erosion and stabilize soils. Silt fencing, straw bales and landscape cloth can be used to retain eroding soils. Once your plantings are established, their roots will also help prevent erosion.

General Guidelines to Remember when Planning your Restoration:

- Increase the amount of coarse woody debris in the aquatic, shoreline and upland zones in order to add aesthetic variety, provide wildlife resting, hiding and feeding habitat and create moist microsites for plants and animals.
- Plant trees and shrubs that will hang over the water's edge in order to provide wildlife habitat, provide a source for future coarse woody debris and create shade in the shallow water area.
- Increase the amount of shrub cover that is crucial to many songbirds, especially some of the warblers that are facing population declines. You can add shrubs in clusters, at varying distances between the shoreline and your house, in such a way that they frame, rather than block your view.
- Plant tree species so that you have a mix of coniferous and deciduous trees to help increase the diversity of the canopy along the shoreland. Such diversity is aesthetically pleasing and important for wildlife.

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