



**“Nature is just enough; but men and women must comprehend and accept her suggestions.”**

-Antoinette Brown Blackwell

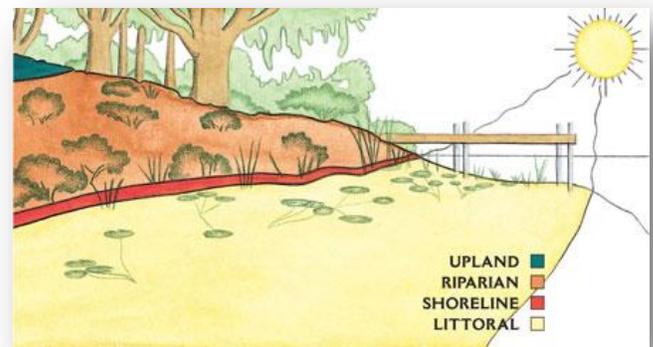
## Your Buffer Area – The Riparian & Upland Zones

The quiet spot by the lake enjoyed by many cottagers and waterfront residents is also the richest natural environment that most of us will ever come into contact with. This waterfront area is crucial to your lake's health, providing oxygen, food, cover and a barrier to contaminants, as well as a living retaining wall for the shoreline.

The natural shoreline has four components, beginning underwater and extending upland. These four components are the littoral zone, the shoreline, the riparian zone, and the upland zone, and each plays a critical role in keeping your lake healthy.

As important as these separate zones are however, it is vital to remember that the shoreline is a natural progression - each area transforms into the next in a gradual, almost seamless transition. Altering any portion of this region affects the whole, diminishing its ability to support life on the lake.

- ❖ The **littoral zone** is the area from the water's edge to roughly where sunlight no longer penetrates to the lake bottom;
- ❖ the **shoreline** is the place where land and water meet;
- ❖ the **riparian zone** is the section of land closest to the shoreline; and
- ❖ the **upland zone** is the higher, drier ground found beyond the riparian area.



The riparian and upland zones act as a barrier to contaminants that are waiting to catch a ride down to the lake with rain runoff, including seepage from septic tanks, fertilizers and pesticides, deposits from family pets, and oil or gas spilled on the driveway. The jumble of trees, shrubs, and grasses along a natural shoreline forms a “buffer” that helps filter out undesirables.

In the riparian zone the thick layer of low foliage controls erosion and sifts impurities out of surface runoff. Leaves and branches break the force of falling rain, which is further slowed by the rough surface of leaf litter, pine needles, and broken twigs. The water is then absorbed by plant roots or the soil. As well as being a filter for the lake, the riparian zone is a refuge for wildlife.

The upland zone is typically forested with the kinds of trees that take advantage of better drainage, including poplar, spruce and white birch. The deep roots of the trees stabilize the slopes, while their foliage buffers the shoreline from winds. The forest canopy also cools the

area by maintaining shade and boosting humidity in the summer. In winter, it provides shelter for a number of wildlife species.

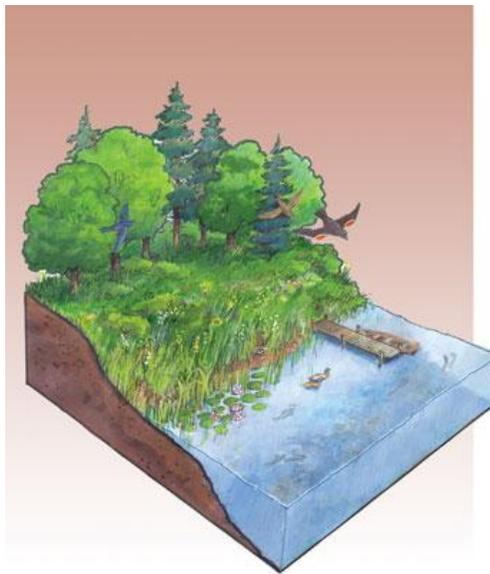
Together, these two zones form a buffer so effective that many experts estimate only 10 percent of the runoff actually makes it into the lake, with much of the sediment and other pollutants being filtered out before reaching the water. If the lake bottom does not drop off too quickly, then the remaining runoff will tangle with another barrier of aquatic plants in the littoral zone, where the jumble of bulrushes, arrowhead, and cattails slows the influx of runoff and consumes many of its nutrients.

## Preserve Your Buffer Area

Almost any kind of development can weaken the lake's buffer, and some projects can ruin it altogether. Even in the upland zone, the hard surfaces of paved driveways, shingled roofs, and patios shed water, increasing runoff and heightening the danger of erosion. Sediment carried into the water is also a concern during construction when land is being cleared for a cottage, a garage, or even just a lawn.

Here are a few ways you can assist the lake's natural filtering system:

- ❖ Eliminate potential pollutants by being careful with gas and oil around the cottage, avoiding the use of fertilizers and pesticides, and maintaining your septic system with regular pump-outs.
- ❖ Maintain as much riparian and upland vegetation as possible. Ensure that there is vegetation of different heights, types and ages all growing together. Your buffer area should mimic the complexity of nature and include a mix of different types of native plants, ranging from low-growing grasses, flowers, ferns



and other plants to shrubs and trees of various heights.

- ❖ Opt for softer or more permeable surfaces (gravel or wood chips) rather than concrete and asphalt.
- ❖ Replant disturbed areas as quickly as possible, and landscape grassed swales or depressions around the cottage to catch and encourage infiltration of rainwater flowing off of the roof. Be especially careful in the riparian zone, where any soil dug up is apt to be washed straight into the lake during the next rainfall. Leave the riparian plants, shrubs and trees in place.
- ❖ Keep flower and vegetable gardens well away from the lake.

Instead of working against nature, why not declare a truce and weave your cottage needs into the natural shoreline? By maintaining all four components of your shoreline in as natural a state as possible, you will be protecting your quiet spot by the lake for enjoyment into the future.

## More Information

There are a number of resources available for waterfront owners wishing to protect their natural shoreline area.

**The Shore Primer**, produced by Fisheries and Oceans Canada in association with Cottage Life, offers cottagers and other landowners constructive solutions for restoring an altered shoreline to its former health and beauty.

**On the Living Edge:** Your Handbook for Waterfront Living, published by the Living By Water Project, is available from the Muskoka Heritage Foundation at (705) 645-7393.

**Muskoka Water Web**  
[www.muskokawaterweb.ca](http://www.muskokawaterweb.ca)