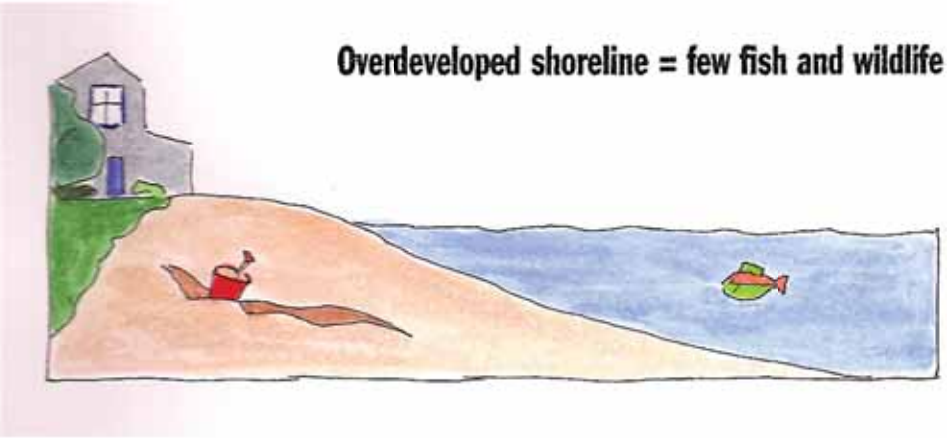
KANGAROO LAKE COMPREHENSIVE STUDY/MANAGEMENT PLAN

SHORELANDS, BUFFERS AND RESTORATION

The development of Wisconsin's shorelands has increased dramatically over the last century and with this increase in development, a decrease in water quality and wildlife habitat has occurred. Many people that move to, or build in, shoreland areas attempt to replicate the suburban landscapes they are accustomed to, by converting natural shoreland areas to the "neat and clean" appearance of manicured lawns and flowerbeds. The conversion of these areas immediately leads to destruction of habitat utilized by birds, mammals, reptiles, amphibians and insects. The maintenance of the newly created area helps to decrease water quality by considerably increasing inputs of phosphorus and sediments into the lake. The negative impact of human development does not stop at the shoreline. Removal of native plants from shallow, near-shore areas for boating and swimming activities destroys habitat used by fish, mammals, birds, insects, and amphibians, while leaving bottom and shoreline sediments vulnerable to wave action caused by boating and wind. Furthermore, the dumping of sand to create beach areas destroys spawning, cover and feeding areas utilized by aquatic wildlife. Yet, besides eliminating fish and wildlife habitat, this type of landscaping also creates problems for homeowners such as:

- Green water: A mowed lawn sends rain and snow runoff carrying fertilizers, pet waste, and lawn clippings to the water, where they fuel algae blooms that make swimming less enjoyable.
- More erosion: Water plants such as bulrushes, cattails and coontail soften the erosive effects of waves along shores. Removing these plants increases erosion.
- Nuisance wildlife problems: Manicured lawns attract geese, which are grazers. In one week, an adult goose can produce 15 pounds of slippery, smelly droppings.

Most species of fish and wildlife don't thrive along sandy swimming beaches or on mowed lawns. They do best within the tangles of aquatic plants ("weeds") and shoreline cover ("brush") that waterfront residents frequently remove.



BUFFER AREA

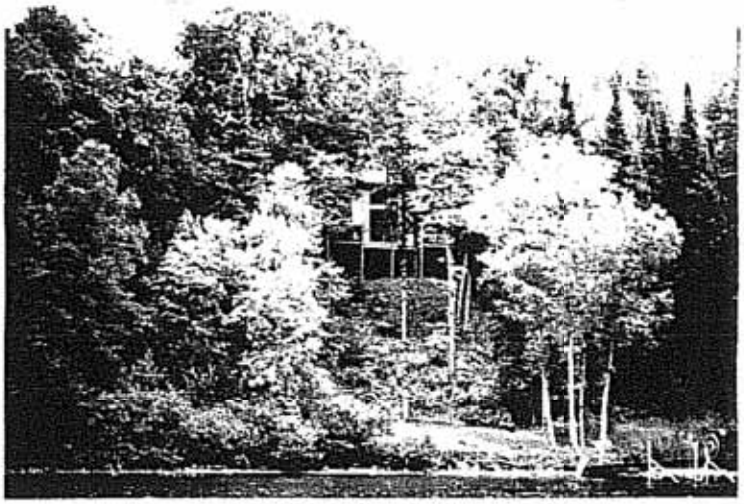
Near-shore vegetation provides habitat for many wildlife species. Waterfowl nest in shoreline grasses, while songbirds build their nests in trees and shrubs. Natural shorelines are wildlife highways, or travel corridors. Grasshoppers, ants and other insects that live in shoreline vegetation are blown into the water, where they are eaten by bluegills and other fish. The lack of shoreline grasses and fallen leaves was perceived as one of the reasons that the Eurasian Water Milfoil weevil (1999 project to see if weevil would eat the Eurasian Water Milfoil and naturally reproduce and attack the milfoil in future years) was less than successful. The required tall grasses and fallen leaves are necessary for the Eurasian Water Milfoil weevil to build its nest, reproduce and survive over winter.

Lightly developed shoreline = lots of fish and wildlife

By leaving a buffer area of natural vegetation along the shoreline, property owners can reduce erosion, help maintain water quality and provide habitat and travel corridors for wildlife. Have your lawn -- and wildlife, too. You don't need to give up your lawn and dock to create a natural, wildlife-friendly shoreland. If you have 100 feet of shoreline, consider reverting at least 70 feet back to its natural condition and keeping no more than 30 feet for a view corridor, boat dock and swimming area. Additionally, if you restore the last 25 feet or more down to the water to shrubs, trees, and natural grasses, you can still keep some lawn up near the house or cabin while helping frogs, ducks, songbirds, butterflies and other wildlife.

The width of the buffer strip depends upon the terrain. A significant body of research suggests that the wider the buffer the more wildlife habitat it can provide, especially for less common species. On a gentle slope, having at least 35 feet of natural vegetation between the water's edge and your mowed lawn will accommodate the needs of some shoreline wildlife. On steeper grades, leaving even more natural vegetation in place will stabilize soils and reduce the need for retaining walls or other erosion prevention. Trees and shrubs in the buffer strip can muffle noise from watercraft, provide increased privacy for residents and provide nesting areas for songbirds.

Avoid using pesticides or fertilizers in the buffer area, because harmful chemicals can leach into the water. Pesticides kill beneficial insects, living in shoreline vegetation, that are important foods for fish, birds and other wildlife. If you fertilize anywhere near the shore, the lake will be better off if you use phosphorus-free fertilizer. The middle digit (o) shows the amount of phosphorus in the fertilizer (x-o-x).



Kathleen Preece

An ideal buffer consists of shrubs, trees,wild flowers and native grasses. Healthy areas near the shore, typically contain a canopy layer of trees like cedar, birch, tamarack, sugar maple, pine, or oak, a mid-canopy layer of smaller or younger trees such as ironwood, hazels and a ground layer of shrubs, ferns, forbs and grasses. Beneficial aquatic plants include bulrushes, wild rice, arrowhead, cattails and bur reeds. If is important to note that any buffer is better than no buffer -- and all buffers may not contain all elements.

WOODY COVER

Because most Wisconsin lakes and rivers are surrounded by trees and shrubs, storms and winds often blow woody "debris" (i.e., branches, limbs, and trees) into the water. This fallen wood is more than just debris; it forms critical habitat for tiny aquatic organisms that feed bluegills, turtles, crayfish and other critters. Water insects such as mayflies graze on the algae that grow on decomposing wood. Dragonfly nymphs hunt for prey among the stems and branches. Largemouth and smallmouth bass often find food, shelter, or nesting habitat among these fallen trees. Above water, a fallen tree is like a dock for wildlife. Ducks and turtles lounge and sun themselves on the trunk.

WHEN IS THE LAST TIME YOU SAW A TURTLE IN THE SOUTH BASIN OF THE LAKE, OTHER THAN THE SLOUGH/BAYOU ???

Dead trees that remain along the shoreline are used as perches by belted kingfishers, ospreys and songbirds.

Many waterfront residents consider this woody cover unsightly and remove it from their shoreline. In northern Wisconsin, undeveloped lakeshores contain one log for every five feet of shoreline, while tree-falls may entirely disappear on highly developed lakes. Yet this takes away hiding and feeding areas for many fish and wildlife species. Unless the fallen tree is a hazard to navigation or swimming, consider leaving it in the water to provide fishing opportunities, wildlife habitat, and wildlife observation.

BOTTOM MATERIALS

Local geography and geology determine what natural materials exist on lakebeds, riverbeds and shorelines. Bottom matter called substrate, is used by fish and other aquatic life. Walleyes spawn on the clean gravel of wave-swept shorelines. Mucky bottoms support insects and other invertebrates that provide food for fish and wildlife. Crayfish, smallmouth bass and other species hide and forage among rocks.

Pure sand is the least ecologically productive bottom substrate. Yet waterfront owners frequently alter the shore and bottom by dumping sand to improve a swimming area. Creating sand beaches on soft bottoms is expensive and covering rock-rubble bottoms with sand destroys fish spawning areas. Before creating a beach, waterfront owners should know that their shoreline alteration will take away fish and wildlife habitat from the entire shoreland ecosystem and will require a permit from the Department of Natural Resources (DNR).

REVIVING/RESTORING THE SHORE

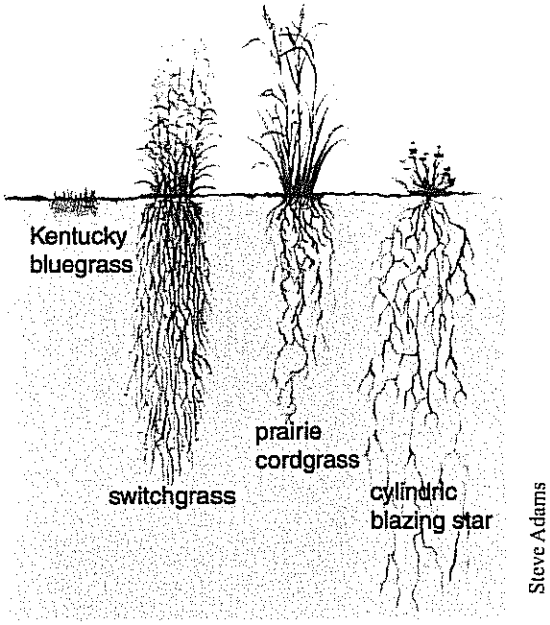
Restoring all the functions of natural buffers takes time and effort. By far the best solution is to protect natural shorelands whenever possible. This includes leaving logs and beneficial vegetation in the water, as well as protecting parts of upland areas near the shore from mowing and other continuous disturbances that compact soil or eliminate ground cover plants, shrubs and trees.

When looking to create a view of the lake, consider only selective removal of branches, trees, shrubs and ground cover. A path with an opening for your dock or swimming area may be all that you need. As times change and your use of the lake evolves, vegetation could be allowed to spread and grow on its own. This option requires less maintenance and provides additional habitat benefits. In the water, aquatic vegetation can quickly recolonize sites previously cleared or disturbed once the disturbance is eliminated or reduced. Consider docking or boating activities that allow portions of the shallow water areas to remain relatively undisturbed.

NO-MOW ZONE

CREATING A BUFFER ZONE BY SIMPLY NOT MOWING ALONG THE SHORELINE IS THE EASIEST AND LEAST EXPENSIVE METHOD. OVER TIME, SHRUBS, TREES AND WILD FLOWERS WILL NATURALLY FILL IN AND PROVIDE A MORE DIVERSE PLANT COVER.

Bill Bartodziej

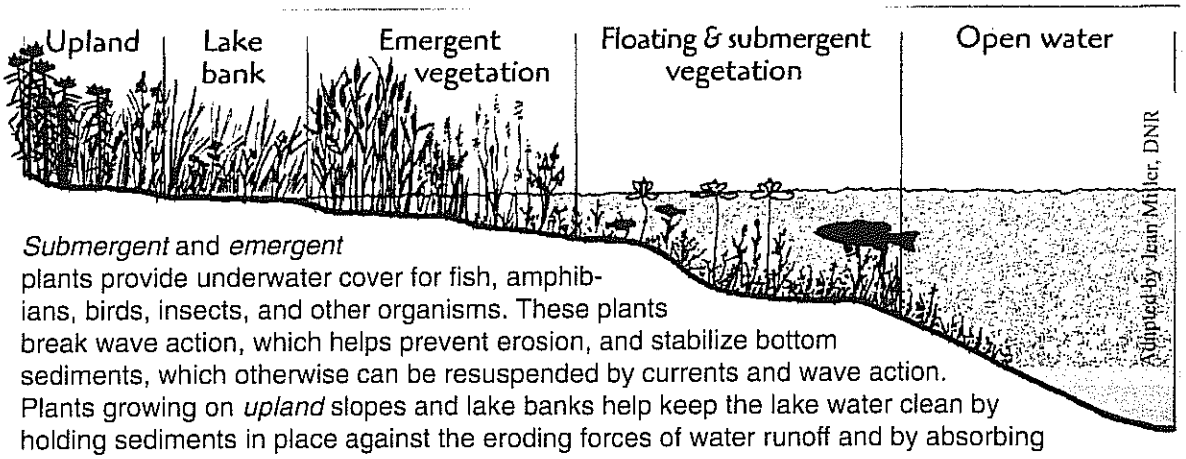


Steve Adams

The picture contrasts the shallow (2-3 inches) roots of Kentucky bluegrass to the deep (3-5 feet) and dense roots of native grasses. The root systems of native grasses may be effective for preventing erosion.

KEEP IT IN THE FAMILY

Native wild flowers, ground covers and trees along the shore add seasonal color and diversity. Native vegetation, once established, will discourage undesirable exotic species such as purple loosestrife from over-taking your property and can deter Canada geese from loitering on your lawn. Properly placed, native plants will frame views, muffle the noise of lake activities, protect water quality and wildlife and restore the natural beauty of native shorelands.



Submergent and *emergent* plants provide underwater cover for fish, amphibians, birds, insects, and other organisms. These plants break wave action, which helps prevent erosion, and stabilize bottom sediments, which otherwise can be resuspended by currents and wave action. Plants growing on *upland* slopes and lake banks help keep the lake water clean by holding sediments in place against the eroding forces of water runoff and by absorbing excess nutrients like phosphorous and nitrogen.

SUMMARY

Maintaining a healthy lake is far less costly than trying to fix a degraded one. If you are fortunate enough to have a natural shoreline, maintain or enhance it as a buffer zone and minimize erosion on the areas used for access or recreation. If your property lacks natural areas, plant native vegetation or let areas grow naturally. You will be surprised at the aesthetic appeal, as well as the energy and time you save, helping your lake help itself. Maintaining and restoring shoreland buffers is a voluntary decision. Local nurseries may be able to supply native plants. The KLA is looking into preparing a list of native plant sources and will make it available to you -- plus possibly having a demonstration. Let us know your thoughts.

Informational Sources:

- Kangaroo Lake Management Study; NES-Ecological Services, 2004
- The Shoreland Stewardship Series; Number 1, "A Fresh Look at Shoreland Restoration", UW-Extension, WI Lakes Partnership, WDNR, WI Association of Lakes, 2003
- The Water's Edge; WDNR, UW-Extension, 2004
- Shoreline Alterations: Natural Buffers and Landscaping; Minnesota DNR
- The Shoreland Stewardship Series; Number 2, "Protecting & Restoring Shorelands".