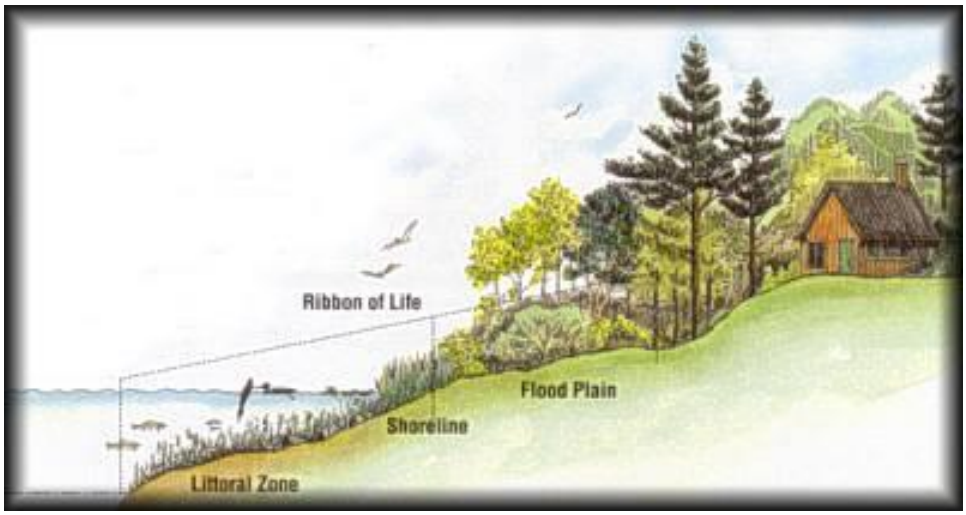
GAMIING Nature Centre

Shoreline Naturalization

The shoreline is a very important part of a lake. It is where fish and other aquatic wildlife spawn and seek shelter amidst the logs, stumps and weeds. The shoreline is also where land animals often feed, breed, or take shelter. As the shoreline becomes less natural, the health of fish and other wildlife is adversely affected.

The Ribbon of Life



Ninety per cent of all lake life is born, raised and fed in the area where land and water meet. The shallow water and the first 10 to 15 meters of shoreland forms a ribbon of life around lakes and rivers that is essential to the survival of many species. This rich and complex habitat supports plants, micro-organisms, insects, amphibians, birds, mammals and fish.

Unaware of the importance of shoreline vegetation, many landowners clear their shorelines and transform them into urban landscapes. They destroy the cattails, bulrushes and other native species, and replace them with lawns and non-native species. They also build retaining walls, docks and boathouses. These changes destroy the balance of the aquatic and shoreline ecosystems. They also alter the wildlife habitat, natural beauty and character of our lakes and rivers.

Natural shoreline vegetation plays an important role in preventing soil erosion. Plant roots anchor the soil, preventing shoreland from being washed away by currents, waves and rain. The roots of mature trees reach down to the upper levels of the water table. Dogwood and meadowsweet roots form a web that extends a half-meter downward; these native species are far more effective in protecting properties from erosion than the roots of grasses, which only reach eight centimeters below the surface.

By preventing erosion and runoff, natural shoreline vegetation also improves water quality. When soil and excess nutrients are washed into the water, fish spawning beds can be destroyed, dissolved oxygen is depleted and the growth of algae and aquatic plants is encouraged. Shoreline vegetation also improves water quality by shading and cooling shallow water.

All of these changes in water quality can lead to rapid eutrophication — the aging of a lake. Eutrophication of a lake ultimately changes the kinds and numbers of species that can live there.

Shorelines can:

- Provide a barrier against erosion by waves and currents.
- Trap sediments from uplands run-off.
- Prevent over fertilization of the water by reducing runoff of sediments.
- Recycle nutrients in on-shore plants.
- Protect shallow waters from excessive warming. (Temperature rises increase algae growth.)
- Preserve the ecological balance of lake. (Nourishing species such as insects and birds, which in turn nourish fish.)
- Play an essential role in the beauty of the landscape.

Benefits of Shoreline Naturalization:

Stabilize Soils, Reduce Erosion

Water moves towards the lake both on top of and through the soil. Surface runoff moves relatively quickly over smoother surfaces such as pavement and mown lawns. Fast moving water has more energy and erosive force and can pick up and carry more and larger soil particles in suspension. Taller grasses, herbaceous and woody plant stems and leaves break up and slow the movement of water thereby reducing its ability to erode soils and carry sediment into the lake.

On the water side, the constant action of wave wash and ice movement dislodges and erodes soil particles. On the upland side, water moves through the soil towards the lake taking bits of soil along for the ride. This is particularly pronounced in the spring as rain and melt water makes its way toward the lake. An established mixture of woody (trees and shrubs) and herbaceous (non-woody grasses, annual and perennial flowering plants) species will provide a deep interwoven root mass which acts like a sieve, allowing the passage of water while retaining soil particles.

Natural shorelines generally have a gentle slope. This allows ice and waves to ride up over top gradually dissipating its destructive force. Watch what happens to a wave on a gradual slope versus the pounding taken by a vertical shoreline such as a retaining wall. This is why, over time, natural vegetated shorelines persist, while concrete and other vertical retaining walls bow, lean and fall apart. If you are considering building or repairing a vertical shorewall, why not consider a sloped, vegetated approach as cost effective natural alternative?

Intercept Nutrients

The deep root systems of woody vegetation extends well into the soil, intercepting nutrients from upland sources such as septic systems, and incorporating them up into plant material before reaching the lake. Less nutrients entering the water means less nuisance aquatic weed growth such as algae and Eurasian water milfoil. Algae comes in several forms, ranging from gross stringy globs to microscopic specs which give the water a "pea soup colour" while milfoil, an invader native to Europe, Asia and Northern Africa, is the most common nuisance species in the Kawartha lakes area.

Attract Wildlife

Natural shorelines provide perches, food, cover and nesting habitat for song birds and game birds, but also browse for small mammals and deer. Under-appreciated amphibian species (like frogs and toads) will also benefit from the addition of shoreline cover.

Enhance Fish Habitat

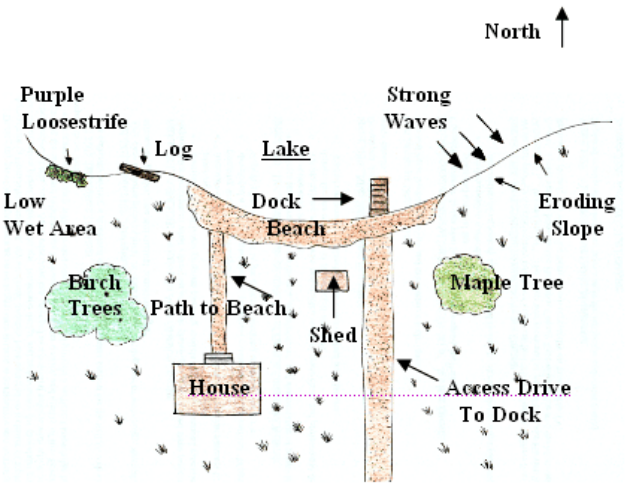
Trees and shrubs at the water's edge provide shade and overhead cover for game fish, baitfish and the fry of many species. Overhanging vegetation also provides habitat for adult forms of many insects, such as mayflies, which are eaten by fish. Leaves from overhanging vegetation drop into the water providing a smorgasbord for aquatic insects and other aquatic organisms, which are in turn eaten by our finned friends.

Aesthetically Pleasing

A vegetated shoreline blends in with the natural environment. Many shrubs provide interest through the seasons with attractive flowers, fruit and bark.

Steps Involved with Completing a Shoreline Habitat Plan

- Step 1 - Take an inventory of what is already along the shoreline and into the interior of your lot.
- Step 2 - Map, to scale, your shoreline, and whatever is necessary for navigation purposes, such as your house and other structures, like a pool, pond, deck, boathouse, and dock.
- Step 3 - Map the existing plant groups along the shoreline and into the interior of your lot.
- Step 4 - Show all paths, walkways and patios on the property.
- Step 5 - Show the location of all power lines, pipes and underground cables in the project area.



Factors to Consider When Designing your Plan

- Size - height and spread of trees/shrubs when first planted and later at maturity.
- Soil - drainage/workability/fertility.
- Sun - areas that receive sun/shade.
- Views - are there any views you want to maintain/enhance/hide.
- Seasons - food and cover available year round for wildlife.
- Time - how much time are you willing to spend implementing the design and to maintain it.
- Cost - what is your budget to get it started and to maintain it.

Design Tips

- Wildlife tend to utilize areas where two different types of habitat meet. Therefore, by combining group plantings with open areas more edges are created. An edge effect can also encourage species diversity.
- By selecting a variety of plants such as trees, shrubs, vines, and herbaceous plants, with different characteristics such as: heights, textures and colours a greater diversity of wildlife will be attracted to your waterfront.
- Shrubs and trees should be planted in clumps or hedgerows to provide a dense habitat and protection for a variety of wildlife.
- By planting deciduous trees on the south side of your house shade is provided in the summer and sunlight can get through in the winter. This provides benefits beyond just wildlife habitat such as: conserve energy in your home by reducing heating cost in winter and air conditioning in summer, slow global warming by reducing energy consumption of fossil fuels and naturally absorbing carbon dioxide through the process of photosynthesis.
- Make sure trees are planted where large roots cannot damage existing structures.
- The new plants should complement the existing vegetation.
- It is always best to use native plants in your designs because they are usually best adapted to the areas climate, soil conditions, and local pests and diseases. Also, native plants usually require less water and maintenance and they do not depend on pesticides and fertilizers to grow well.

Plant Selection:

Herbaceous

- Variety
  - Mix perennials and annuals (Perennials grow back each year, this saves you replanting each year).
  - Plant a variety of vegetation that will flower throughout the whole growing season.
  - Ferns and mosses should grow very well in wet areas on the shoreline.
- Wildlife
  - Flowering plants in a variety of colours should attract insects including butterflies and bees, as well as seed and nectar eating birds.
  - Some plants are important food sources for insect larvae, including caterpillars.
- Growth

- Herbaceous plants generally grow close to the ground acting as ground cover.

Shrubs

- Variety
  - Select shrubs with overlapping flowering times to provide fruit in as many seasons as possible.
  - For greater visual interest, select a variety of shrubs with different colours of bark, multi coloured leaves, etc.
- Wild life
  - Dense shrubs provide food, nesting sites and cover for songbirds and small mammals.
  - Some species of shrubs are appropriate for hedgerows.
- Growth
  - Shrubs can sometimes grow in less than optimal growing conditions (sun or shade) but this may affect the degree of flowering and subsequently limit fruiting as well.
  - Shrub height ranges from 1 to 7 m (3 to 20 ft.).

Trees

- Variety
  - Select both deciduous and coniferous trees, this will ensure year-round accommodation for wildlife.
- Wildlife
  - Mature trees provide cover and nesting places for squirrels and many birds.
  - Tree and shrub bark and twigs are important winter food for deer, rabbits and mice.
- Growth
  - Trees grow slowly, but they can grow very large so allow for enough space for the mature tree.

The Role of the Waterfront Owner:

In addition to keeping a buffer of natural vegetation at the water's edge, you can protect your waterway by making otherwise lifestyle choices:

Reduce Exposure to Toxic Products

Any product that you use on your shoreline property has the potential to wash into the lake and disrupt or destroy the natural processes in the waterway. For this reason, no hazardous products such as pesticides or toxic cleaning products should be used on waterfront properties. Extreme caution must be used when handling chemicals such as gasoline to prevent spills into the waterway.

Reduce the Use of Fertilizers

Nitrogen and phosphorus-rich fertilizers can leach into the water from your property, causing excessive growth of aquatic plans, which clog waterways and disrupt habitat. Keep the use of any fertilizers on shoreline properties to a bare minimum. Better still, landscape with native plants that do not require extra fertilizer, and improve your soil compost.

Maintain Your Septic Tank

Septic tanks can be a source of bacterial contamination and nutrient overloading of lakes and rivers. Reduce the load on your tank by conserving water in your home, and make sure the tank is pumped out at least every two to three years. Septic tanks only delay the introduction of nutrients to the lake - USE WATER WISELY.

Use Phosphate-Free Cleaning Products

Cleaning products are a common source of phosphorus, a nutrient that causes excessive growth of aquatic plants when it leaches into the water. Make sure your cleaning products are biodegradable and phosphate free.

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