

Sustainable Lake Shorelines

Indiana Clean Lakes Program • Factsheet 09-01

I recently attended the 22nd Annual National Conference on Enhancing the States' Lake Management Programs. The theme this year was "On the Edge: Enhancing Ecological Integrity of Shorelines." I was asked to present a talk on shoreline abuse, the anti-management side of the conference's theme. I've seen way too much shoreline abuse in my 30 years here in Indiana, so it wasn't difficult to put together my talk.

Most of the conference presentations, however, described techniques and policies for improving shoreline management. This is such an important topic that I have decided to share with you things that I learned at the conference.

The Value of a Natural Shoreline

Lake shorelines covered with a rich layer of native vegetation provide a multitude of benefits for the lake. Deep-rooted native woody plants and grasses hold soil in place to prevent shoreline erosion. Kentucky bluegrass and other turf grasses have shallow roots that do not help stabilize shoreline soils (Figure 1). Furthermore, shoreline edge plants intercept runoff from lakefront properties that could contain nutrients and chemicals that would otherwise flow into the lake (Figure 2). Un-mowed native grasses and herbaceous plants along the shoreline discourage Canada geese from moving onto lakefront properties – and we all know what a mess these geese can make!

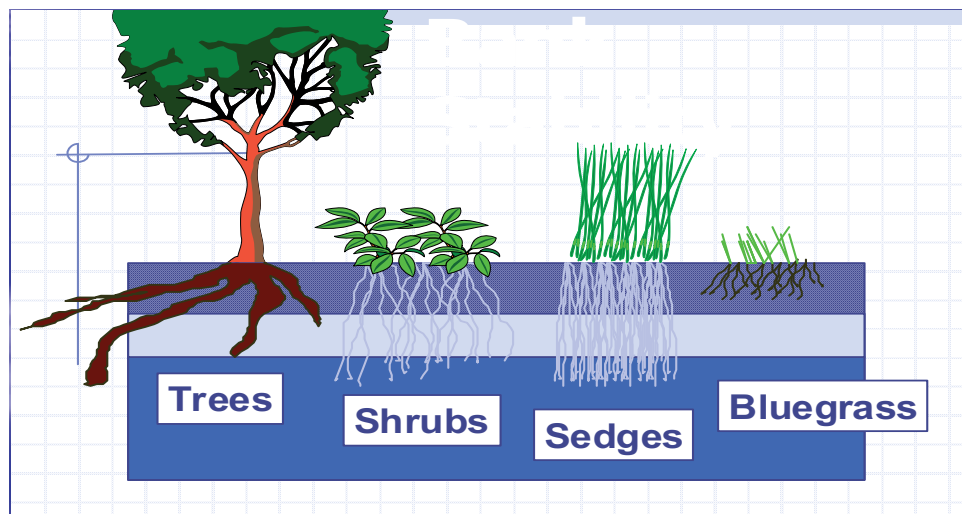


Figure 1. Native grasses, shrubs, and trees have deep roots that help stabilize lake shorelines. Turf grasses do not. Source: Mary Blickenderfer.

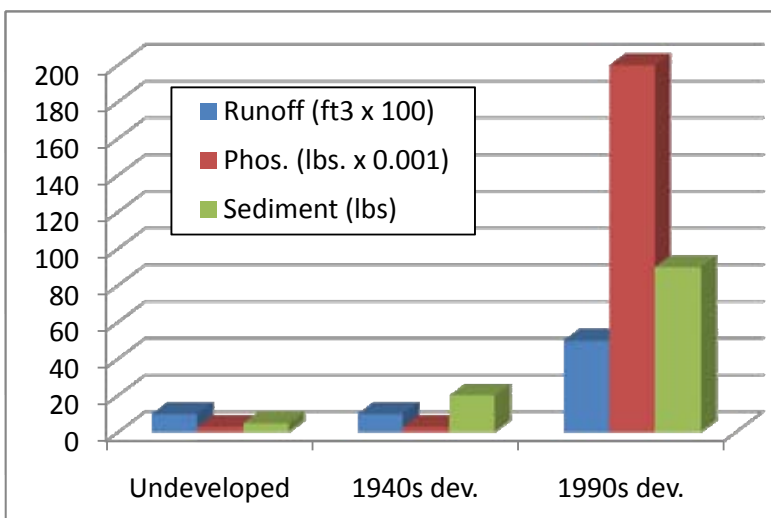


Figure 2. A modern, developed lakefront property contributes a significant amount of runoff, sediments, and nutrients to the lake. Adapted from: WI Lakes Partnership.

Maintaining trees along the lakefront provides shade for your property and for the near-shore waters. This shade is an important fish attractor. Recent doctoral research in Washington by Tessa Francis has shown that shoreline trees can provide an important source of food for fish. Terrestrial insects are very abundant in shoreline trees and a substantial number of these insects fall into the water, where they are eaten by fish. Terrestrial insects actually have more energy content than comparable aquatic insects. On lakes with intact shorelines, terrestrial insects accounted for up to 16 percent of the fishes' annual diet mass and 30 percent of the annual energy content. As a result, fish living in lakes having undisturbed trees along the shoreline grew faster and bigger than fish in lakes where homeowners had removed shoreline trees. Francis concludes that lakes with intact riparian habitats are more likely to support healthy fish populations than lakes that have been deforested by shoreline urbanization (Figure 3).

Lakefront trees also provide privacy for you and your family . . . in your yard and in your home. Remember, views go both ways. When you clear out vegetation to provide an unobstructed lake view from your home, you also create an unobstructed home view from anyone on the lake. I've noticed many Indiana lake homes with unobstructed views and loads of large windows with the blinds drawn to achieve privacy.

In summary, native shoreline plants and trees provide the following attributes:

1. Control shoreline erosion
2. Filter nutrient and chemical runoff
3. Discourage Canada geese
4. Provide shade that attracts fish
5. Provide insects to grow bigger fish
6. Provide privacy for you and your family

With all of these benefits, it sounds like a "no-brainer" for lakefront homeowners to keep and maintain a natural shoreline habit rich with trees (Figure 4).



Figure 3. This home's sterile shoreline provides virtually no habitat value.



Figure 4. A natural lake shoreline doesn't have to be dull or ugly. This shoreline provides many attributes and it is more sustainable. Source: Fred Rozumalski.

I've learned from my own conversations with lakefront homeowners and with colleagues that the reasons most often given for *not* maintaining a natural, sustainable shoreline are:

1. They like the neat, clean appearance (just as Fred Rozumalski stated).
2. They see shoreline erosion problems and conclude that only a bulkhead seawall can correct it.
3. They want to match what their neighbor has.
4. They are afraid of snakes in a natural shoreline

What Can Be Done?

Ask yourself why you were attracted to living on a lake in the first place? Was it the natural beauty? The serenity? The joy of watching birds and wildlife? The thrill of catching fish from your back yard? All of these are valuable benefits of living on the lake.

Why, then, do so many people who move to the lake take actions that destroy the very attributes that attracted them in the first place? They often re-create the landscape they had at their "city" home. But city landscapes are not suitable for the lakeshore.

Why People Clear the Shore

We know that lakes aren't immaculate – they are diverse. They function ecologically because they have a diverse variety of plants, insects, birds, wildlife, and fish that interact to form a functioning and sustainable ecosystem.

Yet the goal of many lakefront homeowners is to create an immaculate lakeshore – trimmed shrubs, trimmed fertilized lawns with no weeds, seawalls. Why?

Fred Rozumalski, a landscape architect/ecologist from Minnesota, explained that people create clean, immaculate yards because they think it shows that they care. If neighbors all keep clean, immaculate yards and you go "natural," it looks like you don't care. People want to show they care, so they succumb to what amounts to peer pressure . . . to blend in.

The word “sustainability” is now common in our language as we try to find more sustainable sources of energy, sustainable agriculture, sustainable forests, etc. A sustainable shoreline should also be a societal goal. Natural shorelines are an important part of a sustainable lake ecosystem. They provide many benefits to keep lakes healthy and clean.

Turf grass lawns aren’t sustainable without significant work and money. Wouldn’t you rather spend time relaxing at your lakefront home rather than mowing the lawn? If the only time you use your lawn is to mow it – you don’t need it!

If your lakefront yard is all turf grass, you can gradually reduce the size of the lawn by adding shrubs and trees, and by planting native grasses along the lakeshore. These initial steps will reduce mowing needs and will begin to provide the positive attributes discussed previously. With time, more native plantings and less lawn will complete the transition (Figure 5).

The key here is using native plants. Be careful to avoid planting non-native species that can become invasive. Unfortunately, potentially invasive plants are available at many local nurseries and greenhouses.

If native plantings look too “messy” for your individual tastes, frame them with neatness elements such as a low retaining wall, some mowed lawn, a fence, or a stone walkway.

Jeff Schloss of the University of New Hampshire identifies ten design principles to protect and improve shoreland property. Consider these principles as you make plans to create an ecologically sustainable shoreland zone at your lake home (Figure 6).

1. Protect and improve soil quality
2. Include as many vegetative layers as possible
3. Select the right plant for the right place for the right reason
4. Use plants to reduce the force and slow the flow of water
5. Maximize the amount of vegetative buffers
6. Minimize areas of impermeable surface
7. Rethink the size (and location) of your lawn
8. Design for low input
9. Design a low-maintenance landscape
10. Remember your actions on land directly affect the water body.

Resources

There are many resources available to help homeowners transform their lakefronts into ecologically sustainable areas that can help improve their lake’s quality. More are on the way.



Figure 5. A turf grass lawn with little habitat value can be transformed in stages to a more ecologically valuable and sustainable shoreline. Source: *Lakescaping for Wildlife and Water Quality*.

- The book *Lakescaping for Wildlife and Water Quality*, published by the Minnesota Department of Natural Resources, is well-illustrated and contains a wealth of useful information. It is available online at: http://www.dnr.state.mn.us/eco/pubs_restoration.html.
- The Indiana DNR Lake and River Enhancement Program is working to create an Indiana Addendum to this Minnesota book. This addendum will contain shoreland

restoration plant lists specific to Indiana. It should be completed in fall 2009. IDNR will conduct a workshop on August 1 at the Merry Lea Environmental Learning Center of Goshen College in Noble County. Contact Angela Sturdevant of IDNR at: (317) 234-4906 or e-mail her at: asturdevant@dnr.IN.gov.

- The Wisconsin DNR has several useful publications specific to Wisconsin but they can be a good place to start. The *Wisconsin Biology Technical Note 1* gives information about making a plan, example plants to use, and maintenance tips. See: <ftp://ftp-fc.sc.egov.usda.gov/WI/technotes/biology-tn1.pdf>.



Figure 6. A shoreline restoration buffer site on Found Lake, WI with newly planted woody material. Source: Patrick Goggin, WI Lakes Partnership.

The Indiana Clean Lakes Program is a cooperative effort of

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