

Haliburton County
Master Gardeners

Guidebook to Ecological
Landscaping in
the Highlands

Guidebook to Ecological Landscaping in the Highlands

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Land Acknowledgement

We are stewards of this land for future generations and acknowledge that Haliburton County is located on Treaty 20 Michi Saagiig territory and the traditional territory of the Michi Saagiig and Chippewa Nations, collectively known as the Williams Treaties First Nations. The knowledge gained over thousands of years has been generously shared by First Nations peoples and has helped inform our work on native plants.



The Haliburton Highlands is a region of some of the last intact forests of Southern Ontario. From the grasslands and Carolinian forest of Southern Ontario you move northward into the mixed forest region dominated by hundreds of freshwater lakes. The depth of natural soils thins and the granite of the Canadian Shield emerges.

This guidebook, written and published by the Haliburton County Master Gardeners (HCMG), will inspire you to protect and enhance the natural world around you. Whether you have a waterfront or an upland property, the landscape choices you make will have either a positive or negative effect on natural features including nearby waterways and lakes. A green thumb is not required. In fact, the most biodiverse properties are those that have been left to quietly thrive in their natural state. On the other hand, misguided property owners and boaters have introduced invasive species to the county which displaces fragile natives. Some property owners have cleared valuable “underbrush” and planted turfgrass down to the waterfront. There is a new kind of gardener though, and they are naturalizing the Highlands one property at a time. This new approach is called “ecological landscaping”.

In this guidebook, we will introduce you to some ideas to regenerate your landscape, ones that improve the environment by improving water quality, increasing biodiversity, supporting wildlife, enriching soil health, providing shade, preventing heat islands, and sequestering carbon. You may be managing your property for pleasure or recreation but we encourage you to do so while considering your property as a small part of a larger, living, breathing habitat.

HCMG have travelled throughout Haliburton County from 2021-23 to advise over 50 people with waterfront or upland properties on how best to naturalize their properties. We’ve populated our website with helpful resources and we’ve created a self-guided multimedia tour along the Minden Riverwalk highlighting native plants, pollinators and the ecological importance of the restoration of the village section of the Gull River.

This Guidebook is supported by the Haliburton County Development Corporation, and the volunteer-based Haliburton County Master Gardeners.



Winter scene in the Haliburton Highlands. Photo Credit: C. Langdon

Geography

It can be a wonderful experience gardening in the Haliburton Highlands. Spectacular views and stunning natural backdrops are common in the Highlands. You likely have an upper story of native trees, an understory of native shrubs and herbaceous plants coupled with a glittering lake, a burbling creek or an imposing rocky outcrop.

As many northern gardeners will agree, there are challenges to gardening in the Highlands. The impulse to keep trying speaks to the doggedness and persistence of the type of character who make this region their home or cottage.

As a gardener, some of these challenges include:

- Long, cold winters with drying winds
- Variable summers of hot, dry or cool, wet weather
- Short growing season and cool nights
- Blackflies and mosquitoes
- Nutrient poor and thin soils
- No municipal water or limited well water
- Foragers like deer, bear, beaver
- Fewer sources of information for northern gardeners

The Haliburton Highlands is part of the Algonquin Dome with the contour of the land sloping from a high point downwards to the east, west and south. The northern part of the county, often called the Algonquin Park Region, is marginally cooler, dominated by coniferous forests and poorer soils. The central and southern parts of the county called the Haliburton Slopes benefit from areas of underlying sedimentary limestone. Limestone contains calcium which can neutralize acid and benefit plants.

Generally, however, Haliburton soils are acidic with a pH of 6 or less due to the subsoil being composed of ground-up granite rock of the Precambrian Shield.

Canada's most recent Plant Hardiness Zone map takes a wide range of climate variables into account, like minimum winter temperatures, maximum temperatures, rainfall, snow cover, wind, and elevation. In Canada, there are 10 zones which are numbered from 0 to 9. The higher the zone number, the warmer the climate. Haliburton County is zone 4.



Aerial view of Algonquin Highlands.

Redefining What Is Attractive In A Landscape

If we are to protect our forests, restore them or create a garden from damaged landscape, we need to think differently about what is attractive. We need to observe what happens in nature and see the connections between fragile native plant communities such as Trout Lilies (*Erythronium americanum*) among Trilliums (eg. *Trillium grandiflorum*), Dutchman's Breeches (*Dicentra cucullaria*) and Lady Ferns (*Athyrium filix-femina*). Placed next to showy Zinnias and Hostas, the ephemeral beauty of these native plants disappears and their ecological functions are suppressed.

Globally, we are faced with a biodiversity crisis unmatched since the extinction of the dinosaurs. We may not be able to solve the global environmental crisis, but you and I can act to protect and restore the ecological functioning of the environment of the Haliburton Highlands, by the landscaping choices we make.

What does this have to do with the type of plant we choose to include in our gardens and landscaping projects? According to entomologist and best-selling author Douglas W. Tallamy*, our small steps to naturalize are important.



Along with other scientists, Tallamy provides evidence that a functioning landscape needs to be composed mostly of native plants. He suggested that 70% of plants (tree, shrub, and herbaceous species) should be native species.

Consider the cumulative effect if your back yard is connected to mine and we both plant natives, doubling our impact. If we band together with our neighbours to support a continuous vegetated ribbon of life along the shorelines of our lakes and rivers, we protect 75% of animal and aquatic species who depend on this space at some point in their lives. Even if you go it alone, you will be making a positive impact and setting an example for others to follow.



Hardwood Forest in Minden Hills.

Photo Credit: C. Langdon

Native plants are required to sustain a food web that, for example, will support the caterpillar population required to rear a clutch of birds. A backyard with native plants can support the raising of a clutch of baby chickadees but a backyard of turfgrass cannot support any animal life except for the non-native Canada Goose, grubs, and moles. With frogs and toads in the long foliage, along with birds and bats in the forest, there will be fewer mosquitoes and black flies. It is a natural world in harmony between predator and prey.

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Redefining What Is Attractive In A Landscape

We are not suggesting that you give up all your non-native flowers or remove your manicured landscape. Do keep pots of long flowering annuals by the front door, a vegetable garden in full sun and some beloved ornamental flowers from Europe or Asia and a small lawn for recreation. However cast a critical eye over your property and envision a forested landscape alive with bird song to replace the lonely specimen trees stranded in an expanse of lawn that only gets visited by the lawn mower. Shrink the lawn, pull up the invasive Goutweed (*Aegopodium podagraria*) and Periwinkle (*Vinca minor*) and replace them with a wild flower meadow to attract all manner of pollinating butterflies, frogs and other wildlife. Leave the leaves and fallen debris under the trees to harbour beneficial insects, to retain moisture and to break down and fertilize your trees naturally. It may look messy but it is ecologically important to the health of your property and beyond which is a beautiful thing.

* Douglas W. Tallamy, author of *Nature's Best Hope: A New Approach to Conservation* available at the Haliburton County Public Library and bookstores.

What is Ecological Landscaping?

At its most ambitious, it is an attempt to reverse the biodiversity crisis that has seen a global decline in insect populations by 45% in the last 40 years and an alarming decline of 30% of bird births, all killed by human activities. The National Audubon Society reports that 2 out of 3 North American bird species face extinction. These are reasons enough to start planting natives.

Every landscape should:

- Capture carbon
- Protect the watershed
- Support a complex food web
- Create wildlife corridors throughout a single property and with neighbouring properties
- Support a diverse community of pollinators since 80% of all non-agricultural plants on the planet require insect pollination for reproduction



Taking Stock

People naturalize their properties for any number of reasons. They want to harmonize their property with the nature around them, support wildlife or conserve what is already there.

In the Haliburton Highlands, everyone lives within a kilometre of a water feature: a lake, a river, a small creek, a wetland or a pond. Ideally, we should all strive to have a native plant buffer thriving from the shoreline back 30 metres. Upland properties are important to the health of our waterways as well so consider shrinking your lawn and planting more trees and native vegetation wherever you live.

Take some time to observe your property for a full year and note the following:

- which areas receive sun and how many hours a day during June which will give you a good average
- on larger properties, note the variation in conditions and the types of ecosystems such as wetland and dry upland forest
- soil types and how they retain and lose moisture
- the condition of your septic system
- any invasive species that will need to be managed or removed
- the signs of wildlife that may be present
- how water drains away from your home and driveway during a downpour. Is water being absorbed before it reaches the lake? Are there signs of erosion?
- the water level fluctuations on your lake or river and how this affects the plants and soil along your shoreline
- any dead or diseased trees that present a hazard
- identify any natural features
- shoreline structures and conditions and whether you need to consult local bylaws or the Ministry of Natural Resources before taking any action

You will want to take an inventory of the plants, including trees, shrubs, herbaceous and aquatic plants that grow on your property. If your goal is to increase native vegetation, pay particular attention to the existing native plants that grow on your property and in the surrounding forest.

To protect the lake quality and make the most of the natural features and native vegetation, you should not rush into any building or site alterations before completing a whole site assessment.

You may want to get some horticultural advice in the early stages of your landscape plan to set you on the right path. You can choose to do some or all the naturalizing work yourself or hire people with local horticultural knowledge to do the work. The HCMG can visit your property and make recommendations and there are other local organizations and businesses listed on the resource page that can assist as well.

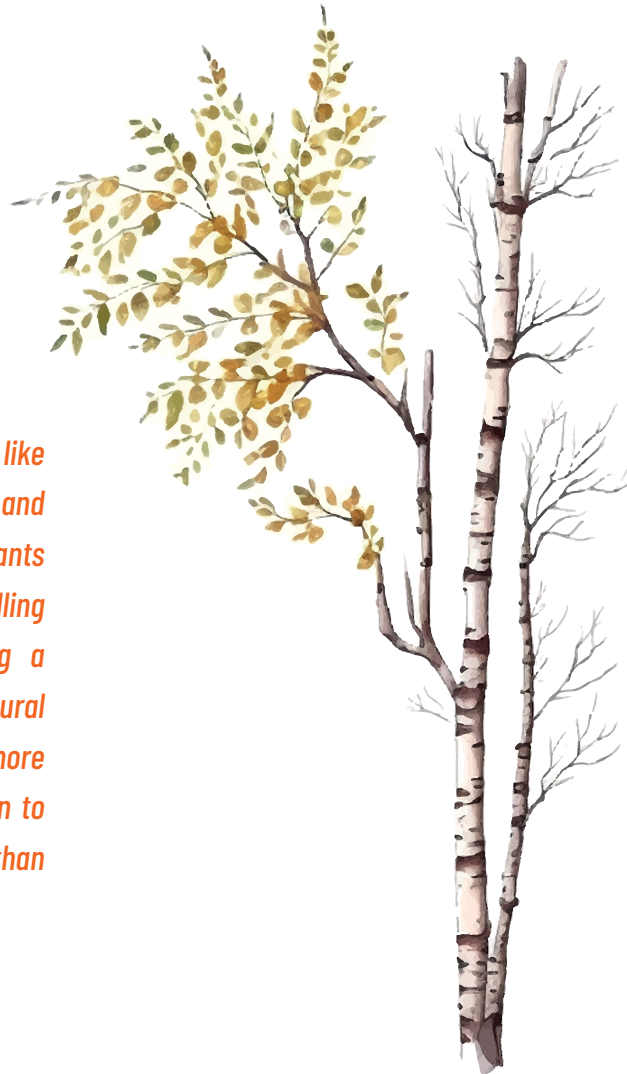
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Taking Stock

Phased Approach

Whatever you decide to do, consider proceeding in stages over several years. If you want to do it yourself, a phased approach will not tax your time, energy, and capacity to make good decisions. There is a certain amount of experimentation, and waiting to see what works well which will help direct the next stage and possibly save you time, money and effort. Sketch out a multi year plan with the most urgent concerns scheduled for year 1.

If you have a manicured property with a predominance of exotic plants and lawn turf, you can transform this landscape a few plants at a time, shrinking the lawn and replacing poorly performing ornamental plants with native plants. If you are doing it on your own, start small and develop experience and expertise as you go.



Many landscape problems like erosion, failing retaining walls and wet areas can be solved using plants or natural processes. Think of calling a horticulturalist before calling a contractor or landscaper. A natural fix will save you money, it will be more resilient and the net contribution to the environment will be higher than an engineered solution.

Request a Consultation with Haliburton County Master Gardeners (HCMG)

Master Gardeners will visit your property to help you address your general and specific concerns.

A site visit includes:

- a tour of your entire property to get a broad picture before zeroing in on your specific concern(s).
- identifying the native plants, shrubs and trees on your property for you.
- identifying invasive and aggressive plants and suggesting a management strategy for you.
- making observations about other issues like drainage, erosion, problem trees, invasives and diseases, etc.

With a site assessment, we can make recommendations on how you can best connect the various parts of your property into a cohesive and functional whole to support wildlife, to keep your shoreline healthy or your perennial gardens attractive. We will recommend plants and where and how to plant them. We will also direct you to local retailers, arborists, gardeners and landscapers and refer you to our website for more information. We will take notes and will provide you with a comprehensive written report following the consultation.

A donation of \$50 per hour is suggested. Our members volunteer their time and expertise and the donation goes to further the community work of the organization.



EMAIL: coordinator@haliburtonmastergardener.ca



Master Gardeners with a shoreline restoration design.
Photo credit: M. Johnson

"The garden consult experience exceeded my expectations. The master gardeners' knowledge was very broad and in sync with how we want to manage our waterfront property."

"We acted on the recommendation that we 'reforest' the front of our property. We planted over 80 trees and are very happy with the results."

"Master gardeners helped us solve the goose problem which was negatively impacting our beach front. We now enjoy the waterfront property that we purchased."

"The master gardeners are very knowledgeable; courteous and professional; truly interested in offering help. We were happy to give a donation."

By-Laws To Protect Native Vegetation

Before you undertake any serious alteration to your property, it is important to consult your township and/or county office for guidance. You must consult with the MNR and or Fisheries Canada to alter anything close to or in the water. You are discouraged from moving rocks and removing aquatic vegetation because they are important to lake health.

Enacted in 2023, the County's Shoreline Preservation Bylaw 416 stipulates a buffer of 20 metres from the shoreline. If you live in Dysart they stipulate a 30 metre buffer in their (Shoreline) Site Alteration Bylaw (2023).

TELEPHONE: 705-457-1740

EMAIL: info@dysartetal.ca

WEBSITE: www.dysartetal.ca

Haliburton County has a Shoreline Tree Preservation By-law No. 3505 which stipulates no cutting of trees with a diameter of 5 cm or more or within 30 metres of the shoreline.

TELEPHONE: 705-286-1333

WEBSITE: www.haliburtoncounty.ca

Another less known by-law is the Haliburton County Forestry By-law 3196 that guides and restricts what landowners can do on properties of 4 hectares (9.88 acres) or more. This is an important bylaw because it applies to all types of properties, not just waterfront lots.

TELEPHONE: 705-286-1333

WEBSITE: www.haliburtoncounty.ca

Conservation By-law Officer

By-law enforcement is complaint driven so if you see any activity going on that you're not sure complies with the by-law, call or email the Conservation By-law Officer for your municipality or for Haliburton County.

TELEPHONE: 705-286-1333

WEBSITE: www.haliburtoncounty.ca

Oceans and Fisheries

Contact for projects in or near water

TELEPHONE: 905-336-4999

EMAIL: info@dfo-mpo.gc.ca

WEBSITE: www.dfo-mpo.gc.ca/regions/ontario-prairie/index-eng.html

Ontario Ministry of Natural Resources

Contact for projects in or near water

Lands and Water Section, Peterborough

TELEPHONE: (705) 755-2000 or 1-800-667-1940

EMAIL: mnr.nric@mnr.gov.on.ca

WEBSITE: www.mnr.gov.on.ca

How Do Your Shorelands Check Out?

1. What percentage of your waterfront is vegetated? *(Bonus points for 75% or more)*
2. How far back from the waters edge is your tree and plant buffer?
 - ☐ 0-3 metres
 - ☐ 3 - 10 metres
 - ☐ 10-20 metres
 - ☐ over 20 metres
3. Are the plants in the buffer native to Ontario? A Mix? Ornamental? Turfgrass? Other?
4. What is the nature of your shoreline?
 - ☐ Bedrock
 - ☐ Sediment based beach (boulders, cobble, gravel, sand, mud etc.)
5. Do you use pesticides and/or herbicides?
6. Do you have your septic tank regularly inspected and pumped?
7. Do you have a lakebed friendly dock?
8. Are your driveway and walkways permeable or made of hard material like asphalt or rock slab?
9. Do you leave woody debris and fallen leaves/pine needles where they fall?
10. Do you leave the aquatic plants growing at your shoreline to attract wildlife?
11. Do you leave fish friendly woody debris in the lake?
12. Do you leave overhanging branches to shade your water's edge?
13. Did you install or inherit armour stone, rip rap, break wall or other hardened water edge?
14. Does water from your property soak into the ground before reaching the lake?
15. Any signs of erosion?
16. Is your property:
 - ☐ Highly Natural - 75% +
 - ☐ Mostly Natural - 50-75%
 - ☐ Somewhat Natural - 25-50%
 - ☐ Very Little Natural - 25% or less
17. Are there Invasive plants? Are they being removed or managed?

Be Aware of Invasive Plants

Ontario's native plants existed relatively undisturbed for thousands of years prior to European settlement. This diverse group of plants evolved together with native wildlife adapting to local climate and soil conditions to create stable natural communities we call ecosystems.

By contrast, invasive plants come from outside the Haliburton Highlands. When introduced, there is the potential for them to establish themselves and disrupt the native plants, often crowding them out. Some invasive plants can even alter the soil composition, poisoning it and eliminating the competition.

There are close to 500 invasive plant species in Ontario and gardeners like you and me have been responsible for bringing some of these to our region. We've done it without awareness of the problems that can be created.



Shade tolerant highly invasive Periwinkle (*Vinca minor*)

Not all introduced plants, like tulips (*Tulipa*) and hostas, become invasive and they are acceptable in small numbers close to the house. But they are not as beneficial to wildlife as native plants. If these introduced plants produce viable nectar and pollen it may not be of high quality. Pollinating insects will visit them but derive little benefit. Local master gardeners have seen properties where all the native plants have been destroyed and replaced by turfgrass, invasive plants and benign ornamentals.



Sun loving invasive False Spirea (*Sorbaria sorbifolia*)



Avoid the use of toxic herbicides. These are not always effective, will kill other plants in the area, can pollute our waterways or leave your soil contaminated.

Be Aware of Invasive Plants

INVASIVE PLANT	ALTERNATIVES
Periwinkle (<i>Vinca</i>)	Wild Strawberry (<i>Fragaria virginiana</i>) Bearberry (<i>Arctostaphylos uva-ursi</i>) Wild Geranium (<i>Geranium maculatum</i>) Wintergreen (<i>Gaultheria procumbens</i>)
Goutweed (<i>Aegopodium podagraia</i>)	Same as above
Lily of the Valley (<i>Convallaria majalis</i>)	Same as above
Miscanthus Grasses like Maiden Grass and Japanese Silver Grass	Little Bluestem (<i>Schizachyrium scoparium</i>) Northern Sea Oats (<i>Chasmanthium latifolium</i>) Indian Grass (<i>Sorghastrum nutans</i>) Feather Reed Grass (<i>Calamagrostis x acutifolia</i> 'Karl Foerster')
False Spirea (<i>Sorbaria sorbifolia</i>)	Common Elderberry (<i>Sambucus canadensis</i>) Bush Honeysuckle (<i>Diervilla lonicera</i>)

During our garden consultations, Master Gardeners have found that 80% of area properties contain at least one invasive plant brought in by a previous or current owner. When you buy plants, make sure you select non-invasive or native plants. Consider doing an online search of the botanical name before bringing anything home from the store or from friends.

A booklet called *Grow Me Instead, A Guide for Northern Ontario* comes highly recommended and is published by the Ontario Invasive Plant Council. It lists some of the most common invasive plants and suggests alternatives such as the ones in the accompanying chart.



Highly invasive Goutweed (*Aegopodium podagraia*)

For practical advice on how to rid your property of invasive plants read more on our website.

Scan the QR code to peruse the Ontario Invasive Plant Council: Grow Me Instead.



Vista Pruning



Well vegetated properties can still offer a view of the lake. Deciduous shrubs and trees can be thinned and branches removed with little effect on the vegetation. This approach is called 'vista pruning' and looks more attractive than a clear-cut swath down to your lake.



Deciduous trees can be pruned at any time except for early spring when sap is flowing. Conifer trees can be pruned at any time. If lower limbs are removed from either deciduous or coniferous trees, it is permanent and they do not regrow. Many deciduous shrubs can tolerate a severe pruning.

How To Tell Your Soil Type

Finding the right recipe for your soil takes some trial and error. Purchasing soil has its limitations, you can buy soil and triple mix in bags or by truckload, but you really don't know what you're getting. Landscaping soils often contain little real soil and the nutrients will be used up after a few short years. Better to start with what you have and create a soil that has the powerful combination of tilth, texture and nutrients for growing native plants.

The thin but rich humus layer that you find in the forest will have been lost when your property was cleared and if you are like most, you will be left with coarse sandy soil with some silt.

Organic Matter

Most plants thrive in soil that is rich in organic matter which retains moisture and has an abundance of bacterial and fungal activity. Nutrient uptake by plants is dependent on a soil that is rich in bacterial life. Organic matter can be locally sourced and can include composted kitchen and yard waste, leaves and needles, well-rotted wood chips, and manure. Organic matter is acidic and there is such a thing as too much of a good thing. Excess nitrogen in organic matter can favour weeds over native plants.

If you give your soil the care and attention it needs, you can avoid pesticides, herbicides and fertilizers which can have a long term, negative impact on your garden.

Mulch

With established perennial gardens, mulch is the best way to introduce organic matter. Mulch also holds in moisture which benefits sandy, fast draining soil. A thick layer of mulch (5-10 cm) will also suppress weeds by blocking out sunlight. You can use shredded leaves and conifer needles, compost or untreated wood chips. Avoid decorative coloured bagged mulches unless you're certain they contain no toxins and the dye is not disguising shredded pressure treated wood or pallets.

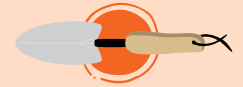
So, there you have it – the recipe for good soil for native plants. Autumn is a good time to start amending your soil for spring planting.

Earthworms – Friends or Foes?

Did you know, earthworms are not native to our region and are quite destructive in our forests?

In years past, we were told worms were good for aerating the soil. This is only true for heavy, clay loam soil that has been compacted by agriculture.

In our native forest ecosystem, the soil is already aerated. Earthworms consume the decaying leaf litter and other small organic material (known as "duff") and thereby change the composition of the soil, decreasing its ability to store carbon and making it more difficult for native insects to burrow and for tree seedlings to succeed.



The ideal soil, called loam, is 1/3rd each of sand, silt and clay with a small amount of organic matter.

How To Plant And Care For Your Plants

Congratulations! You've chosen the native plants for your garden and landscaping plans, and now you are ready to plant them.

Earlier in this guidebook, you learned about soil types and what you can do to amend your soil if needed. In zone 4, Haliburton County has around 120 growing days, characterized by long days with plenty of sunshine in the summer, yet cold winters that can drop down well below zero for several weeks. We also typically get plenty of rain in the fall and lots of snow in the winter, providing the necessary conditions for herbaceous perennials, shrubs and trees to survive harsh temperatures.

If you have thin soil on your property, you will be tempted to replace it. This would be necessary if you are planting a vegetable garden, however native plants are best suited to our native soils.

Planting potted or bare root plants

To give a native plant the best start possible, begin by digging a hole as wide as the diameter of the spread of branches or stems of the plant. You should dig the hole only as deep as the level of soil in the pot (or as deep as the root collar of the trunk of the tree seedling if you are planting a bare root tree or shrub). If your soil does not contain much organic matter, you can mix in some compost, however native plants prefer to be planted in our natural soil.

Carefully remove the plant from its pot being sure to remove any dead, damaged or diseased branches or leaves prior to planting. Loosen the sides of the roots either by rubbing with your hand, gently teasing a few roots free or by washing the roots gently with running water. Place the plant into the planting hole so that the main stem(s) or trunk is vertical and backfill with the prepared soil to a depth of about 2/3rds of the planting hole. Water deeply to settle the soil, then continue backfilling with the



New plantings need to be watered.

How To Plant And Care For Your Plants



Plants from a native plant nursery. Photo Credit: C. Langdon

remaining soil. Do not fill higher than the level of the root collar or root crown to avoid the risk of killing your freshly planted treasure! Water again to saturate, but don't flood, the soil.

If you are planting a bare root tree or shrub seedling, stretch out the roots gently and prepare a planting hole that follows the shape of the roots when they are stretched out horizontally.

Once the plant is securely planted, you can apply 5-10 cm of an organic mulch, like well rotted wood chips, dry leaves, pine needles or compost, to the surface of the soil around the plant. Make sure that the mulch does not touch the trunk or main stem(s) of your plant. An organic mulch will help retain soil moisture, inhibit germination of weed seeds and will provide nutrients as the soil microorganisms and fungi begin to break it down.



Be Patient!

Patience is needed with native plants! Remember the saying "the first year they sleep, the second year they creep, the third year they leap". Your patience and care will be rewarded with healthy, vigorous gardens!

Deeply water your new plants daily for 2 weeks, then weekly for 2 weeks. Once they have been in the ground for a month, you can continue watering to ensure the soil remains moist, but not saturated.

Maintenance Dos and Don'ts

Winter is coming! Creatures are seeking shelter from freezing temperatures and predators. What can you do in your garden to help?

Plant stems, tree branches, leaf litter, bare ground, dead wood, brush piles and rock piles are all natural nesting and overwintering habitats. Unfortunately, fall clean up in the garden usually removes these natural refuges.

Steps you can take:

1. If you have a wildflower garden, leave dead flower stalks over the winter. If you do cut them back, trim at varying heights. Spring growth will quickly hide the vertical housing you left in place. Common occupants of hollow, dead, or pithy stems are carpenter bees, yellow-faced bees, leaf-cutter bees, cavity nesting wasps, stem boring moths and some spiders. Some insects insert their eggs into the hollow stems and the eggs are kept safe until their spring emergence.
2. Prune shrubs in late spring before the plant breaks dormancy. When pruning shrubs, cut 10-15 cm from the stem node or other branches; this end may serve as a nest entrance for stem nesting bees.



Overhanging trees provide shade for fish and places for birds to perch. Photo Credit: C. Langdon

Maintenance Dos and Don'ts

3. Leaves are food and shelter, not litter! Even on lawns, a thin layer left to decompose provides organic matter and nutrients. If you absolutely feel the need to remove leaves, spread them on vegetable or flower beds, or pile around trees, shrubs, and perennials for mulch. If possible, rake or use a leaf vacuum to keep them whole. If you decide to remove leaves in the spring, try to wait until late spring and give the snug bugs and their families a chance to emerge and move on to their summer habitat.
4. When mulching, consider using compost, leaf litter and plant debris rather than a thick layer of wood chips. It gives insects easier access to their winter home. If you use chips, keep the layer light enough for insects to burrow and navigate to their seasonal abode.
5. "Snags" or dead standing trees, and fallen logs provide housing for pollinators and various wildlife. Do not remove them if they aren't a safety hazard. Lay a log horizontally and bury one end a few centimeters into the soil to help it retain moisture. Add a few small branches and rocks. Leaving bark on the logs will also provide additional cover for a diversity of bark beetles, millipedes, lace bugs and more. They are prey for other animals and assist in the process of decomposition.
6. Brush piles provide very good habitat for moths, butterflies, songbirds, small mammals, and bumblebees. Select an out of a way location for your pile and create a sturdy base with logs or large branches along with some stones. Continue to stack branches, small limbs, and brush on top. A good size to aim for is no higher than 2m and no wider than 3m. Have plenty of gaps throughout the pile to provide sheltering spaces. Put up a sign that says Pollinator Habitat - this will inform your neighbours of your intention to be a good steward of the land.
7. Along your shoreline, leave logs, branches, rocks and plants in place to retain soil, provide habitat and slowly decompose. A "shaggy" shoreline is a healthy shoreline!

As you can see, less work makes for better habitat for pollinators and beneficial insects in your garden, woodlot and shoreline!



Photo Credit: C. Langdon



HABITAT CREATION

Plant A Small Forest



Mix of Yellow Anemone (*Anemonoides ranunculoides*) and White Trillium (*Trillium grandiflorum*).

Instead of planting a tree here or there on your property, why not think holistically and plant a self-sustaining mini forest? In isolation or as a link to other forested areas, your little forest will be a gift to the planet, your neighbourhood and yourself. You can start small by extending the boundary of an existing treed area. An unused open area of turfgrass or a sparsely treed section on your property can be transformed from a heat island into a properly functioning forest ecosystem. A new forest will provide an important wilderness travel corridor through your property to the next, it can complement your bird feeders in winter with seed bearing trees and will attract a greater number and variety of songbirds.

Forests are the lungs of your neighbourhood, producing oxygen, filtering pollutants, sequestering carbon, modifying the harsh climate, retaining moisture, providing shade, beauty and habitat for wildlife. Think about the nurturing of a forest for these larger, life-sustaining goals.

Studies show that single specimen trees don't grow to be as healthy as a grouping of trees does when they are grown close to other plants, as in a forest. They thrive when grown closer together, they form extended families connecting and sending messages and nutrients via their roots and the mycorrhizal fungi that connect them. They also can communicate via pheromones borne by the wind.

A collaborative underground network with fungi is a form of mutualism where the fungi benefit by obtaining carbon from the tree and the tree benefits by the extended network of fungi, making water and nutrients available that the tree would normally not be able to access. Shrubs and the smaller plants also benefit as their roots intertwine and mesh together making them more resilient to high winds. Forests provide a safe corridor and habitat for wildlife movement, feeding, sheltering, nesting and breeding.

Plant A Small Forest

For optimum success, plant trees and plants that are native to Haliburton County. Observe what grows in nearby forests, this will tell you what plants might grow best. Try experimenting a little too. Avoid non-native species as they are not well adapted to our locale, are prone to disease and, most importantly, provide little benefit to native wildlife.

The structure of a healthy forest has four layers which include:

- **CANOPY** – the tallest trees
- **SUB-CANOPY** – made up of smaller trees
- **UNDERSTORY** – a variety of shrubs
- **GROUND COVER** – low growing plants and spring ephemerals



Yellow flowered *Clintonia borealis*. Photo Credit: C. Langdon

There are many methods of planting a natural forest. The first and easiest is to stop mowing your grass and let an area regenerate on its own. You can assist with additional plantings and strategic weeding to give the advantage to the native vegetation you would like to thrive.

If you have a property that will not reforest naturally you can do a mixed succession planting. If you would like to speed up the process consider the Miyawaka method. In the early 1970's a Japanese botanist, Akira Miyawaka, pioneered a reforestation method that closely mimics what would have happened naturally but faster.

Here are some suggestions for a forest planting:

CANOPY	White Pine; Balsam Fir; White and Black Spruce; Sugar, Red and Freeman's Maple; Red Oak; Basswood; Ironwood; Tamarack; White Cedar; Hemlock
SUB-CANOPY	Wild Black Cherry; Paper Birch; Serviceberry; Striped Maple; Alternate Leaf Dogwood
UNDERSTORY	Leatherwood; Snowberry; Hobblebush; Red Berried Elder; Northern Bush Honeysuckle; Purple flowering Raspberry; Maple leaf Viburnum
GROUND COVERS	Wild Geranium, Wintergreen, Wild Ginger, Foam Flower, Ferns, Sedges, Virginia Creeper, Bittersweet, Northern Sea Oats Grass

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Plant A Small Forest

The herbaceous understory and ground cover shades tree roots, covers bare soil, influences the growth of tree seedlings, and discourages weeds. Its fallen foliage is higher in nutrients than decaying tree leaves. Shallow roots mat together to anchor the soil and intercept surface runoff. Deeper rooted plants also take up water and excess nutrients at levels just above the bedrock in areas with thin soil.



For assistance in planning a small forest and sourcing native plants contact the HCMG. To learn more, visit our website by scanning the QR code.

Red Oak (*Quercus rubra*) – Beloved By Birds

Oak is one of the most ecologically important plants in the world. The Red Oak (*Quercus rubra*) is the dominant native oak of the Highlands with a lesser population of Bur Oak (*Quercus macrocarpa*). White Oak (*Quercus alba*) may also be found in the county. Oaks support more species of life than any other tree genus sustaining everything from acorn-collecting jays to caterpillars, crickets, and wild turkeys. They are a long living tree and are best planted from an acorn or small sapling. They can be planted in multiples as close as 1-3 metres apart with understory plants to create a resilient and wind resistant plant community.



Red Oak
(*Quercus rubra*)
Seedling

Oak leaves are superior to other leaves because they are slow to break down (up to 3 years) and therefore provide a long-lasting blanket over the soil, maintaining moisture and giving life to soil organisms. Nutrients produced by the tree are tied up in the leaves and if left on the ground will feed the tree. Leaves left in place also provide critical habitat for thousands of insects that will emerge in the spring to feed migrating birds. Every birder knows to look in the oak tree canopy to spot the greatest number of birds in the spring. Moth caterpillars are found on oaks in disproportionate numbers and they are critical to feed the clutches of young birds who would otherwise starve. Collecting and burying acorns for winter food, the blue jay is responsible for the spread of oak trees burying acorns up to 1.5 kilometres from their collection site.

Oak trees support 100's of species of moths and butterflies whereas non-native trees support far fewer. For this reason, oaks are a keystone species in the Highlands. It is really an



Trees loom large in the public's imagination, but did you know that smaller herbaceous and woody plants make up 90% of the species in the forest and are vital to forest function.

Plant A Small Forest

easy decision to plant oaks with the big question being how many.

Many species of native trees have diseases but it is still important to plant them because some will develop resistance.

Basswood (*Tilia americana*) – A Magnet For Pollinators

The Basswood tree is distinct among trees because it requires insect pollination for fertilization whereas most trees are wind pollinated. Other insect pollinated trees include Red Maple (*Acer rubrum*), Black Cherry (*Prunus serotina*) and Wild Plum (*Prunus americana*). Basswood is a fast-growing tree reaching 25-35 metres with multiple stems in the wild. It has large heart shaped leaves and fragrant cream-coloured flowers that open in late June or July. They provide thousands of pollinating insects like bees and moths with pollen and nectar.

The Basswood tree is one of the trees that will adjust to climate change in the county according to Peter Schlegelbaum, a forester and former owner of the Haliburton Forest and Wildlife. Some other survivors will be the Red Oak (*Quercus rubra*), Cherry (*Prunus*), Ironwood (*Ostrya virginiana*) and Birch (*Betula*).



Forest in spring with White Trillium (*Trillium grandiflorum*).

Healthy Shoreland, Healthy Water

Plants have roots that intertwine, roots that mat together, roots that penetrate deeply and anchor around rocks, and roots that prevent soil from washing away. Nature has done a pretty good job holding things together since the last ice age 10,000 years ago. Attached to these roots are a variety of remarkable plants, including shrubs and trees that have evolved over thousands of years with each other and with mammals, insects and avian species to create some extraordinary ecosystems.



Property with minimal clearing on a steep slope while still allowing for lake views. Photo Credit: C. Langdon

Increasingly, landscapers are turning to native plants and methods that mimic natural processes to restore degraded sites along shorelines and in upland areas as well.

If you live on the waterfront, access to the water to reach your dock or beach is important. Ideally, efforts should be made to minimize the amount of native vegetation that you remove to create a path to the shoreline. For level sites, a soft path is kindest to the land. For steeper sites, steps or a snaking path may be necessary. Any open pathway will act as a water course during heavy rains so cover the surface of your path with wood mulch to help slow and absorb water. If your slope is very steep and you are using rock, make it local granite. Don't overlook the value of plants when you are putting

in hardscapes like steps, patios and retaining walls and, wherever practical, choose plants over hardscape to solve problems and create aesthetically-pleasing spaces.

Shorelines cloaked in vegetation resist erosion far better than properties cleared of all vegetation. Steep banks remain stable when planted with Willow (*Salix*) shrubs, Speckled Alder (*Alnus incana*), Beaked Hazelnut (*Corylus cornuta*) and Red Osier Dogwood (*Cornus sericea*).



Property with minimal clearing on a steep slope while still allowing for lake views. Photo Credit: C. Langdon

Healthy Shoreland, Healthy Water

Hard surfaces like retaining walls do little to prevent the force of a river or wave action from slowly undermining the wall and they eventually fail. Engineers have found that rip rap, which is a layer of large sharp stones along the shoreline, is not always effective in stabilizing the shore but rather, simply armouring it for a period. Rip rap does a poor job of absorbing the energy of water and merely deflects waves to the edges, undermining neighbouring properties. Placing plants in rip rap to accumulate organic debris from roots can help. Bearberry (*Arctostaphylos uva-ursi*) would be a good choice; it is a hardy, low growing plant that thrives in poor soil and lots of sun.



Grassed waterfront property with no vegetation to capture runoff. Photo Credit: C. Langdon

Restorationists are now opting to use vegetation and softer organic materials. In serious cases, a steep slope may need to be cut back to reduce the angle and then clothed in coco or burlap mat to hold disturbed soil in place until plant roots spread enough to take over this function. Coconut fiber rolls and mats placed along a shoreline can absorb and redirect water. By punching holes in the fiber, shoreline friendly plants can be planted to eventually take over the role of the fiber mat.



Rock Rip Rap only to be used in extreme cases. Photo Credit: C. Langdon

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Healthy Shoreland, Healthy Water



On average, an untouched forest floor can absorb 65% more rain than a cover of turfgrass.

Ideally, we want to take care of water before it reaches the shore. To do that we need to assess the state of the landscape back from the shoreline. Erosion at the shoreline can originate tens of metres upland so careful management of your entire property is critical. Ultimately, the goal is to allow rainfall and runoff to be absorbed, filtered and cleaned before it runs down the slope to the water body. Bioswales, rain gardens, and undulations in the landscape can all be used to hold water and give it time to absorb into the ground.



Master Gardener planting live stakes of Willow (Salix) and Red Osier Dogwood (Cornus sericea) to deter geese on the Minden Riverwalk. Photo Credit: C. Langdon

Healthy Shoreland, Healthy Water

Forests filter and regulate the flow of water. Leaves capture and slow the fall of rain to the forest floor, which itself acts like an enormous sponge, absorbing up to 46 cm of precipitation before gradually releasing it to streams and recharging ground water.

Build swales or ditches and then plant them so that plant roots can take up excess water. A bioswale allows surface water to soak into the earth slowly. Use rocks, logs and any other natural debris to slow down the flow of water and limit erosion. Place logs perpendicular to a compacted and steep path to direct water to the sides. Use wood chip mulch on sloped pathways as it is absorbent and is a soil builder.

An effective and affordable solution for any terrain, but particularly for steep slopes, is the use of wattles. These are simply bundles of organic material, interwoven twigs and tree branches or possibly coco rolls. Live stakes and/or steel rods are used to hold the material in place. The live stakes are cuttings taken from shrubs such as willow and dogwood that quickly set down roots. The use of live stakes can only be done in early spring and the stakes can be bought or cut from existing vegetation before leaf-out.

Elderberry (*Sambucus canadensis*), Buttonbush (*Cephalanthus occidentalis*), Willow (*Salix*), and Dogwood (*Cornus*) are all sold as live stakes. It is best to buy them dormant and plant them in April or early May. There is much you can do to slow down water with materials found nearby. With a particularly challenging site you may have to call in a horticulturalist for advice and you must consult with local bylaws before bringing in any machinery to re-grade.

How to obtain plants:

Local garden centres have a very small inventory of native plants, so you'll have to be creative.

- Celebrate what you have, prune, move and enhance.
- Transplant or divide from plants on your property.
- Collect seeds from friends.
- Purchase sustainably grown plants.
- Do not remove any native plants from the wild as they will undoubtedly fail and it is an unethical practice. You may rescue plants from a ditch or building site.

For a list of local landscapers, arborists and nurseries please visit our Buy Local page on our website:



Wetland Biodiversity



Wetlands are habitat for the Great Blue Heron.

If you have the good fortune to live close to a marsh, you will be able to observe the comings and goings of the fauna of the most biodiverse ecosystem on the planet.

Some people see swampy land as a breeding ground for mosquitoes with no inherent value. They itch to drain the land, fill in the low spots and use it for agriculture, housing or industry. Around the world such unrestrained impacts have released tons of carbon into the air affecting the climate and reducing biodiversity. Wetlands act like sponges, soaking up excessive water and releasing it slowly over time. The draining of wetlands is linked to droughts, water pollution, shoreline erosion and destructive and widespread flooding.



Wetlands are comparable to rainforests and coral reefs for the sheer number of plant and animal species that they support.

Protecting all wetlands including those within town borders prevents damage to roads and properties from flood events. Wetlands can absorb an enormous quantity of water during torrential rain storms and help regulate water levels throughout the year.

Wetland Biodiversity

Wetlands also filter out pollutants and excess nutrients, reducing the algae growth in lakes and other water bodies downstream. Too much algae growth robs the lake of oxygen which can result in the death of fish and is a sign of a system badly out of balance. Healthy wetlands help to maintain lake health.

If you have a low spot on your property, think about making it an attractive feature instead of filling it in. If it is in a sunny area, you might want to plant Blue-eyed Grass (*Sisyrinchium*) or the native, bright red Cardinal Flower (*Lobelia cardinalis*). There are native shrubs, like Common Buttonbush (*Cephalanthus occidentalis*) and Pussy Willow (*Salix caprea*) that also thrive in wet soil and at least part sun. If your wet area is in shade, how about planting a fernery? There are any number of native ferns and other moisture loving plants that thrive in low light conditions.

Common Buttonbush is a handsome spreading, multi-branched shrub having balls of showy white flowers resembling pincushions and button-like balls of fruit. Ducks, other water birds, and shorebirds consume the seeds. It's also called a honey plant because butterflies and bees are drawn to its sweet nectar and aromatic flowers. It is suited to very wet soils so consider planting it in a water garden, bog or pond area with at least some sun for best flowering.



Common Buttonbush. Photo credit: Sharon Hoyes

Plant a Pollinator Meadow

Do you have a full sun location, perhaps a large lawn that you'd like to make over into a wildlife haven for pollinators, birds, and amphibians? If you're considering replacing your lawn, a naturalized meadow or grassland will have a much better chance to allow torrential rain to soak into the ground and filter contaminants before it percolates into our waterways.

Meadows and grass prairies and their associated plants are not native to the Haliburton Highlands, whereas forests and wetlands are. We have, however, created open spaces around our homes, perhaps to allow more sun to enter, to grow vegetable and flower gardens and to keep mature trees from growing too close to our homes. Whatever the reason, we need to import plants that will grow in this created space.

In our region, replicating a mixed-grass prairie would be the best choice to replace lawn turf. Short to medium grass plants are adapted to less fertile soils because there isn't as much plant mass. This makes them better suited for around our homes and other buildings. The tallgrass plants that dominate a prairie landscape have more demanding needs like moisture, a rich clay-based soil many centimeters deep to accommodate its roots and survive periodic burns. These plants would not do well here.

Preparation

There is some preparation involved to be successful in establishing a meadow which might explain why buying a package of wild flower mix and tossing the seeds into the grass didn't work for you. Start small but not too small, say 36 sq. metres (6m x 6m). Some people simply stop mowing the grass.



*"A meadow is what can happen
when you give the earth
a chance to heal itself."*

~ Owen Wormser,
regenerative landscaper and author



Young girl in wildflower meadow. Photo Credit: C. Langdon

Plant a Pollinator Meadow

For most of us in the Haliburton Highlands, our grass contains a lot of unwanted plants. For your new meadow, we recommend that you get rid of the grass and aggressive plants.

1. Smother what is currently growing by placing black plastic, cardboard, or other dark material over the area for 3-6 months, ideally over the summer.
2. The soil around your home will likely be sandy and gravelly; the newer your home, the poorer the soil. Enrich it with organic matter and topsoil if you don't want to take the time to build soil which can take a few years.
3. It will be time to seed in mid to late October. Remove the cover but don't turn over the soil or you will bring weed seeds to the surface. Instead, lightly rake and broadcast your chosen seed mix from a reputable local supplier.
4. Lightly rake to work the seeds into the ground and roll the area with a lawn roller to press the seed into the soil.
5. Cover with just enough straw to maintain moisture, keep seed in place and hidden from birds.

Now What?

In the spring you will see that some flower seedlings have germinated but there will be unwanted seedlings too. Some wildflowers won't germinate in the first year, so you'll have to be patient. Don't pull but cut large unwanted plants to the ground and do this before they flower and seed. Black-eyed Susan (*Rudbeckia hirta*) is quick to grow so be sure to include lots of that flower in your mix. There is no need to fertilize and watering should be done only if there is a period of drought. Goldenrod (*Solidago*) is a prolific wildflower in our area and will find its way into your meadow without you having to plant it.

When your meadow is well established after 3-4 years, you can continue to remove the more aggressive plants like Daisy Fleabane (*Erigeron annuus*), Evening Primrose (*Oenothera biennis*) and Common Mullein (*Verbascum thapsus*). These are great for pollinators, but they outcompete the other native plants, reducing diversity. You don't need to mow or cut down your meadow and remember to leave the seed heads for the birds, and the hollow pithy stems for overwintering insects. Monitor your meadow and cut to the ground any tree seedlings and woody shrubs you would rather not have in your meadow.



Meadow with native Rudbeckia
hirta flower in foreground.

Photo Credit: C. Langdon

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Plant a Pollinator Meadow

If your area is small, you can consider purchasing some plants called plugs from a native plant nursery and get a year's head start on your meadow.

Here are some plants to consider including in a meadow:



Bottlebrush Grass (*Elymus hystrix*)



Little Bluestem (*Schizachyrium scoparium*)



June Grass (*Koeleria macrantha*)



Prairie Dropseed (*Sporobolus heterolepis*)

Photo credit: Belinda Gallagher



Plantain Sedge (*Carex plantaginea*)

Photo Credit: Watersheds Canada



Long-stalked Sedge (*Carex pedunculata*) in a forest

clearing. Photo Credit: C. Langdon

We also recommend the following, photos of which you can see elsewhere in this guide:

Meadowsweet (*Spirea alba*), **Snowberry** (*Symphoricarpos*), **Pale Purple Coneflower** (*Echinacea pallida*), **Black-eyed Susan** (*Rudbeckia hirta*), **Asters** and **Lance Leaf Coreopsis** (*Coreopsis lanceolata*).

Groundcovers Are Not Just Turfgrass



Wild Ginger (*Asarum canadense*) used as ground cover in part shade

While turfgrass is often used as a ground cover, one option in the Haliburton Highlands is the native Woodland Strawberry (*Fragaria virginiana*). This is an excellent groundcover for sunny spaces, with spring flowers that will be used by many pollinating insects and with berries that are important food sources for birds and small mammals. You can even make tea from the leaves of strawberry, which are loaded with vitamin C.



Fall colour of sun and shade tolerant Virginia Creeper (*Parthenocissus quinquefolia*)



Plant Foamflower (*Tiarella cordifolia*)
in shade to part shade

Turfgrass has few ecological benefits so one of the things we can do to attract more wildlife is to replace some of our turfgrass with native groundcovers. Ground covers can be 3cm to 60cm tall so we must think about how we use our turfed spaces. Undeniably, turfgrass can be a very practical option, but most of us have far too much of it.

You're not going to set up a tent or play ball on a groundcover of Canada Anemone (*Anemonastrum canadense*), Bearberry (*Arctostaphylos uva-ursi*) or Bracken Fern (*Pteridium aquilinum*) yet all of these are native ground covers that can thrive in sun. Any low growing plants from the Winterberry (*Ilex verticillata*) family can take sun but do need moisture to thrive. Virginia Creeper (*Parthenocissus quinquefolia*) is a vine that does double duty as a ground cover in sun or shade.

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Groundcovers Are Not Just Turfgrass

Here are some suggestions to naturalize sunny areas currently covered with turfgrass:

1. Plant a wildflower and native grass meadow.
2. Plant slow growing eco lawn seed formulated by Wildflower Farm in Cold Water, Ontario, and sold at local hardware stores.
3. Plant the native Wintergreen (*Gaultheria procumbens*), which is a 10cm tall creeping evergreen plant with red berries in the fall. It can tolerate some drought and does best in dappled sun. You can also consider the native Canada Anemone (*Anemone canadensis*), a great spreader and prolific in the sun with long flowering white blossoms. Canada Anemone can reach 30cm high, but can tolerate being mowed periodically.

Are you looking to cover a woodland edge?

Why not plant Wild Ginger (*Asarum canadense*), Foamflower (*Tiarella cordifolia*), Wintergreen (*Gaultheria procumbens*), Ferns (*Polypodiopsida* or *Polypodiophyta*), or Plantain-Leaf Sedge (*Carex plantaginea*). Check the Native Plant Directory on the Haliburton County Master Gardeners website for these and other native plants.



A wildflower meadow can cover a lot of ground in a sunny location.

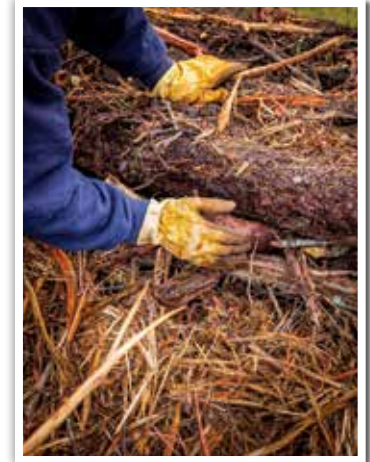
Erosion Remediation

The key to erosion control is to slow down or temporarily stop the downward momentum of water, reducing its capacity to erode. How can you slow water runoff on slopes? One suggestion is to build a small rain garden at the top of your slope.

A rain garden is not the same as a water garden. The following are 5 components of a rain garden:

1. There needs to be a depression in the terrain
2. The filter bed is amended to absorb more water (see wood debris trench photo)
3. Berm can be created on the down slope side
4. Clustered rocks can be used above the rain garden to slow water entering the garden, if necessary
5. Plants tolerant of water (i.e. 2-3 days of standing water) and long periods of dryness can be used to fill the rain garden.

A rain garden is a low-tech solution for a location that periodically gets inundated with water. For example, some downspouts can't handle the quantity of rain and the spillover can cause existing vegetation to die and the soil to erode. Hard surfaces channel water during torrential rain and spring snowmelt events cause erosion particularly on steep slopes. A rain garden and berms might be an affordable solution to excessive runoff. A 1.5m x 3m rain garden, 15cm deep, has the equivalent storage capacity of 11 rain barrels.



A depression is filled with organic debris such as twigs, logs and leaves.



A small pond can be used to hold excess water from overflowing downspouts.
Photo Credit: C. Langdon

Dig your rain garden (30-45cm deep) and fill with a combination of logs, branches, and wood chips at different stages of decomposition. Add native soil and locally composted organic matter. Plant your water tolerant plants dispersed throughout the rain garden. Remember that good humic soil will store a lot of water.

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Erosion Remediation



Leave fallen logs or bring in organic matter to build soil and slow water flow.

Other practices for extreme sites are to mulch deeply, contour the soil, plant native species adapted to the location and plant densely.

A small berm at the top of and/or mid-way down your slope will help. Put in a berm of logs, branches, soil and/or rocks to slow down water run off and allow rain to be absorbed and plant roots to be established. The idea is to place any material that will act to obstruct or slow down the momentum of the water. Organic material has the additional benefit of providing texture and nutrients to your soil as it breaks down.

Clearing a shoreline or hillside of herbaceous plants, shrubs and trees can lead to erosion if not re-planted. Longer, steeper slopes, especially those without adequate vegetative cover are more susceptible to very high rates of erosion during heavy rains than shorter, less steep slopes. Select the right plants.



Stumps and fallen debris left in place to slow water flow and prevent erosion.

Erosion Remediation

In this situation plants that can withstand short periods of flooding and long periods of dryness are required. Xeriscaping plants are defined as those plants that tolerate drought but won't do well in conditions that include extreme wet and extreme dry. Likewise, plants that require constant moisture will not do well.

The following native Ontario plants can tolerate moist and dry soil:

- Aster (*Aster spp.*)
- Black-eyed Susans (*Rudbeckia hirta*)
- Blazing Stars (*Liatris aspera*)
- Bittersweet (*Celastrus scandens*)
- Goldenrod (*Solidago spp.*)
- Blue Vervain (*Verbena hastata*)
- Sweet gale (*Myrica gale L*)
- Red Osier Dogwood (*Cornus sericea*)
- Canada Anemone (*Anemonastrum canadense*)
- Blazing Star (*Liatris aspera*)
- Little Bluestem (*Schizachyrium scoparium*)
- Highbush Cranberry (*Viburnum trilobum*)
- Common Ninebark (*Physocarpus opulifolius*)
- Sedges (*Cyperaceae*)
- Rushes (*Juncus*)
- Nannyberry (*Viburnum lentago*)
- Non-invasive ornamental grasses like Sweetgrass (*Hierochloa odorata*)
- Shade-tolerant native plants including: Common Elderberry (*Sambucus canadensis*), Sensitive Fern (*Onoclea sensibilis*), Heart-leaved Aster (*Symphyotrichum cordifolium*), Ostrich Fern (*Matteuccia struthiopteris*) and Marginal Woodfern (*Dryopteris marginalis*).



Blue Vervain (*Verbena hastata*)



FRIEND OR FOE?

Mosquitoes and Blackflies – Some Interesting Facts

Working outdoors in the spring and summer includes dealing with blackflies and mosquitoes. All the water in all its forms throughout the County provides good habitat for biting insects. Surrounded by nature, we have to accept that to live in harmony with nature we need to safeguard the fragile balance of nature's interwoven web that sustains all living creatures, including humans.

Nature does not make mistakes and these insects are here for very important reasons...

- blackflies pollinate some flowers (but they are not an important pollinator of Blueberries (*Vaccinium corymbosum*), as many have heard)
- mosquitoes and blackflies provide an important source of protein for wildlife such as fish, dragonflies, frogs, birds and bats
- the great hordes of blackflies are active and biting for only a short time in spring and early summer
- there are 42 species of blackflies in Algonquin Park and most likely as many in the Haliburton Highlands, and most feed on flower nectar
- there are 67 species of mosquitoes in Ontario and the males feed on nectar and play a role in pollination
- in our area, blackflies do not transmit diseases to humans

(Information source: Roger LaFontaine, Park Naturalist, Ontario Parks)

Blackfly larvae create copious amounts of nutrient-rich fecal matter that fertilizes riverbanks and feeds many small organisms. If all mosquitoes and blackflies were to be eliminated the fragile food web would be significantly disrupted and much wildlife would suffer or perish. The less diverse our ecosystems are, the less stable they become.



Male mosquitoes play a role in the propagation of native plants.

Goose Deterrence

Did you know that the Canada Goose is not native to the Haliburton region? Historically their nesting grounds were limited to the Arctic tundra, to the Western Prairies and to the grasslands and wetlands of southwest Ontario. They were nearly extinct 100 years ago because of overhunting and loss of habitat.

Since then, conservation efforts and government wildlife laws have re-established their numbers, now estimated in the millions.



Canada Goose love grass.

Human settlement has also rapidly expanded. The once forested Ontario landscape has changed to include significant increases in turfgrass, suburban sprawl and fields of corn and grain. With few predators and an abundant food supply, the exploding populations of Canada Goose are finding a profusion of feeding sites and are spoiling land and polluting water with their excessive droppings. They are also very territorial and will push out other waterfowl from using the habitat for their own feeding and breeding needs.

Geese leave large quantities of molted feathers and droppings, up to 2 kg per bird per day, which have health risks to humans and consequences for other species, the land and water. Competition for feeding and nesting material can also spread diseases such as botulism, cholera, or avian flu among geese. The habitat in our region did not evolve to support such a large bird species with its outsized brood and insatiable demand for food and space. The fragile ecosystem of the Canadian Shield is being negatively impacted by this large bird.

What Can We Do?

Wildlife populations are controlled by several limiting factors including predation, habitat carrying capacity, and disease. If you want to help reduce the number of geese in the Haliburton Highlands and restore species balance, you need to make your property unattractive to them. The most effective way to do that is to change the landscape. Geese feel safest in open, grassy landscapes where they can forage without fear of hidden predators.

The first step to designing a goose deterring landscape is to plant a physical and visual barrier of shrubs and other plants along the water. A cost-effective solution for a large area would be to use Red Osier Dogwood (*Cornus sericea*) and Willow (*Salix*) cuttings purchased or taken from nearby plants in the very early spring. 25-to-30 cm cuttings can be planted into the ground to a depth of 15cm. Rain and natural saturation of the shoreline will soon have them establishing roots.

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Goose Deterrence

White Meadowsweet (*Spiraea alba*) is readily available at nurseries and is another quick growing, dense shrub that deters geese. For a year or so while your shrubs are maturing, you will need a line with flags or flashing tape to deter the geese from coming up out of the water onto your lawn. This barrier will only work for the 6 weeks during July and August when the geese are molting and lose their flight feathers, preventing them from flying. During the rest of the year, they will simply fly over any barrier.

The second step is to reduce the expanse of grass by planting shrubs, trees, and other plants, preferably native to the Haliburton Highlands. A small grove of Pagoda Dogwood (*Cornus alternifolia*), a medium growing shrub with showy spring flowers and an open branch structure, would be a good choice for any location. You could incorporate a snaking path to the water, robbing the geese of clear sightlines from the water to the grass they desire.

It may take 2-3 years to fully vegetate your waterfront to deter the geese. Geese like to return to the same nesting location year after year so you'll have to be vigilant if you have nesting geese on your property. It may take you some time to adjust to the more natural look, but you'll rejoice when you've succeeded in eliminating the Canada Geese who were fouling your property, polluting your water and displacing native waterfowl.

In Summary:

1. Reduce the amount of grass that they like to eat and replace with native plants.
2. Design a narrow zig zag or snaking walking path to the water to reduce the sight lines from the water to the grass.
3. Plant a continuous 75cm high band of dense native plants along the shoreline as deep as you can (6-10m deep recommended but anything will help). These plants will provide a physical barrier and will further reduce sightlines. The geese will fear predators and stay away.
4. Erect a temporary barrier of two rows of line or reflective scare tape until the vegetation fills in.
5. Encourage aquatic plants such as bulrushes and cattails that work to deter geese and help purify your water.
6. Plant trees and understory shrubs to obstruct their overhead line of sight.



Zig Zag path to water at Walling's Way. Photo Credit: C. Langdon

A Three Stage Approach to Landscape Design



1. It is common to extensively clear land before building homes and other structures. Scientists agree, however, that a vegetated property in addition to a well-maintained septic system, are the most important things a property owner can do to improve and protect lake water quality.

Native vegetation also provides:

- privacy from neighbours;
- protects steep slopes from erosion;
- provides wildlife habitat;
- absorbs and filters 65% more water than turfgrass;
- increases plant diversity and resiliency from climate change;
- protects harmful debris and nutrients from washing into the lake;
- wave action at the shoreline and water level fluctuations are absorbed by aquatic and shoreline vegetation, reducing erosion.

A Three Stage Approach to Landscape Design



2. Plant a buffer along the lake including plantings in the water if your site is shallow enough. Leave woody debris in the lake and leave overhanging branches to shade and protect fish and other aquatic species. Plant species native to the Haliburton Highlands. Place your ornamental plants and vegetable garden well away from the lake close to the house.



3. Reduce the lawn by planting a swath of vegetation from the lake to the upland forest beside and behind your home. In addition to the important 'ribbon of life' along the shoreline, this natural area provides a critical safe passage zone for wildlife to upland areas.

Degraded shorelines are a threat to animal habitat and water quality. Silt from erosion covers fish spawning sites and reduces fish populations. 90% of aquatic life rely on the shoreline at some point in their life while 70% of land animals move through the shoreline habitat. (*Ducks Unlimited*)



*"If suburbia were landscaped
with meadows, prairies,
thickets or forests,
or combinations of these,
then the water would sparkle,
the fish would be good to eat
again, birds would sing, and
human spirits would rise."*

*- the late Lorrie Otto,
Native Plant Gardening Pioneer*

Selection of Native Plants

Master Gardeners recommend the following native plants and shrubs for the Haliburton Highlands region. For a larger selection see more on the HCMG website by scanning the QR code or go to www.HaliburtonMasterGardener.ca.



Selection of Native Plants Legend

LIGHT REQUIREMENTS

**Sun**

6 or more total hours of direct sun per day

**Part Sun/Part Shade**

4-6 hours total hours of sun or 6 and more hours of dappled sun. Part shade is closer to the lower end of the spectrum of 4 hours of total sun.

**Shade**

Less than 4 total hours of direct sun

BLOOM TIMES

**Spring****Summer****Fall**

MOISTURE REQUIREMENTS

**Dry****Average****Moist****Wet**

WILDLIFE BENEFITS

**Food Plants**

Provide a variety of foods including from nectar to nuts for birds, insects and mammals

**Nest Plants**

Provides habitat, protection and shade for birds/small mammals

**Caterpillar Plants**

Host caterpillars which are a major food source for some birds, insects and reptiles

POLLINATION

Plants host a variety of pollinators such as butterflies, bees, moths, ants, beetles, flies, mosquitoes and wasps.

**Hummingbird****Butterfly****Bee****Moth**

* good plant for rain gardens and annually flooded areas that are wet for short periods

Selection of Native Plants

**Pale Purple Coneflower***(Echinacea pallida)***Black-eyed Susan***(Rudbeckia hirta)*

Ruby-throated Hummingbird on a Cardinal flower

Cardinal Flower*(Lobelia cardinalis)***Blue Lobelia***(Lobelia siphilitica)*

Selection of Native Plants



Lanceleaf Coreopsis
(*Coreopsis lanceolata*)



Asters

New England Aster (*Symphyotrichum novae-angliae*);
Blue Wood Aster (*Aster cordifolius*);
White Wood Aster (*Aster divaricatus*)



Blue Vervain
(*Verbena hastata*)



Woodland Strawberry
(*Fragaria vesca*)



Selection of Native Plants



Photo Credit: C. Langdon

Canada Anemone
(*Anemone canadensis*)



Photo Credit: C. Langdon

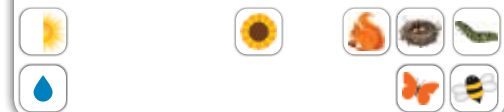
Bearberry • evergreen groundcover
(*Arctostaphylos uva-ursi*)



Wild Geranium
(*Geranium maculatum*)



Woodland Sunflower
(*Helianthus divaricatus*)



Selection of Native Plants



Wild Columbine
(*Aquilegia canadensis*)



Celandine Poppy
(*Stylophorum diphyllum*) • endangered



Bunchberry
(*Cornus canadensis*)



Pearly Everlasting
(*Anaphalis margaritacea*)



Foamflower
(*Tiarella cordifolia*)



Ostrich Fern • Marginal Wood Fern
(*Matteuccia struthiopteris*) • (*Dryopteris marginalis*)



Blue Flag Iris
(*Iris versicolor*)



Dogwoods - Red Osier • Alternate Leaf
(*Cornus sericea*) • (*Cornus alternifolia*)



Selection of Native Plants



Common Ninebark
(*Physocarpus opulifolius*)



Meadowsweet
(*Spiraea alba*)



Snowberry
(*Symphoricarpos albus*)



Northern Bush Honeysuckle
(*Diervilla lonicera*)



Keystone Plants Are Native Plants

Red Oak (*Quercus rubra*), Basswood (*Tilia americana*), and Serviceberry (*Amelanchier*) are some of the native and keystone trees that grow in the Haliburton Highlands. Other native and keystone plants include Highbush Cranberry (*Viburnum trilobum*), Red Osier Dogwood (*Cornus sericea*) and Meadowsweet (*Spiraea alba* var *latifolia*) among hundreds of others.

They are native because they evolved with the land. They are also "keystone" plants. Keystone plants attract more wildlife, particularly beneficial native insects, than do others and should form the backbone of your plantings. 96% of our terrestrial birds rely on insects supported by keystone plants.

All native species are important perhaps in ways that science has not yet discovered. Singling out some plants is not to suggest that there is a hierarchy among plants, but just that "keystone" species are native to a region and always to be preferred over ornamental and specialty cultivars. Even if the diversity of other plants is high, the system will collapse if the keystone plants are removed.

Don't be dismayed when you see caterpillars and other insects taking shelter in the trees or eating leaves, but rather think of all the clutches of baby birds that will be fed and the moths and butterflies that will later emerge. It is all part of nature, and of the wonder that is the forest food web.



Blue Wood Aster (*Aster cordifolius*)

Straight Species and Nativars Explained

Have you heard and been confused by terms such as hybrid, cultivar, nativar and variety? Don't despair, experienced gardeners have been as well. When it comes to introducing native plants to the fragile and pristine environment of the Haliburton Highlands, here is what you need to know.

Grow straight species because they are the plant that you would find in the wild. Seeds are gathered from various varieties of wild plants and planted by nurseries or you can do it yourself. A **cultivar** is a plant that has been bred to bring out a particular colour, shape etc. A **nativar** is a cultivar from a straight species/wild-type of native plant.

There are 2 reasons why you want to avoid planting cultivars and nativars.

- ONE, a cultivar can cross pollinate with the native species and negatively alter the genetics of the native plant and its attractiveness to wildlife. This is the case in areas of pristine nature where native species still exist. If you want to plant a cultivar or nativar make sure it is sterile.
- TWO, we don't have enough data to know if the changes to create a cultivar that is attractive to people are also beneficial to wildlife. In some cases, it may make no difference, in others, the pollen may be less nutritional, the double petaled flowers inaccessible or the altered colour may not be attractive to pollinators.

Cultivars sometimes called nativars have been manipulated in such a way that their leaf colour for example is purple instead of green. The native Ninebark (*Physocarpus opulifolius*) has green leaves that the caterpillars like to eat. There is a cultivar called *Physocarpus opulifolius* 'Diabolo' with attractive purple leaves but they are distasteful to the caterpillar.

If you want to support songbird populations you will want to provide them with food. Caterpillars are an important food source for birds so you will want to grow lots of the green coloured native Ninebark and only a couple or maybe none of the purple leaved 'Diabolo' cultivar.



Native Ninebark on the left and the non native purple leaved 'diabolo' cultivar on the right.

Our Partners

Abbey Gardens Shoreline Outreach Program Contact Cara Steele, Program Coordinator & Ecological Specialist at cara@abbeygardens.ca to learn more, or visit abbeygardens.ca/shoreline. Abbey Gardens is aligned with the Natural Edge Programme of Watersheds Canada. • www.abbeygardens.ca/product/shoreline-outreach-program

CHA, The Coalition of Haliburton Property Owners Association (CHA) has been at the forefront of county wide efforts to protect water quality. They have produced multiple resources like the Ribbon of Life video about shoreline vegetation • www.cohpoa.org

Haliburton County Master Gardeners is a volunteer organization that provides horticultural advice specific to the Haliburton and surrounding regions (zone 4) on a range of topics. HCMG is aligned with the Natural Edge Programme of Watersheds Canada • www.haliburtonmastergardener.ca

Watersheds Canada, Natural Edge Program "...empowers Canadians to take local action on the restoration and conservation of their freshwater resources by enhancing their shoreline areas with native trees, shrubs, and wildflowers." • www.naturaledge.watersheds.ca



Advice from Master Gardeners. Photo credit: Michelle Leigh

Nurseries and Consulting Services

Botanigals – Family-based nursery and ecological consulting in Algonquin Highlands. Grow and sell native plants • www.botanigals.ca

Chalk Lake Greenhouses – Wet meadow, emergent, submergent and floating-leaved plants available. Contract growing as well • R.R. #4, Uxbridge, ON, L9P 1R4 • 905-649-5384

Ecology Park Plant Nursery – Cathy Dueck c/o Peterborough Green-Up • 888-745-3238 • www.greenup.on.ca/ecology-park

Friends of Ecological and Environmental Learning (FEEL) – Annual native plant sale in May • 705-854-0284 • www.ecoenvirolearn.org/native-plant-sale.html

Grounded Gardens – Naturalized gardens designed and installed • Haliburton ON • www.groundedgardens.ca

Grow Wild! – Native Plant Nursery and ecological consulting company. Online catalogue of native trees, shrubs and plants including Woodland, Shoreline and Pollinator collections of 20 pre-selected plants from \$50 to \$75 • 3784 Highway #7, Omemee, ON • www.nativeplantnursery.ca

Native Plant Nurseries – Native Wildflowers, Natural Landscape Design, Restoration Expertise, Contract Growing, Seed Packets • Pepperlaw, ON • www.nativeplantnurseries.ca

Native Plants in Claremont – Native perennials, trees, shrubs, and vines • www.nativeplants.ca

Northern Wildflowers – Seeds and more • 95 Laura Ave, Lively, ON • 705-618-4797 • www.northernwildflowers.ca

Ontario Native Plants – An online plant retailer shipping anywhere in Ontario • www.onplants.ca

Rockwood Forest Nurseries – Selection of native trees and shrubs • 437 Mark Road, Cameron, ON • www.rockwoodforest.com

The Land Between – Shoreline Naturalization, Consultation/Implementation • 705-457-1222 • info@thelandbetween.ca • www.thelandbetween.ca

Wildflower Farm – Since 1988, Eco-lawn, native grass seed, wildflower seed • 10195 Hwy 12, Coldwater, ON • www.wildflowerfarm.com

Books

A Garden for the Rusty-Patched Bumblebee: Creating Habitat for Native Pollinators: Ontario and Great Lakes Edition by Lorraine Johnson, Sheila Colla, Illustrated by Ann Sanderson, Douglas and McIntyre, 2022

Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard by Douglas W. Tallamy, Timber Press, 2020



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