

## Stabilization Measures for an Eroding Lakeshore

5/2007

Are you experiencing new erosion on your shoreline? Stabilizing erosion can be expensive if done with a constructed wall or the use of riprap. In many locations there are simpler, cheaper and more lake-friendly to the lake environment alternatives. These are presented below in rough order from cheapest to most expensive, with an eye to maintaining or recreating a naturally vegetated shore for its habitat and scenic benefits. Enjoy the lake and know you are helping it at the same time!

**A naturally vegetated shore is the best insurance against erosion.** Therefore maintaining or reestablishing vegetation is the optimum approach. To do so:

1. Cease lawn mowing on the lake's bank. Leave at least 10-15 feet wide strip along the shore to "go wild." Add native trees or shrubs in to the zone, or let them seed themselves in. It is the mixture of types of plants (trees, shrubs, groundcover) that provide stability with root masses; grass alone is easily undermined.



2. Minimize your access points to the lake or dock so that other stretches of your shoreline can be allowed to revert to a more native vegetation scheme. By leaving natural sections of the shore you increase the fish habitat values near your property.

3. It's OK to prune lower branches and thin out shrubs to open up or maintain partial views, but it is important not to eliminate them all together. Allowing some small trees to grow is recommended as eventually the large ones will need "replacing." The spongy "duff" layer of decomposing leaves under trees and shrubs is also a very important aspect of filtering uphill runoff, and is why lawns don't work as well as the natural forest floor.



4. Shallow water emergent or floating leaved plants help to dampen wave energy, so let them continue to grow along your shore if they are there already. Limit the removal of aquatic plants to those directly in the way of a swimming and docking area.



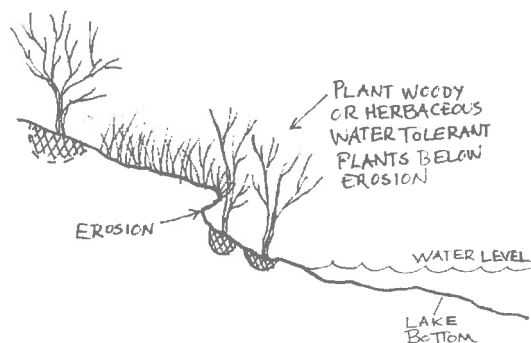
Where erosion has already occurred, consider methods that will allow you to mimic a natural shore, rather than building retaining walls. Walls are expensive to build, offer no lake habitat or ecological benefits, are a barrier to wildlife, and will require replacement over time.

1. Most undeveloped natural shores have a line of cobble and rocks right at waters edge. If rocks are already present at the waters edge, leave them there. Rocks in the 6-12 inch size are typically better than larger ones because large rocks tend to just transfer the wave energy elsewhere. It is important to have vegetation overhanging the rocks to keep the sun from heating up the rocks and the water.



2. Reslope, if necessary to smooth erosion gullies, and replant native species above the rock toe.\* A 2:1 slope (2 feet horizontal to 1 foot vertical) or less can generally be stabilized with just vegetation. Use erosion control blanket to cover bare soil while herbaceous vegetation becomes established.

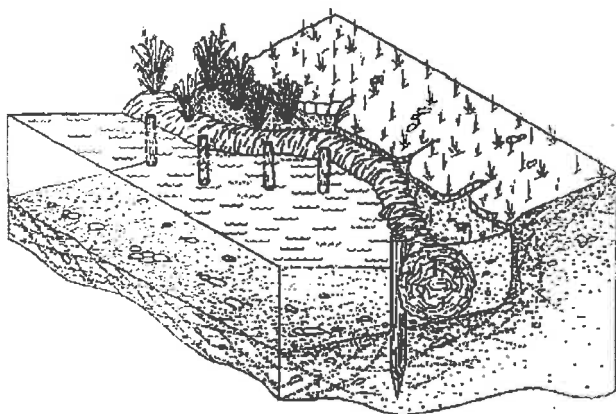
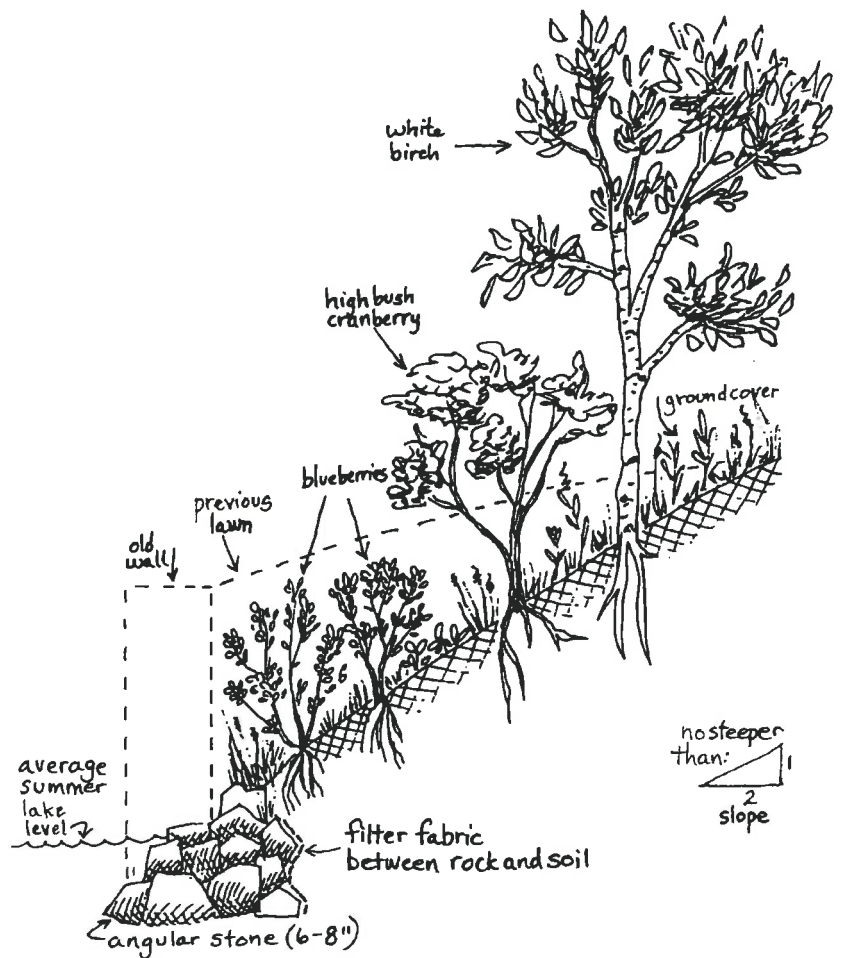
3. Plant water-loving plants just below the eroding area.\* These will dampen the wave energy and trap eroding soil from above. Unless the erosion is severe, it may eventually self-stabilize. Choose quick growing native species and stay away from invasive species.



4. A single row of medium sized rocks (less than 1 foot high) might be effective at the waters edge in an area that receives a lot of use and foot traffic, such as where you access the lake or a dock.\* It is important particularly where the groundcover is grass, as grass is shallow-rooted and easily undercut by wave erosion. Install filter fabric behind the rocks so that fine soils do not wash out from behind the rocks.



5. If the area is undergoing serious erosion, it may be necessary to excavate in order to establish a rock toe.\* Install filter fabric against the back side of the rocks to prevent soil from washing out from behind the rocks. The rock toe need only extend about 6-9 inches above the water level. Using this approach allows you to mimic and reestablish a naturally vegetated shore.



6. An alternative to rock is the use of a coir fiber roll.\* It is pinned securely to the soil, at or above the water line. If this is used, the erosion occurring can be allowed to self-stabilize as the fiber roll will catch the sediment and begin to establish a new stable slope. Native vegetation can be added to the base of the slope as the new slope establishes itself.

\* Note that any work (fill, construction, walls, moving stones, rock toes etc.) beyond (i.e. lakeward) of the normal summer water level requires a Shoreland Encroachment Permit. Contact Steven Hanna at 241-3791 for information.

For more information or to obtain other topics in the Lake Protection Series, contact the Lakes and Ponds Section at (802) 241-3777 or visit [www.vtwaterquality.org/lakes.htm](http://www.vtwaterquality.org/lakes.htm). Vermont Agency of Natural Resources, James H. Douglas, Governor, George Crombie, Secretary