



The Land Between



TD Friends of the
Environment
Foundation

DESIGN-YOUR-OWN SHORELAND



Shoreland
Gardens

Design-your-own Shoreland

Presented by The Land Between Conservation Charity



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6712 Gelert Road, Haliburton, ON K0M 1S0
info@thelandbetween.ca | thelandbetween.ca | 705-457-1222

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Writers: Siena Smith, Angela Vander Eyken, Leora Berman

Copy editing: Jaime Kearnan

Design and layout: Jaime Kearnan

Contributors: Kristyn Bennett, Jazlyn Burrell

Technical review and content support: Rebecca Krawczyk of Botanigals, and Watersheds Canada

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The Land Between bioregion is a vital refuge for biodiversity in Ontario with 57 listed Species at Risk. As such, the Land Between has been awarded the status of a Community-nominated Priority Place for Species at Risk (CNPP) and along with our cooperative working model, The Land Between Conservation Charity receives support from Environment and Climate Change Canada (ECCC) for species recovery in the region.

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About This Guide

The Design-your-own Shoreland Guidebook was created to help property owners design a shoreland garden that not only meets their specific needs and tastes, but also benefits the many species of plants, animals and insects with whom the shoreland area is shared.

This guidebook provides all the information landowners need to know about the importance of native shorelands to human, environmental and economic health, and serves as a step-by-step guide on how to plan, design, install and maintain a beautiful native shoreland garden.

Included in This Guide:

- Plant recommendations for hard-to-grow-in spots, such as hot and dry or shady areas.
- Plant recommendations to achieve a specific garden style, such as Japanese or English Cottage.
- Solutions to common problems, including nuisance geese and erosion.
- Information on growing requirements, bloom colour, time and duration.
- Benefits to native species and their habitats for over 100 native species of wildflowers, shrubs, grasses and trees!
- And so much more!

We hope enjoy reading the Design-your-own Shoreland Guidebook as much as we did writing it.



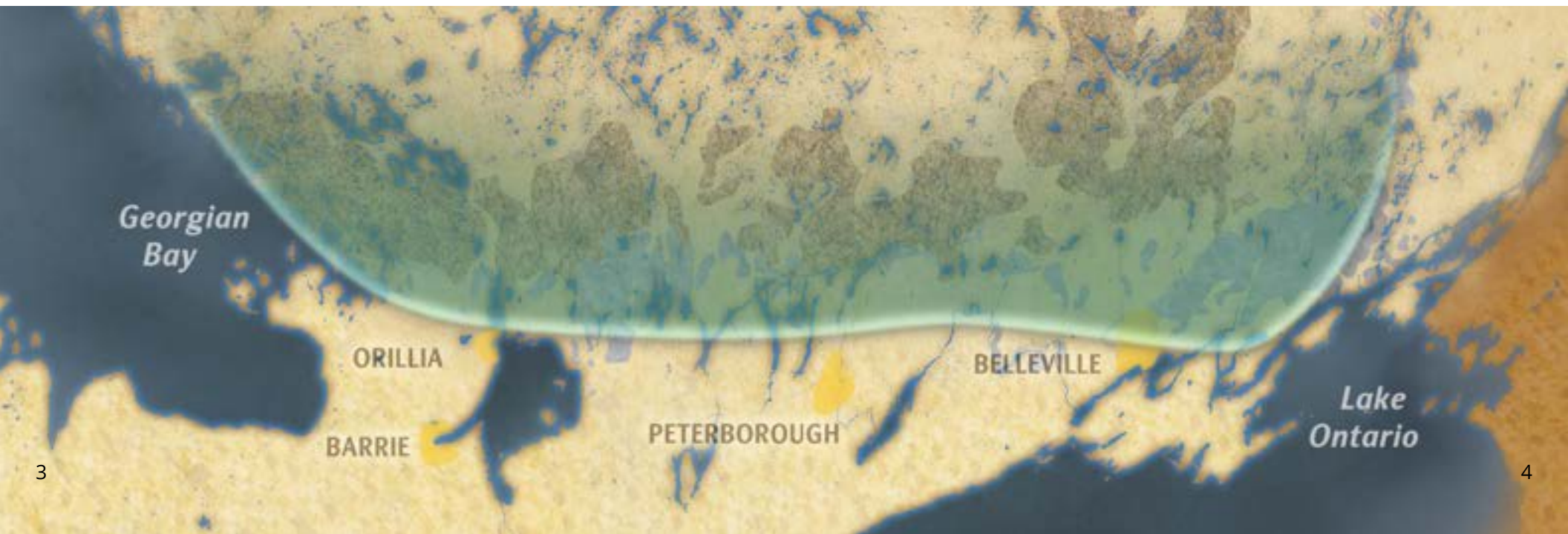
The Land Between

The Land Between is a bioregion that extends from the Georgian Bay Coast to the Ottawa Valley. It is a regional belt of more than 240 km in length and 50 km in width, spanning 9 counties and enveloping what is commonly thought of as Ontario's "Cottage Country". It is the last intact wilderness in southern Ontario, a final refuge for wildlife species, and a land of hope. The region is an irreplaceable source of ecosystem services that keep its residents, and the rest of Ontario, healthy.

The Land Between is an ecotone, a complex area of transition between the Canadian Shield and St. Lawrence Lowlands. It is characterized by low relief and exposed granite to the north, and "stepping stones" of limestone plains along the south. Connected lakes and wetlands between these dry open ridges and patches of cool shaded forest are the patterns of this unique natural system.

The Land Between is home to the highest percentage of shoreline-to-area anywhere in the province of Ontario. It is also, however, an area of extremely shallow soil cover, with a soil depth of 15cm commonly found throughout the region. The lack of soils, together with the abundance of connected fresh water, make this landscape easy to damage, and the effects of pollution and disruption far reaching and long lasting. It is for these reasons, among many others, that proper and informed maintenance and stewardship of shoreland habitats is critical in this region.

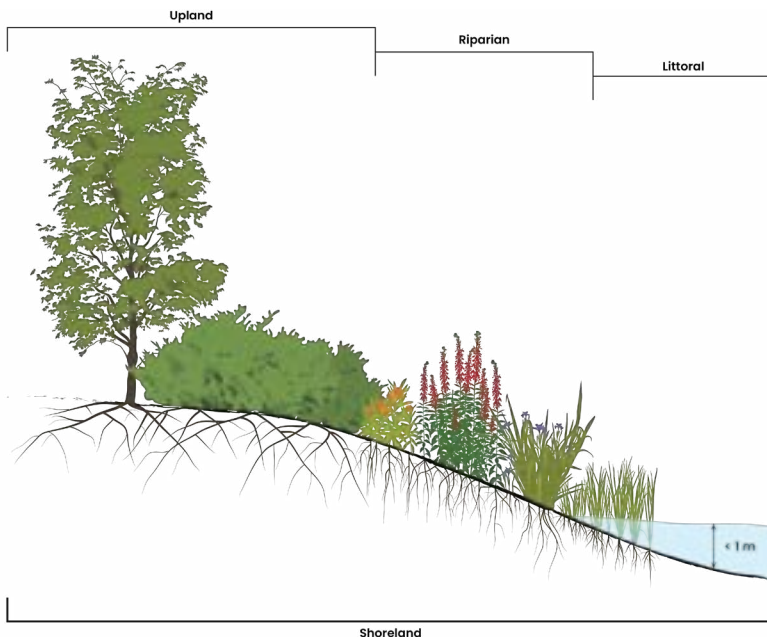
The Land Between is also a charity, a grassroots non-government organization and works to achieve bioregionalism; a sense of place and active stewardship rooted in the understanding that human well-being comes from the land. The charity conducts applied collaborative research and conservation projects, provides education and facilitates public engagement in order to restore habitats and wildlife populations, cultural assets and economic pillars across the Land Between bioregion.



What is a Shoreland?

Contrary to popular belief, the shoreline is much more than just the thin border between the land and water. In fact, the shoreline is actually the area from the high water mark to 100 feet (30 m) upland, and from the high water mark to a water depth of 3 feet (1 m). That is, the shoreline includes both upland and lowland areas. A more accurate term for this area is actually '**shoreland**', and it is the term that we will use throughout this guide.

The shoreland encompasses three zones: the riparian, littoral and upland. The **riparian zone** is the area typically thought of as the 'shoreline' - the area between the upland and the water. The **littoral zone** is the area from the high water mark to a depth of 1 meter (3 feet). A depth of 1 meter is the point beyond which sunlight can no longer reach the bottom of the water. As such, **emergent plants** (plants that are rooted in the bottom of the lake that grow to emerge from the water) do not typically grow beyond this point.



i. The Shoreland is an Ecotone

Just as The Land Between is an area of transition between the Canadian Shield and the St. Lawrence Lowlands, shorelands are transition areas between upland and aquatic environments. As such, just like The Land Between, shorelands are areas of extremely high biodiversity, as they support both aquatic and upland species, as well as species unique to the shoreland habitat.



ii. The Value and Importance of a Natural Shoreland

The benefits of a natural shoreland can be felt in every aspect of life in Ontario's Cottage Country. Natural and native shorelands are not only critical for the maintenance of biodiversity and ecosystem function, they are also indispensable to you as a property owner, and even to the economy as a whole. Some of the many values of a natural, native shoreland include:

To you and your property:

- Beautiful esthetic
- Low maintenance
- Erosion control
- Reduction or elimination of nuisance wildlife
- Buffering capacity against flooding

To wildlife:

- Foraging, nesting and resting habitat
- Reduction or elimination of invasive species
- Fish nurseries
- Increased buffering capacity

To lake health:

- Enhanced water filtration and increased water quality
- Decreased erosion and siltation
- Decreased risk of algae blooms

To the economy:

- Sustains healthy and beautiful lakes for recreational use*

**Outdoor sports and recreation, including cottaging, account for more than 70% of the revenue in Ontario's Cottage country, much of which would not be possible without healthy, beautiful lakes. Healthy shoreland environments allow for a sustainable and resilient economy.*



Shoreland Standards of Excellence

With this guide, we hope to help you achieve the desired esthetic and functionality of your space, while meeting the following Shoreland Standards of Excellence:

- 1. 70% natural shoreland:** At least 70% of the shoreland on your property is occupied by native plants, trees, shrubs or land features.
- 2. 75% native plant cover in the riparian area:** The riparian area, the area where land and water overlap, is a critical habitat area for terrestrial, aquatic and amphibious species. 75% cover with native plants in this area will ensure that all species that depend on the habitat have a source of food, shade and shelter.
- 3. 50% native plant cover in your upland areas:** At least 50% of the upland area of your property is occupied by native plants, trees, shrubs or land features.
- 4. Diversity:** a wide variety of native plants at many different heights.

Meeting these standards of excellence will not only allow you to have a beautiful shoreland, but will also enable your shoreland to effectively function in its natural capacity to filter water, control erosion, and provide food and shelter for countless species of insects, mammals, amphibians, reptiles and birds!



Shoreland Dos and Don'ts

Here we outline some basic guidelines to keep in mind when beginning the process of designing your own shoreland garden. Considering these “Do’s and Don’ts” will help ensure your shoreland project is successful and long-lasting.

DO!

- **Use native, non-invasive plants.** See Appendix A for some great suggestions!
- **Plant a wide variety of plants with different heights and bloom times.** The variation in plant height will provide habitat for species at all levels (and give your garden beautiful structure). The varied bloom times will ensure there is a source of food for pollinators and other species throughout the growing season.
- **Consider what is already growing wild around your property.** If the species you already have are not invasive or exotic, consider planting more of them, or allowing them to spread naturally.
- **Evaluate the “invasive potential” of a plant before planting.** While some plants may not be considered invasive broadly (in Ontario or Canada for example), they may be locally invasive. Plants described as having “aggressive” or “competitive” growth should be carefully considered before planting.

- **Consider doing nothing.** Nature generally knows how to take care of itself. By leaving things where they fall (trees, leaves, etc.) and letting things grow wild, you are allowing the naturalization process to occur, naturally!
- **Consider installing or creating supplemental habitat structures.** There is no such thing as too much habitat in a backyard environment. Installing things like bird houses and feeders, and bat and butterfly boxes can help provide additional food and shelter for your backyard visitors. You can also create supplemental habitat with things you already have in your yard, such as wood, leaves and yard debris. Creating and leaving piles of natural materials provides a great home for small rodents, insects and snakes to hide.



DON'T

- **Plant more than 25% non-native plants.** Non-native (not naturally found in an area or region) plants often provide no ecological benefit to native species as many cannot be used as food, shelter or nesting material. But, a few non-native plants here and there are more than okay as long as they are not invasive.
- **Plant invasive species.** **Invasive species** are non-native species that cause harm to native species. Invasive plant species tend to grow more quickly and aggressively than native species, and often outcompete native plants for space and

resources. Invasive plants also contribute little to the proper function of an ecosystem.

- **Bring in unclean or untraced fill.** Fill, whether it be soil, gravel or otherwise, can be full of invasive and non-native plant seeds that can wreak havoc on your garden. If fill is absolutely necessary, try to source it from local, clean and traceable sources whenever possible.
- **Fill in natural depressions or wet areas.** These spaces are important nurseries for species such as salamanders and frogs, which play an important role in a balanced and healthy food chain in your backyard environment.
- **Harden surfaces.** As we will discuss in Chapter 6: *Common Myths about Shoreland Development*, hardened surfaces can have a detrimental impact on your lake. Avoiding or minimizing such areas in favor of native gardens or natural features allows for more efficient water flow control and filtration before the water reaches the lake.
- **Create wide open spaces.** Bare, open areas like lawns limit the filtration of upland runoff that enters the lake and attracts tundra species, such as geese. If you require some lawn for recreation or other purposes, consider breaking it up with flower beds or other natural features. Not only will this dissuade geese from using your property, but natural features slow the flow of water from the upland into the lake. The decreased rate of flow will allow more pollutants, such as excess nutrients and sediment to be filtered out before it reaches the lake, enhancing the quality of the water in the process. For more information on how to deter geese from your property, please see Chapter 11.i.





Common Myths About Shoreland Development

Shoreland development usually means one or more of the following: re-grading (changing) natural slopes, removing vegetation, or hardening upland surfaces. These development actions have significant and far reaching consequences, and usually do not achieve the desired intent of the landowner. In this section, we shed some light on some of the most common myths surrounding shoreland development.

Myth 1: Lawns are easier to maintain than a natural shoreland garden

Unlike lawns, which require regular mowing, watering and seeding, natural shorelands are very low maintenance! Beyond the initial planting and some occasional watering until the plants establish good roots, native gardens require very little effort from you! If you would like to keep your native garden looking “tidy” and maintain sight lines, some occasional pruning may also be necessary.

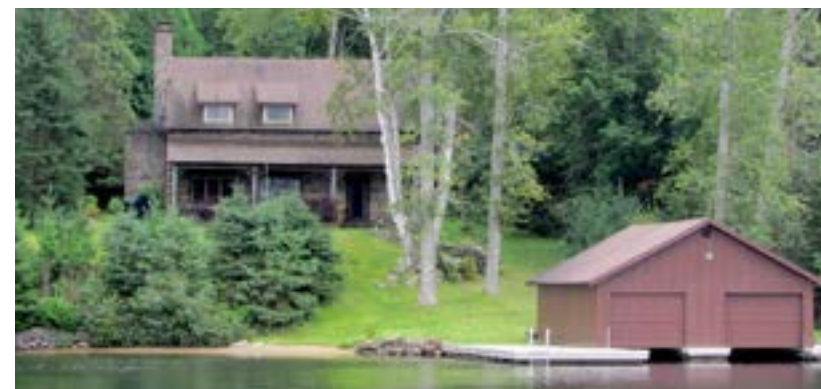
Myth 2: Natural shorelands are “messy”

Your native shoreland garden can be as messy or tidy as you would like! The primary guiding principle behind a natural shoreland is the presence of a wide variety of native plants and as little to no lawn or hardened surfaces as possible. How trimmed and tidy you choose to keep your natural garden is entirely up to you! What’s more, you may find your children and grandchildren prefer natural shorelands over manicured ones, as natural shorelands provide endless frogs, insects, and other animals to discover and explore.

Myth 3: Trees and shrubs limit site lines

They do not have to! If you have trees and shrubs blocking your site lines, consider limbing or trimming some branches back. This way you can achieve the view you desire, while still leaving these beneficial plants in place. What’s more, trees provide a natural and beautiful privacy screen around your property, allowing you to see out, but blocking your neighbors from seeing in.

If you would like to plant trees and shrubs on your property (or supplement the ones you already have), but are afraid of losing your site lines, simply choose species that grow to a maximum height below the site line(s) you would like to maintain. Or, when the trees and shrubs are established and tall enough to block your view, prune and limb them as required. Not only will these trees and shrubs provide food and cover for species, their



roots will also help control erosion on your shoreland . Detailed information on how to properly limb trees can be found in **Watersheds Canada's Native Plan Care Guide** (see Chapter 18: *References*).

Myth 4: Retaining walls control erosion

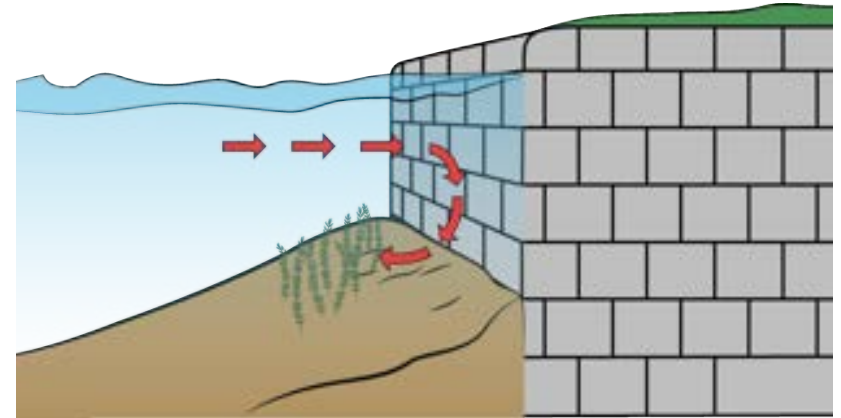
The roots of native trees and plants hold the soils of the shoreland in place and prevent them from being washed away as a result of water movement and wave action. When trees and plants are removed from the shore, the roots go with them, leaving the soil loose and susceptible to erosion. To combat this, many landowners turn to retaining walls. While in some cases retaining walls are the only option, oftentimes they only serve to exacerbate the erosion problem.

While retaining walls may control the erosion on your property for a time, they are usually not an effective long-term solution. This is because, when a wave hits a wall, all the energy stored in the wave is not absorbed, but redirected (Newton's Third Law: For every action there is an equal and opposite reaction). That is, the wave energy bounces off the wall and goes elsewhere. This can cause several problems.



Wave energy bouncing off the wall can cause a form of backwash, resulting in erosion in front of the wall. Over time, this can compromise the integrity and strength of the wall, and ultimately

cause it to fail. Additionally, invasive, nuisance plants often thrive in disturbed and eroded areas, such as the lake bottom along retaining walls. Rebounded wave energy can also be redirected to either side of a retaining wall, often resulting in erosion in other areas of the shoreland which may be occupied by others: your neighbors. Even relatively small walls can cause major problems on neighboring properties.



Break walls can also cause erosion behind the wall. Walls block upland runoff (rain and other water) from entering the waterbody, causing it to pool and collect behind the wall, eventually leading to erosion. Just as with erosion in front of the wall, over time, this erosion can result in wall failure.

In summary, the energy (ability to erode shorelands) contained in a wave does not disappear when it hits a break wall: it is just redirected. For this reason, retaining walls are often not the best solution to erosion issues. To dissipate the energy contained within a wave and prevent the energy from causing damage, waves need to be broken gradually and gently, and a wall does not allow for that. What does however, is a long, dynamic, natural shoreland.

Myth 5: Hardening or smoothing of upland areas has no impact on lakes

Removing the naturally occurring vegetation from upland areas and replacing it with materials such as stone, brick or cement can have a detrimental impact to the lake environment. Hardening upland areas removes the ability of an area to absorb rainwater, resulting in an increase in the amount of runoff entering a lake, and increasing the risk of flooding as a result. Hardened areas are also unable to filter runoff, resulting in increased deposition of soils, nutrients and other pollutants into the lake. This in turn can result in siltation, making the water unpleasant to swim in and disrupting aquatic habitats (particularly fish nurseries). Unfiltered runoff can also lead to toxic algae blooms, resulting from increased phosphorus loading.



Benefits of a Natural Shoreland

Natural shorelands are as valuable to people as they are vital to lake ecosystems. The area where land meets water is the primary focus for property aesthetics and many recreational activities, but it also provides rich habitat for a variety of aquatic and terrestrial species, helps prevent erosion from wind and wave action, and filters excess nutrients and contaminants from upland runoff. In this section, we explore in more detail some of the benefits that natural shorelands have to offer.

i . Water Filtration, Bacterial Control and Nutrient Management

There are a range of nutrients and beneficial bacteria naturally occurring in lake ecosystems which provide the essential fuel needed for plant and animal growth. These nutrients come from sources, such as the natural erosion of bedrock and soil, precipitation (rain and snow), and animal waste. The porous, uncompacted soils and deep native plant roots along vegetated shorelands keep the levels of these nutrients and bacteria in balance by naturally absorbing and filtering runoff before it reaches the lake. In fact, natural shorelands help filter out chemical, bacterial and sediment contaminants by up to 50%, 60%, and 75% respectively (Muskoka Watershed Council, 2013).

ii. Algae Bloom Mitigation

What is an Algae Bloom?

An algae bloom is the rapid increase in the population of an algae colony in a water body. Algae growth is a normal part of lake ecosystem function and is essential for the survival of fish and other aquatic species that rely on the algae as a food source. However, human activity around water bodies can exacerbate the occurrence, frequency and duration of algal growth, resulting in an algae bloom. Algal blooms in turn cause cloudy water, reduced

water quality, and cascading effects in the food chain.

What's more, when the algae dies, vast amounts of oxygen are taken from the water by the living organisms that decompose it, leaving very little oxygen in the water for other aquatic species. The low-oxygen environment created by the algal decomposition process kills fish and other aquatic organisms such as benthic macroinvertebrates, crayfish, and molluscs. Blue-green algae blooms can be especially dangerous, as some species can produce toxins capable of harming humans and animals.



What Causes an Algae Bloom?

One of the largest contributing factors to algal blooms in lakes is the introduction of surplus nutrients, particularly phosphorus, into the environment. Phosphorus naturally occurs in lakes at low levels, and is an important nutrient in normal and balanced plant and algae growth. Excess phosphorus can come from many human-made sources including fertilizers, sewage/septics, and pesticides, as well as as a result of soil erosion. Too much phosphorus in a lake can result in uncontrolled plant and algae growth. In fact, just one pound of phosphorus in the water is enough to grow a whopping 500 pounds of plants and algae. This growth is exacerbated by climate change and lake warming effects which favour the proliferation of algae.

Preventing Algae Blooms

Natural shorelands help discourage algal blooms in two major ways: by filtering and removing excess nutrients from runoff, and by preventing erosion of nutrient-rich soils into the lake.

In addition, native vegetation shades the water's edge to help cool the lake and buffer against the effects of climate change. As algae proliferates in warmer waters, the cooling effects of natural shorelands help discourage the conditions for algal growth.

iii. Goose Control

Geese are tundra species; they feel most comfortable in flat, open landscapes near the water's edge where they can see a great distance in all directions, and easily retreat to the water if need be. They also love to eat fertilized grass. So, if you have a goose problem, it is likely because your shoreland resembles a tundra.

Natural shorelands are a great way to naturally and effectively deter geese. A thick vegetation corridor consisting of tall (60 cm+) native grasses, sedges, wildflowers and shrubs interrupts the sightlines that geese need to feel comfortable, deterring them from the area.



Deterring geese from your shoreland not only saves you the headache of having them around, it also protects the water quality of your lake. One goose can produce up to 2 pounds of fecal matter per day, contributing to the runoff of excess nitrogen, phosphorus and pathogens into lake water. One of the most concerning pathogens contained in geese fecal matter is *Escherichia coli* (E.coli) which, if ingested in drinking water or while swimming, can have serious health impacts. Further, schistosomes, another pathogen found in goose fecal matters, can cause swimmer's itch. The prevalence of these harmful bacteria in lake water can be controlled naturally with vegetated shorelands which discourage the inhabitation of geese.

iv. Slope Maintenance, Flooding and Erosion Control

Erosion, the gradual dispersion of material from its source as a result of water, wind or another natural force, is a regular and common process. Under normal circumstances, erosion occurs at an unnoticeably slow rate (the natural rate of sediment accumulation in a lake due to erosion is about 1 mm/year). However, human activities, such as artificially hardening shorelands and removing native plants exacerbates the rate of



erosion. These changes remove the natural buffers that work to slow and absorb water as it flows over upland areas, increasing the amount and force of water moving overland. This increase in force and volume of water results in an accelerated rate of erosion, and an increased risk of flooding, which in turn can cause land losses, slope failures, and pose a risk to human life. Removal of vegetation in upland areas, especially deep-rooted trees, can also have drastic effects on slope stability and result in erosion problems all the way down to the shore.

Gently sloped, natural shorelands are typically more effective in shoreland stabilization, wave dissipation, flood mitigation and erosion control than artificial, hardened shorelands. Deep native plant roots act like glue to hold the soil together, and uncompacted soil and vegetation act together like a sponge to soak up excess water.

v. Invasive Plant Species Control

Invasive plants are species that do not naturally occur in an area (i.e. they have been introduced) and whose growth has a negative impact on native species. Invasive plants tend to be very aggressive, often completely overtaking an area by outcompeting native species for space and nutrients. One common invasive plant species to the Land Between is the European Common Reed (*Phragmites australis australis*).



The proliferation of invasive plant species can make a habitat unsuitable for the animals, insects, and other organisms that occupy an area. For example, uncontrolled growth of aquatic and semi-aquatic invasive plants can destroy fisheries by displacing native plant species, decreasing oxygen supply in the water, and disrupting food webs. What's more, invasive plants directly impact humans by hindering or impeding recreational activities such as swimming and boating, and ruining the aesthetic appeal of a natural and healthy waterbody.

Unfortunately, because shorelands are the interface between aquatic and terrestrial ecosystems, they support seed dispersal by multiple means (wind, water and animals), making them naturally more susceptible to invasive species. Shoreland soils also tend to be more exposed than in other areas as a result of natural wave action and erosion, as well as human disturbances, making seed establishment easier.

Heavily vegetated, natural shorelands are the best defence against invasive species. A diversity of native vegetation and the occupation of soil space means there is less chance for invasive species to establish. It is very difficult to manage or eradicate invasive species once they are established, especially in aquatic ecosystems, so prevention is always the best option.



vi. Strong Foodweb Foundation and Maintenance of Species Habitat

Natural shorelands provide important food sources and habitat for approximately 90% of freshwater species, and a further 70% of land-based wildlife (Kipp & Callaway, 2003). Natural shorelands are extremely biodiverse because they feature plants, animals, and environmental conditions from both aquatic and terrestrial ecosystems, as well as flora and fauna completely unique to the shoreland. This meeting place of two ecosystems and the transition zone between them, known as an ecotone, is marked by high habitat complexity and connectivity.



Aquatic vegetation, wood debris, and rocks along the shoreland are critical components of healthy lake habitats. Plants help supply the lake with oxygen and are important hiding spots for aquatic and semi-aquatic species including fish, frogs and turtles. Similarly, logs and rocks provide essential spawning grounds and nursery areas for fish. On land, foliage helps keep the shoreland cool, creating a higher oxygen environment for fish and other aquatic life. Combined, these features offer places for habitat, shelter and safe travel corridors for the lake's inhabitants.

Natural shorelands also provide food for many species both in the water and on land. In fact, they are hotspots for biogeochemical activity. Compared to other habitats, the

shoreland is one of the largest producers of the building block of ecosystems: organic carbon. This carbon fertilizes soil for plant growth, and provides food for organisms at the base of the food web, which then feed other species further up the ladder.



vii. Buffering Against Climate Change

Climate change continues to bring about many physical changes to our environment, including an increased prevalence and severity of storms, flooding and drought, and drastic fluctuations in temperature. Lake ecosystems are particularly sensitive to these changes.

Climate change is causing changes in water levels and temperature, timing of ice melt, and increased nutrient runoff, all of which have the potential to significantly damage a lake environment. These physical changes can also cause biological and ecological impacts, including bacteria load increases, altering the timing of biological events (such as spring nesting for birds and seasonal spawning for fish), and shifting species home ranges.

Natural shorelands are one of the best buffers against the effects of climate change. They provide numerous natural defenses to protect human life, property, wildlife, and habitats. For example, natural shorelands:

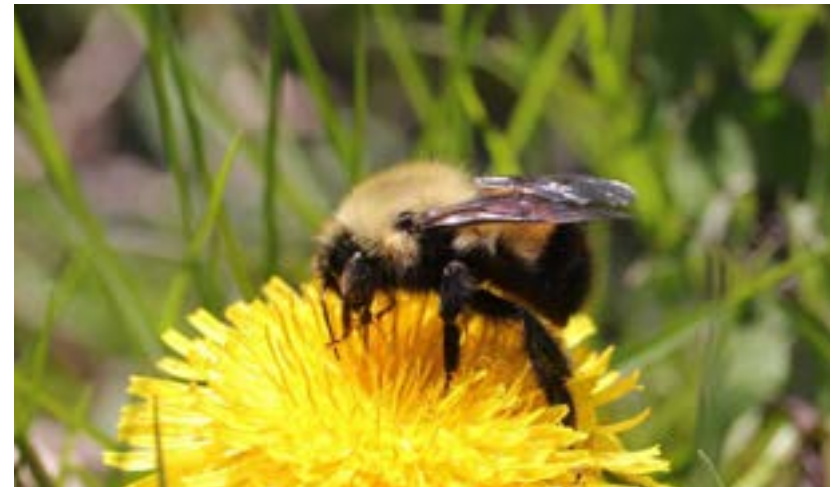
- Filter excess nutrients from increased runoff, erosion,

precipitation and other inputs, thereby buffering against lake pollution and discouraging the conditions needed for algal growth

- Provide shade along the water's edge to cool water temperatures, thereby discouraging algal blooms and providing suitable habitat for fish and other aquatic organisms
- Mitigate flooding and drought with established, native vegetation and porous, non-compacted soils that absorb excess water, and hold onto and release water when there is a deficit
- Reduce shoreland erosion and loss of property associated with increased frequency and intensity of storms with deeply-rooted vegetation and embedded rocks and logs which act as a glue to help hold soils together
- Remove and store carbon dioxide, a greenhouse gas which contributes to global warming, through vegetation corridors and stable soils banks

viii. Pollination

Pollinators such as birds, bees, butterflies and other insects thrive in natural shoreland areas. These species are not only essential for promoting biodiversity, but also for maintaining plant health in the garden and on the farm. A wide variety of flowering native plants that bloom at different times throughout the season help



provide food and habitat for numerous species of pollinators. These pollinators in turn serve as a food source for other animals along the shoreland, such as aerial insectivorous birds and bats, and ensure food stability through the pollination of crops.

Natural shorelands are also important resting and nesting areas for pollinators - from Milkweed plants used by monarchs to raise their young, to dead standing wood used by cavity-nesting bees and birds, these naturally complex areas along the shoreland are essential for allowing pollinators to flourish.

ix. Pest Control

Natural shorelands support a variety of organisms living in balance and harmony, with each organism playing a unique role in the broader environment. In healthy ecosystems, these different roles mesh together almost seamlessly to provide natural ecosystem services.

Natural predator-prey interactions in a healthy shoreland environment create a natural form of pest control. Birds frequenting a shoreland area eat approximately 400-500 million insects per year, dragonflies eat hundreds of insects and mosquitoes per day, and bats eat their own body weight in insects every night. These interactions provide \$53 billion worth of nontoxic pest control around the world (Nyffeler et al., 2018; Boyles, 2011). By consuming insects, these animals not only help reduce pesky mosquito populations, they also help prevent the spread of insect-vectored diseases.

In addition, natural garden insects such as Ladybugs, Green Lacewings, wasps and hoverfly larvae eat enough aphids and other pests to naturally control the spread without the use of harmful pesticides. Similarly, toads, snakes, salamanders, ground beetles and birds all love to feast on slugs, and will gladly keep their populations under control in the shoreland.

Finally, native plants in the shoreland have specific evolutionary defenses which allow them to better protect themselves against

pests compared to non-native plants. Thus, natural, healthy shorelands with a variety of beneficial insects, birds and other wildlife are the key to keeping pest populations under control around the lake.





Planning a Shoreland Naturalization Project

i. Balancing Recreation and Nature

As with anything, shoreland naturalization is about balance: balancing the needs of nature and the environment, with your needs for a functional and beautiful space. With careful planning and consideration, you can create a space that works for you, your lake, and your lake's wild inhabitants.

Lawns

Lawns consisting of short, shallow-rooted grasses are ideal for outdoor activities and access to the water. However, they also encourage runoff, erosion, flooding and the destruction of habitat around the lake. Open areas with fertilized lawn will also attract geese. Not only can these animals be aggressive, but their guano contains bacteria harmful to humans, and high nitrates that can reduce oxygen availability in lakes.

Compromise

Landowners can enjoy open spaces while also protecting their lake by establishing "no-mow zones" along the shore. Preserving native vegetation at the shore helps maintain the lake's natural protective barrier, or buffer zone. A minimum buffer of 30 feet is

recommended for adequate filtration and habitat preservation, although a buffer of 100 feet is even better.

If you would like to maintain an area with an open lawn, consider positioning it further upland and away from the water. To connect upland recreational areas to the shoreland, it is best to establish one single path down to the shore. This path can be mulched or gravelled to keep the soil stable while still allowing for absorption of water and runoff.

Beaches

Sand that is imported for sunbathing and wading areas is a temporary addition to the shoreland that can have long-term negative impacts on the lake environment. Sand from artificial beaches will eventually be carried out into the lake via wave action, causing **siltation**. When siltation occurs, the fine particles in the water can smother and suffocate fish eggs, bury mayflies in their burrows, and cover cracks, crevices, and vegetation that fish, frogs, and toads depend on to lay their eggs.



Further, when it comes to "tidying-up" the shoreland and beach area, removing too much "wrack" (washed-up, coarse woody debris, vegetation and dead organisms along a shoreland) can greatly reduce the biodiversity of aquatic and terrestrial habitats. Wrack is essential for providing the food and organic carbon needed to support soils and sediment, and for feeding and sheltering the microbes and invertebrates that support fish nurseries and other animals.

Compromise

To enjoy the sand and protect the lake, consider establishing a beach set back from the shoreland, almost like a sandbox in the upland zone. Further, avoid “cleaning” the shoreland as much as possible (leave the wrack where it is). The best option for nature (and the shoreland esthetic)? Forgoing the sand altogether!

Swimming and Docking

Removing rocks, vegetation, and wood debris from the water can improve swimming and docking areas for people, but it can be disastrous for the lakes’ wildlife inhabitants. Removing these natural features means removing essential oxygen sources, food resources, and habitats for many aquatic species.

Compromise

Clearing a designated area for swimming and safe boating while maintaining areas for aquatic vegetation and other features can be a good compromise. Simply adding a buoy, flag, or other indicator of these elements is even better, as it can help swimmers and boaters navigate through the waters while keeping these areas intact.



Docks can also be used as a bridge to bypass aquatic vegetation in shallow waters. Floating and cantilever docks have the least impact on wildlife. To learn more about building or repairing

docks that minimize harm, see [*The Dock Primer: A Cottager's Guide to Waterfront-Friendly Docks*](#), by Max Burns and produced by Fisheries and Oceans Canada and Cottage Life.



ii. Permits

A necessary, and sometimes overwhelming step when planning shoreland restoration work is becoming familiar with the legality of working on and around the shoreland. This includes learning about the permits you will likely need and how to apply for them.

In Ontario, most water bodies are classified as Crown Land and are therefore regulated by the Public Lands Act, specifically Ontario Regulation 239/13 and Ontario Regulation 975. Other applicable legislation includes:

- *The Environmental Assessment Act*
- *The Species at Risk Act*
- *The Navigation Protection Act*
- *The Fisheries Act*
- *The Lakes and Rivers Improvement Act*
- *The Planning Act*
- *The Canadian Constitution*
- *The Ontario Heritage Act*

These Acts, regulations and policies are put into place to ensure alterations to natural shorelands and lake beds are done in an ethical, culturally and environmentally conscious manner where proposed actions will have no or very limited impacts on the surrounding environment, wildlife, humans and property.

Specific Permits you may Require

In this section we outline some of the most commonly required permits for work conducted on and around shorelands. This list may not be exhaustive, and additional permits that may be required.



ii.i Ministry of Natural Resources and Forestry Crown Land and Shore Lands Work Permit

The most common type of permit required for shoreland work is a **Crown Land and Shore Lands Work Permit**, authorized by the Ministry of Natural Resources and Forestry (MNR). This work permit is required for work on most lakes, rivers and shorelands, excluding federal land and private land (only if they do not affect shorelands).

A work permit is required for any of the following proposed work:

- *“build a new erosion control structure or change the dimensions of an existing erosion control structure*
- *the placement of fill on shore lands (infilling lake or river bed , or building an erosion control structure) for any other purpose*
- *create a new dredge or expand an existing dredge*
- *construct a building or structure, except for building(s) registered for mining purposes*
- *construct or place a structure or combination of structures that are in physical contact with more than 15 square meters of shore lands*

(e.g. docks with large cribs)

- *construct a road, except where constructed under the authority of the Crown Forest Sustainability Act*
- *construct a trail, except when constructed under the authority of the Crown Forest Sustainability Act or for mineral exploration purposes*
- *construct a water crossing, such as a bridge, culvert or causeway, except when constructed under the authority of the Crown Forest Sustainability Act*
- *remove native aquatic vegetation along the shoreland of Georgian Bay, Lake Huron and on the Canadian Shield*
- *if you conduct activities subject to exemptions but cannot follow the rules”*

A Crown Land and Shore Lands Work Permit is **NOT** required for the following work:

- *“undertake minor road maintenance on public land*
- *place a registered ice fishing hut on the ice*
- *install a water line, service cable or heat loop for private residential use*
- *remove a dock or boathouse that does not involve dredging*
- *construct or place structures that are in physical contact with 15 square meters or less of the shore lands fronting your property (e.g. docks, single-storey boathouses)”*

The following activities are exempt from requiring a work permit, so long as the rules, as laid out in the ministry’s regulations, are strictly adhered to:

- *“construct buildings on a mining claim*
- *dredging shore lands previously dredged*
- *maintain, repair or replace erosion control structures on shore lands*
- *relocate rocks on shore lands*
- *remove invasive aquatic plants*
- *remove native aquatic plants”*

All of the rules for the above listed exemptions can be found on

the Government of Ontario website (<https://www.ontario.ca/page/crown-land-work-permits>). Note that even if you can adhere to the rules for a specific exemption, you may still be required to register the activity on the MNRF online Registry at least 10 days before initiating the project. If you cannot follow the rules for any of the exemptions, a work permit will be required.

There is no fee required for the work permit. To apply, the application must have all applicable sections complete and sent in to the MNRF for review well before the proposed project start date. Upon review, which typically takes around 12 weeks, MNRF staff may require a site visit to approve the permit. There is no guarantee a work permit will be approved. Further, even if the work permit is approved, there may be conditions. MNRF staff may also conduct inspections at the site during project implementation to ensure rules and restrictions are adhered to. For more information and to apply, please visit <https://www.ontario.ca/page/crown-land-work-permits>.



Fisheries and Oceans
Canada

ii.ii Department of Fisheries and Oceans and Species at Risk Act Work Permits

For in-water work, the MNRF defers all permitting to the Department of Fisheries and Oceans (DFO). The DFO reviews proposed work that may impact fish and fish habitat in or near water. You can submit your project plans for DFO professionals to review through their online process. They will help guide you to identify the potential risks of the project to fish and their habitats, and will help ensure these impacts are managed in the best way possible. For more information and to submit your project plans, visit <https://www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/request-review-demande-d-examen-001-eng.html>.

ii.iii Other Legal Considerations

In addition to contacting the DFO and MNRF, you may also have an obligation to contact other bodies of authority depending on the location and nature of your proposed works.

These may include:

- Your local Conservation Authority, which issues permits for development in regulated floodplain areas. See conservationontario.ca for more information.
- Your local municipality, which may issue building permits for structures such as docks and boathouses, or have bylaws, official plans or ownership rules and regulations that must be abided by. See ontario.ca/list-ontario-municipalities for more information.
- The Ministry of Environment, Conservation and Parks (MOECP), which issues permits to take water, and regulates herbicide and pesticide use and large -scale dredging. See ontario.ca/environmental-permissions for more information.
- Ontario One Call, who should be contacted before the start of any project to determine if your hydro or gas lines could be impacted by your proposed work. See ontarioonecall.ca for more information.





Designing Your Shoreland Garden

So you are ready to start designing your shoreland garden! In this section we take you step-by-step through the shoreland garden design process. Our goal is to help you create a shoreland garden that meets your needs, aligns with your aesthetic, and is beneficial to aquatic and upland species and ecosystems.

Step 1: Get to Know Your Property

Before you make any decisions about what you would like to change about your shoreland, we encourage you to take some time to appreciate what you already have. Consider the role your space plays in a healthy ecosystem, and think about the benefits of the natural features that are present. After taking stock of what you have, we encourage you to take some time to get to know the physical aspects of your property, so that you can make well-informed choices about the plants you bring to your garden.

i. Who Else Lives on Your Property?

Before making any major changes, we encourage you to take some time to observe what wildlife is already living on the property. Are their frogs hanging out in the vegetation near the shore? Are there birds perching on a tree that appears dead? Are there bees and butterflies feeding from the wildflowers that are already present? By observing your property for at least a year (all four seasons) before you begin making changes, you will ensure that you have a complete picture of who is sharing your property with you.

This is probably the most important step in a shoreland garden design project, and will allow you to make decisions about what will stay and what you will change in the context of the wildlife that lived there before you and will hopefully have a home there long after you are gone.

ii. What Natural Features Do You Want to Maintain?

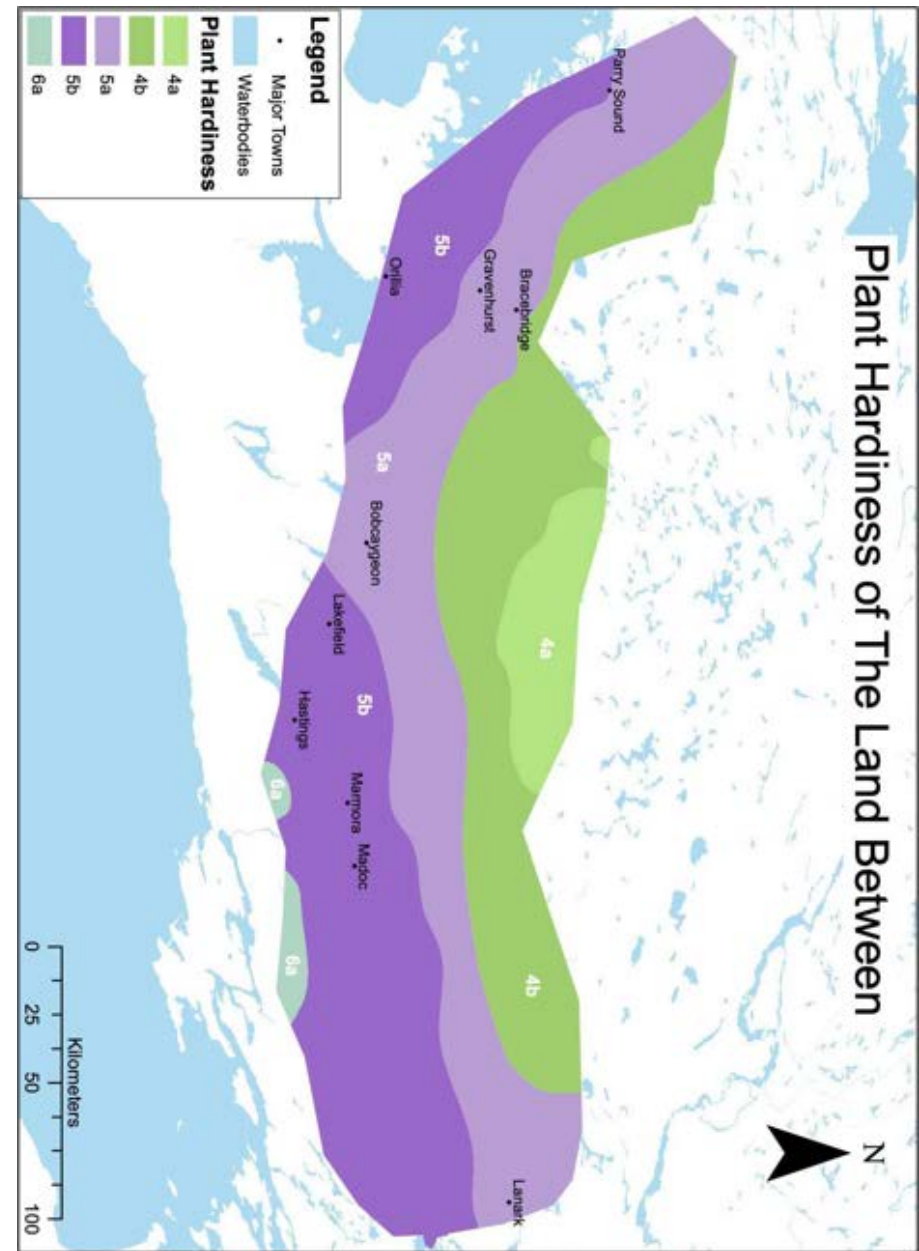
It is important to consider what natural or other existing features you would like to maintain in your shoreland garden and what the existing natural features can do for you. Large trees can function to naturally cool your home, cottage or dock area; shrubs and other hardy vegetation can make excellent privacy screens between you and your neighbors; large exposed rocks are excellent places for kids to climb and play; and native vegetation will take care of itself, freeing up time you would otherwise need to spend watering flowers and mowing the lawn.



iii. Plant Hardiness Zone

A **plant hardiness zone** is an area defined by the climate and temperature of a region. It provides an indication of which plants will be able to grow in an area, and which ones will not. Hardiness zones are denoted by a number followed by the letter 'a' or 'b'. For example, Ontario encompasses hardiness zones 7a (in the far south near Windsor) to 0b (in the far north), while The Land Between encompasses hardiness zones 4b, 5a and 5b. Try to use the following map to determine which hardiness zone your property is located.

If you live outside of The Land Between Bioregion, you can visit [the Natural Edge webpage](#), a program by our partners at Watersheds Canada. There you will find an interactive plant



hardiness zone map of Canada, as well as a complete database of native plants. Each plant included in Appendix A will also have their hardiness zone listed so you will be able to easily choose which plants to include in your garden.

iv. Soil

Soil type can play an important role in determining which plants should be planted in a given area. Some plants are tolerant of a wide range of soil types, while others have more specific growing requirements. There are many fantastic online resources outlining the steps to take to determine your soil type. To help you, we have described the main types of soil here:

Clay: composed of very fine particles that are plastic-like when wet. When mixed with a small amount of water, clay soil will hold a shape it is molded into.

Loam: composed of a mix of sand, silt and clay. Like clay, loam can be molded into a form when a small amount of water is added to it, but it will crumble much more easily than clay.

Sand: loose soil that is not as fine as silt, but is less coarse than gravel. Sand will usually not hold its shape, even when mixed with a small amount of water.



Silt: composed of particles that are smaller and finer than sand, but larger and coarser than clay.

Make note of the various types and locations of soils around your shoreland so that you know which plants will be supported in each area. It is also a good idea to make note of areas where the soil is consistently wet or moist, and areas where the soil is dry. Soil moisture will also dictate which plants will grow well in different areas of your property.

v. Sun

As we all know, some plants will take all the sun they can get, while others prefer a more even split of sun and shade. It is important to have an idea of where and for how long the sun hits various parts of your shoreland, so that you can choose plants that will do best in each area.



If you already have a good idea of the sun in your space, great! If not, try to take a peek outside every few hours one day to see what kind of sun each area is getting. Or, watch the sun at a different time of day over several days. Take notes as you do so you can refer back to them at a later time.

Step 2: Sketch Out Your Property

The most important part of any plan is a strong foundation. Sketch out your property to determine how much space you are working with, what needs changing, and what can be left as is. Be sure to include the following in your sketch:

- The locations of all existing structures present in the area to be naturalized including sheds, docks, septic beds, cottages, etc.
- The areas you would like to naturalize, and the areas that you would like to maintain as they are (for recreation, septic bed, water access, etc.)
- The natural features you would like to maintain (trees, rock features, etc.)



- The issues you would like to address through naturalization (geese, erosion, slopes, sight lines, flooding, invasive species, algae blooms, mosquitos, privacy, etc.), and the areas in which these problems are occurring
- The amount of sun that each area receives
- The type of soil in each area (if variable across project area)

Your sketch does not need to be overly detailed or fancy, it is just a way for you to visualize what space you have to work with, and what elements you need to work around and/or complement.

Step 3: Choose your Design Style and Colour Palette

This is where the process starts to get really fun. Do you have a particular style of garden that you are hoping to emulate in your design? How about a specific colour palette? Here we outline some of the most common garden themes requested by our patrons, and some of the key elements that go into constructing these types of gardens. If none of them jump out at you, that's okay! We encourage you to do your own thing.



i. Japanese-Inspired Garden

A Japanese style garden is characterised by simplicity, minimalism and calm. The colour palette is dominated by greens, with minimal white and/or pink flowers. Evergreen trees are the backbone of this garden style, along with herbaceous plants with attractive green foliage. White and pink flowering trees add a delicate pop of colour. Water features are also a staple of this garden style and can be integrated into your native shoreland garden through the use of things like bird baths. Lastly, no Japanese-inspired garden would be complete without an arched bridge feature.



The Japanese style of gardening lends itself well to using native plants to create the desired look. White and Red Pine, White Spruce, and Common Juniper can be used as the evergreen backbone for these gardens, while native plants can be encouraged to colonize in the understory. Native flowering trees and shrubs such as Nannyberry, Chokecherry and Dogwood have beautiful and delicate white flowers that will align with this style of garden. We also have an excellent native substitute for the iconic Japanese Maple Tree: Ninebark, a hardy native shrub that produces white-pink flowers and beautiful crimson-red leaves.

**Please note that regular pruning is essential to ensure the desired look is maintained over time.*

ii. English Cottage Garden

One of the main characteristics of an English style garden are informal, lush, multi-layered plantings full of flowering plants. Bright, abundant blooms in perennial borders are a mainstay in this style. Some features, such as fences, pathways and trellises, can add some structure and backbone to the garden. No single specific colour palette defines the English Cottage style garden, but it is essential to choose colours that go well together, and plants that flower throughout the growing season. By creating season long blooms in the garden, you will also be providing a steady food source for many different types of pollinators.



In this style, lawn space should be minimized to allow as much space as possible for bold, densely planted garden beds. Some classic native plants to use in this style include Smooth Wild Rose (*Rosa blanda*), Tall Larkspur (*Delphinium glaucum*), Foxglove Beardtongue (*Penstemon digitalis*) and native varieties of clematis. White Pines, Maples and erratic rock placement can also add additional structure to your English Cottage garden.

iii. Wildflower Garden

The key to this garden style is to plant flowers and grasses together, with large clumps of flowers throughout the garden area. As the goal of this garden style is a natural, native look, defined beds and organized plantings are not necessary. In wildflower gardens, a bit of chaos can go a long way.



So many of our beautiful native wildflowers suit this style of garden well. Some common plant choices include: native Asters, Black-eyed Susan (*Rudbeckia hirta*), Purple Coneflower (*Echinacea purpurea*), Green-headed coneflower (*Rudbeckia laciniata*), native Milkweeds, Fireweed (*Chamerion angustifolium*), Wild Bergamot (*Monarda fistulosa*), and Tall Cinquefoil (*Potentilla arguta*).

iv. Italian-Inspired Garden

Italian gardens are characterized by well-pruned shrubs, geometric lines, lots of greenery and minimal flowers. Shrubs are traditionally pruned into impressive shapes, such as balls and cones.

To create an Italian-style garden with native plants, consider using Eastern White Cedar (*Thuja occidentalis*), Balsam Fir (*Abies balsamea*), Sweet Gale (*Myrica gale*), Winterberry Holly (*Ilex verticillata*) and Mountain Holly (*Ilex mucronata*), all of which have beautiful green foliage and take well to being pruned into shapes. You can also use White Meadowsweet (*Spiraea alba*) which grows into a nice mound on its own. Another staple of the Italian garden is the vine-smothered pergola. An excellent choice of native climbing vine that will cover a pergola well is Virginia Creeper (*Parthenocissus quinquefolia*).



Lastly, because Italian gardens are characterized by few flowers, try to limit the amount of colour you introduce with your flowers to one or two. Native red-flowering plants such as Cardinal Flower (*Lobelia cardinalis*), Oswego Tea (*Monarda didyma*) and Wild Columbine (*Aquilegia canadensis*) will be striking against the green foliage, and complement well with the red berries produced by the Winterberry Holly and Mountain Holly as well.

v. Rain Garden

A rain garden isn't exactly a 'style' of garden, but rather an extremely useful landscape feature that can be added to any of the above garden styles. In other words, rain gardens can be made to align with a Japanese, English Cottage, Wildflower, Italian, or any other style of garden you choose. The only criteria for a rain garden is that they are located in depressions with deep, loose soils that tend to collect water.



Rain gardens collect water; they are great at soaking up and filtering excess runoff from impermeable surfaces such as driveways, lawns, roofs, and patios. In fact, they can remove up to 90% of excess nutrients and chemicals, and up to 80% of sediment from runoff before it flows into the lake, making them a great option for upland portions of your shoreland garden! In addition, there is no need to worry about breeding mosquitoes in rain gardens because they dry out shortly (12-48 hours) after a rainfall.

Creating a Rain Garden

When considering the location of your rain garden, it is best to utilize the natural depressions you already have on your property, preferably in the upland zone. However, you can create

your own depression for a rain garden. A perfect spot to do so is at the end of a downspout or any other area where you think runoff will collect. Make sure that your rain garden is located at least 15 m away from steep slopes (a grade of more than 15%), as excess water in these areas can cause landslides. To avoid damaging your septic system and any structures, ensure the rain garden is located at least 3 m from any building foundations, and at least 4 m from your septic bed.



To prepare your rain garden for planting, dig the soil down by 85 cm and ensure that the soil at the bottom is not compacted (loosen up the soil if it is). Next, add about 60 cm of rain garden soil mix (special mix that contains a combination of compost and sand to allow for easy infiltration), lightly tamping down the soil every 20 cm or so, and leaving about 25 cm for plants, with no more than 10 cm of mulch added on top. The finished rain garden should be located deeper in the soil than the surrounding area to encourage pooling.

In terms of planting your rain garden, simply choose a variety of native shrubs, perennials, ferns, and wildflowers that tolerate moist-wet soil for 12-48 hours after heavy rainfall but are also okay with dry soils when it doesn't rain.

Some great options for vibrant rain garden include:

- Spotted Joe-pyeweed (*Eupatorium maculatum*)
- Black-eyed Susan (*Rudbeckia hirta*)
- Sweet Oxeeye (*Heliopsis helianthoides*)
- Swamp Milkweed (*Asclepias incarnata*)
- Butterfly Milkweed (*Asclepias tuberosa*)
- Wild Columbine (*Aquilegia canadensis*)
- Turtlehead (*Chelone glabra*)
- Showy Tick-trefoil (*Desmodium canadense*)
- Wild Bergamot (*Monarda fistulosa*)
- Blue-flag Iris (*Iris versicolor*)

For grasses, consider planting:

- Big Bluestem (*Andropogon gerardii*)
- Canada Wild Rye (*Elymus Canadensis*)
- Indian Grass (*Sorghastrum nutans*)
- Prairie Cordgrass (*Spartina pectinata*)

If you would like to add some shrubs, consider planting:

- Red-osier Dogwood (*Cornus sericea*)
- Common Ninebark (*Physocarpus opulifolius*)
- Nannyberry (*Viburnum lentago*)
- Common Elderberry (*Sambucus canadensis*)

For more plants that are tolerant of periodic flooding, refer to the full plant list in Appendix A.



Step 4: Choose your Minimum and Maximum Heights

Before you start choosing which specific plants you would like to include in your garden, it is important to consider what minimum and maximum plant heights you are willing to incorporate, or that you need to incorporate depending on your end goal. Most plants for sale will have their max height listed on their tag. If not, a quick online search should give you the information you are looking for! The maximum and minimum heights of all of the plants referenced in this guide are specified on the full plant list in Appendix A .

If plant height does not matter to you at all, great! You can skip this step. However, if you are concerned with geese, sight lines, privacy, or creating beneficial shoreland habitat, this is worth a read.



Geese

As discussed on page 20, in order to deter geese, their sight lines must be blocked. Because geese are about 2 feet tall, you need to have shrubs planted at the shoreland that are 2 feet tall or more. The shrubs you plant must be hardy and shrubby already in March, so that they will block the sight lines of geese when they return in the spring.

Sight Lines

If you are concerned about planting taller plants and shrubs because you do not want to block the view you have from your home or cottage, you can choose plants that do not grow above the sight line. Alternatively, you can prune and limb trees and shrubs as necessary to maintain your sightlines. See page 85 for details on how to safely and properly prune and limb your trees and shrubs.



Privacy

If you would like to create some privacy for your backyard, native trees and shrubs are an excellent way to do it. Not only will you achieve the privacy you are looking for, you will be able to add more colour and structure to your backyard space than a fence would be able to provide. The heights of the plants that you choose for creating a privacy screen will depend on your situation and the level of privacy you are looking to achieve. Please see page 65 for a list of plants that we recommend for creating privacy screens. More detailed information about each of these plants, including the approximate maximum height that each of the plants tend to reach can be found in Appendix A.

Creating Variable Habitat

By including trees, shrubs and herbs with varying heights in your garden design, you are creating habitat for species that live at all levels: from underground to the tops of trees. Low and dense shrubs provide cover and shelter for smaller, ground dwelling species as they move throughout your garden, while taller trees and shrubs provide perching, nesting and roosting habitat for birds and small mammals. The greater the variety of type and height of plants you choose to use in your garden, the more complete and dynamic habitat (and attractive garden) you will be creating.



Step 5: Choose Your Plants

Now comes the best part of the whole process: choosing your native plants! The best thing about using native plants is that they are naturally suited to grow in the area in which you will be planting them. They tend to be hardier, easier to maintain, and thus a cheaper alternative to non-native ornamentals due to their special adaptations to local diseases, native soils and climatic conditions.

Appendix A includes a list of plants native to Ontario that can be grown in shorelands of the Land Between. It also provides a more detailed description of each of these plants, along with a description of their soil type, water and sun exposure needs, as well as a photo of each plant so you can see how they may fit in with your design style. However, these lists are not exhaustive.



For additional plants to consider, visit [the Natural Edge Plant Database](#) by Watersheds Canada, or check out the plant catalogues of your local native plant nurseries.

To begin, choose the plants that you are most interested in growing; that is, the plants that align with your desired colour palette, height and style (see *Step 2: Choose your Design Style and Colour Palette* for tips on which native plants suit specific styles) and/or that will help you achieve your desired goals (such as deterring geese, attracting pollinators, etc.). Appendix A includes a list of plants that are best for helping you address some of the most common problems associated with waterfront properties as well as lists of plants that are best for creating specific habitat types.

When you have amassed a list of plants that you like, ensure they are able to grow in your region's growing zone. If the growing zones align, you must then consider the growing conditions of each plant, and ensure they are planted in areas where they will get the sun, soil type and moisture they require.

The process of plant selection can be fun as well as challenging. If you would like input and support with this step, feel free to consult the many additional resources we have listed in this guide (Appendix C). Alternatively, if you would like professional input, feel free to set up an in-person consultation with a representative from the Natural Edge's shoreline restoration program. They will

be able to help guide you through this entire process from start to finish. The contact information for this program can be found in Appendix C.

Step 6: Choose Your Additional Features

Your design is nearly complete! In this section we outline some additional features you may like to consider including in your shoreland garden. While not essential, these structures can provide additional habitat, food or protection for species in and around your shoreland, or help to further address issues such as nuisance pests. A description of some of these additional features can be found below but it is not an extensive list. If you have other ideas for ways to enhance your shoreland garden habitat, we encourage you to incorporate them into your designs.



Bat Boxes

Bat boxes are a great way to provide supplemental roosting areas for bats; a place where bats can safely rest during the day before they begin feeding at dusk. You can purchase bat box kits or pre-assembled boxes from The Land Between charity. It is recommended that bat boxes be mounted on the side of a

structure, pole or tree at least 10 inches above the tallest nearby vegetation, as close to open water as possible, and in a location that receives at least 6 hours of sunlight per day.

Bird Nesting Boxes

Because there are fewer old forests and trees than there used to be, it can be challenging for cavity-nesting species to find suitable nesting sites. Bird nesting boxes on your property can be a simple, yet effective way to help local wildlife. We recommend installing nest boxes of different depths with different sized openings to support a range of wildlife. It is best to install nest boxes during the fall or early winter months, well before nesting season begins. Place nest boxes on a pole away from trees to stop squirrels from dropping onto them. You may choose to construct your own, or purchase a pre-made nest box. There are many online resources available for either option.



Turtle Nest Cages

The predation rate of turtle nests in the wild is incredibly high. This rate is pushed even higher in areas near human establishments, as with humans often comes higher numbers of predators like raccoons and skunks. By installing cages over turtle nests, the risk of predation is greatly reduced, and the turtles in

that nest have a much higher chance of hatching. Pre-assembled nest cages and the associated pegs can be purchased from The Land Between charity. Alternatively, the materials to build a nest cage can be purchased from hardware or other similar stores. A tutorial on how to build a nest cage can be found on our Turtle Guardians website (turtleguardians.ca).

Rocks and Logs

Leaving existing rocks and logs around your shoreland area can provide important basking areas for turtles and snakes. Snakes and turtles are ectotherms, meaning their body temperature is regulated by external sources of heat. This means they need to “bask” or lie in the sun to warm up. Creating supplemental basking habitat by leaving rocks and fallen logs in place in the riparian area may make your shoreland more attractive basking habitat.





Easy Wins

Creating a native shoreland garden, especially starting from scratch, can be a daunting task, but it does not have to be! In this section we list some “easy wins”; small steps you can start with that will do wonders for naturalizing your space.

i. Create “No-Mow Zones” Around your Shoreland

A “no-mow zone” is exactly as the name suggests: an area around your shoreland that is allowed to grow wild and is never, or rarely, cut or mowed. As a result, native species of wildflowers and grasses will naturally populate and grow in these areas. These native plants will in turn act as a buffer to harmful pollutants and sediment, filtering them out before they can reach the water, thereby improving the overall water quality of the lake. “No-mow zones” will also help create habitat and cover for the countless species that call the shoreland home, and make your property much more attractive to pollinators like bees, butterflies and hummingbirds. Creating “no-mow zones” is one of the easiest ways to start the naturalization process on your property, as all you have to do is nothing at all!

ii. Limb and prune trees rather than remove them

As previously discussed, you do not have to remove trees to get the perfect view of the lake from your home or cottage. Instead, consider trimming or limbing them. This way, you will not only be able to obtain the lake view you are looking for, but you will also be able to maintain all of the important ecological functions provided by the trees in your shoreland ecosystem. These important functions include carbon storage, habitat creation, erosion control, and natural shading and cooling of shoreland areas. Trees can be an excellent addition or inclusion in any shoreland garden design and style.

iii. Collect and Spread Seeds

Collecting and spreading seeds from native plants* on your property is an easy (and free) way to get the shoreland naturalization process started! Simply spread the seeds you collect in the area you are looking to naturalize. This is a fun family activity, and a great new skill to learn. One of the easiest native plant seeds to spread are milkweed seeds. These seeds have a soft, feathery tuft that allows them to travel on the wind.

**Please note that it is important to verify the seeds you are collecting do in fact belong to native species*



Solutions to Common Problems

In this section, we offer solutions to some of the most common problems experienced by lakefront property owners including nuisance geese, lack of privacy, erosion and more. Much of the information in this section has been touched on in previous segments of this guide, but here we go into more detail about how exactly to solve these problems.

i. Geese

As we discussed on page 20, geese are tundra species and colonize areas that resemble flat open landscapes. They prefer fertilized, short grass with an open view near the water's edge. This allows them to see and escape from predators, a landscape characteristic of many unnatural, developed shorelands

The best way to deter geese from your property is by having a thick buffer of plants in your shoreland area. Consider blocking the sight lines and water access of geese by planting a "wall" of hardy shrubs that are at least two feet tall throughout your shoreland, as close to the water's edge as possible. As geese are approximately 2 feet tall, the vegetation will block their sightlines, making them feel uncomfortable and vulnerable to predators. As geese are approximately 2 feet tall, the vegetation will block their sightlines, making them feel uncomfortable and vulnerable to predators. The wall of shrubs at the water's edge will also make water access from land more difficult for geese, further decreasing the habitat quality of your property for the nuisance birds. As geese return to The Land Between in the early spring, it is best to plant shrubs that will be hardy at this time of year. Planting a wall of shrubs along the edge of the water will also make the area less suitable for nesting by the geese, decreasing the likelihood that they will lay their eggs in those areas. Some shrubs that are ideal for deterring geese include:

- Sweet Gale, Sweet Bayberry (*Myrica gale*)
- White Meadowsweet (*Spiraea alba*)
- Pussy Willow (*Salix discolor*)
- Beaked Willow (*Salix bebbiana*)
- Sandbar Willow/Narrow Leaved Willow (*Salix exigua*)
- Nannyberry/Sweet Viburnum (*Viburnum lentago*)
- Smooth Wild Rose (*Rosa blanda*)
- Chokecherry (*Prunus virginiana*)
- Silverberry/Wolf Willow (*Elaeagnus commutata*)
- Common Juniper (*Juniperus communis*)
- Northern Bayberry (*Myrica pensylvanica*)
- Shadblow Serviceberry (*Amelanchier canadensis*)
- Mountain Holly/Catberry (*Ilex mucronata*)

More information about each of the above listed geese-deterrent shrubs can be found in Appendix A.



To further deter geese from your property, consider eliminating some or all of your open lawn area. If you require some lawn for recreation or other purposes, consider breaking it up with flower beds or other natural features. This will further break up the site lines of the geese, making them feel vulnerable to predators.

As added measures, you can also consider placing flash tape, flags or other moving deterrents near your shoreland. These objects will scare the geese and prevent them from becoming too comfortable on your property. These objects tend to only work as temporary measures however, as the geese will eventually get used to them and no longer be afraid.

ii. Lack of Privacy

Whether you are close with your neighbors or not, it is always nice to have privacy in your own backyard. One of the best ways to achieve that privacy while still maintaining the natural esthetic of your space is to use shrubs and other native plants as a privacy screen.



If you are looking to create privacy in your space all year round, native coniferous trees and shrubs such as White Cedar (*Thuja occidentalis*) are a good option. White Cedar can grow as tall as 15 m (50 ft), but regular pruning can keep the tree/shrub at the height and density you are looking for.

If your primary concern is privacy throughout the warm months, then you may wish to consider some of the deciduous shrubs listed below. These species grow to be quite full and bushy and so will provide plenty of privacy during the months when you

will be using your backyard space the most. However, as these species are deciduous, they will lose their leaves in the fall and therefore will not offer as much privacy at that time. Some beautiful deciduous options for privacy screens include:

- Chokecherry (*Prunus virginiana*)
- Nannyberry/Sweet Viburnum (*Viburnum lentago*)
- Silverberry/Wolf Willow (*Elaeagnus commutata*)
- Red Elderberry (*Sambucus racemosa*)
- Black Elderberry (*Sambucus nigra*)



Another beautiful option for creating privacy in your space is to install one or more trellises and allow native climbing plants to grow on and along them. Some native plants that will grow nicely on a trellis (and aid in the creation of privacy) are:

- Purple Clematis (*Clematis occidentalis*)
- Virgin's Bower (*Clematis virginiana*)
- Virginia Creeper (*Parthenocissus quinquefolia*)*

A detailed description of each of these plants, as well information on their growing conditions can be found in Appendix A.

**Virginia Creeper can be aggressive and should only be planted in areas where it will be welcome to spread. Pruning will be required if you would like to contain it to a particular area of your garden.*

iii. Increased Habitat Connectivity

Another common goal of shoreland property owners is to increase habitat connectivity on their property. Habitat connectivity refers to the degree to which isolated habitat patches or features are connected at a given landscape scale; in this case, your backyard shoreland area. A well connected habitat supports a greater degree of biodiversity on your property, bringing with it the benefits of pest control, buffering capacity against forces of change, and a wider variety of life for you and your family to witness and enjoy.



The best way to increase the level of habitat connectivity on your property is to increase the area occupied by natural and native vegetation, and to limit the amount of lawn and hardened surfaces in the space. Lawns and hardened surfaces (patio stones, concrete, etc.) are ecologically barren, offering nothing to the many plants and animals at work in your shoreland area.

That being said, your space also needs to be functional and meet your needs. For example, if you require some lawn for recreation

or other purposes, consider breaking the area up with flower beds or “no-mow zones”.



These areas will serve as “islands” or corridors on/along which species can forage and seek shelter as they move across your property. “No-mow zones” along the edges of natural habitat areas such as forests, meadows or lakes are the most beneficial, as they provide a natural and covered transition zone for species as they move from one habitat type to the next.

Another great (and even easier) way to increase the degree of habitat connectivity in your shoreland area is by creating (or just leaving) various piles of leaves, sticks or rocks throughout the space. These piles will provide a home, source of food and cover for countless insects, mammals, amphibians, birds and reptiles, which in turn will allow them to better contribute to the ecological function of the space through pest control, seed dispersal and so on.

iv. Erosion Control

The native plants that are best for erosion control are those that spread quickly and have substantial, far reaching and/or deep penetrating root systems. These root systems help to hold soils

in place against the forces of wind, rain, waves and water level fluctuations. Native plants can also be beneficial in combating erosion by acting as a natural and gradual wave break. Plants that do not mind having wet “feet” (roots) function best in this capacity, as they can be planted directly in the water, well positioned to absorb any incoming wave energy generated by wind, boats, or fluctuating water levels. Some native plants that are great for erosion control include:

Herbs and Wildflowers

- Spotted Joe-Pye Weed (*Eupatorium maculatum*)
- Common Milkweed (*Asclepias syriaca*)
- Butterfly Milkweed (*Asclepias tuberosa*)
- Black-eyed Susan (*Rudbeckia hirta*)
- Wild Bergamot/Bee Balm (*Monarda fistulosa*)
- Common Yarrow (*Achillea millefolium*)
- Fireweed (*Chamerion angustifolium*)
- Indian Paintbrush (*Castilleja coccinea*)
- Purple Coneflower (*Echinacea purpurea*)
- Green-headed Coneflower (*Rudbeckia laciniata*)

Shrubs

- Sweet Gale, Sweet Bayberry (*Myrica gale*)
- White Meadowsweet (*Spiraea alba*)
- Snowberry (*Symphoricarpos albus*)



- Pussy Willow (*Salix discolor*)
- Beaked Willow (*Salix bebbiana*)
- Sandbar Willow/Narrow Leaved Willow (*Salix exigua*)
- Elderberry (*Sambucus canadensis*)
- Wild Black Currant (*Ribes americanum*)*
- Winterberry (*Illex verticillata*)
- Smooth Wild Rose (*Rosa blanda*)
- Chokecherry (*Prunus virginiana*)
- Silverberry/Wolf Willow (*Elaeagnus commutata*)
- Gray Dogwood (*Cornus racemosa*)
- Common Juniper (*Juniperus communis*)
- Northern Bayberry (*Myrica pensylvanica*)
- Shadblow Serviceberry (*Amelanchier canadensis*)
- Wild Red Raspberry (*Rubus idaeus*)

Grasses

- Indian Grass (*Sorghastrum nutans*)
- Canada Wild Rye (*Elymus canadensis*)
- Big Bluestem/ Turkeyfoot (*Andropogon gerardii*)
- Prairie Cordgrass/Ripgut/Slough Grass (*Spartina pectinata*)
- Plantain- leaved Sedge (*Carex plantaginea*)
- Switch Grass/ Panic Grass (*Panicum virgatum*)

A complete description of each of these plants can be found in Appendix A.

**Wild Black Currant is not considered locally invasive; however it is a carrier of White Pine Blister Rust, a fungal disease that can be fatal to White Pine trees. For this reason, we strongly encourage all landowners to avoid growing Wild Black Currants within 1.6 km of White Pines.*

v. Hard-to-grow Spots

Whether it be too dry, too hot, too shady or too rocky, most of us have one or two spots on our property where it is difficult to get anything to grow. In this section we outline some of the most common difficult growing conditions faced by shoreland property owners, and make native, non-invasive plant recommendations for you to grow in these areas.

A complete description of each of the plants included in this section, along with a photo and information on their growing conditions, can be found in Appendix A.



Shade

It is a well known fact that plants require sunlight to survive. So, finding something that will grow in shady areas can pose quite a challenge. One of the most commonly recommended plants for shady, difficult to grow in areas is Periwinkle (*Vinca minor*). Unfortunately, Periwinkle is incredibly invasive and can quickly spread from its original planting location into new and unwanted areas, creating a dense mat of vegetation that blocks the sunlight from reaching the ground below it. This in turn, inhibits all other plant growth, including tree seedlings. As such, the use

of Periwinkle should be avoided. However, there are plenty of native, non-invasive plants that can be grown in shady conditions. Some native groundcover alternatives include:

- Common Blue Violet (*Viola sororia*)
- Canada Wild Ginger (*Asarum canadense*)
- Bearberry (*Arctostaphylos uva-ursi*)

If you are looking for something that will grow taller and make a bit more of a statement in a shaded area, consider planting one or more varieties of native fern. Some ferns native to The Land Between bioregion include:

- Interrupted Fern (*Osmunda claytoniana*)
- Ostrich Fern (*Matteuccia struthiopteris*)
- Royal Fern (*Osmunda regalis*)
- Sensitive Fern (*Onoclea sensibilis*)



Hot and Dry

Hot and dry areas in a garden can be just as difficult to plant and care for as heavily shaded areas. Luckily, there is a wide variety of native plants and grasses adapted to hot and dry conditions. What's more, because these plants are specially adapted to

be drought and heat tolerant, once these plants are properly established, you will not need to water them! Some beautiful, native plants that are tolerant to heat and drought include:

Wildflowers

- Tall Cinquefoil (*Potentilla arguta*)
- Black-eyed Susan (*Rudbeckia hirta*)
- Butterfly Milkweed (*Asclepias tuberosa*)
- Wild Bergamot (*Monarda fistulosa*)
- Common Milkweed (*Asclepias syriaca*)
- Smooth Wild Rose (*Rosa blanda*)
- Evening Primrose (*Oenothera biennis*)
- Lance-Leaf Coreopsis (*Coreopsis lanceolata*)
- Pearly Everlasting (*Anaphalis margaritacea*)

Grasses

- Canada Wild Rye (*Elymus canadensis*)
- Big Bluestem/Turkeyfoot (*Andropogon gerardii*)
- Indian Grass (*Sorghastrum nutans*)

Please note that if the weather is exceptionally hot for more than a few days in a row, watering your native plants will help to keep them looking perky and healthy.



Recently Disturbed Areas

Oftentimes after construction, renovation, repair or other related activities, landowners are left with disturbed backyard and/or garden areas. That is, whatever was previously growing in a given area has been removed or destroyed as a result of an activity, leaving little more than a pile of dirt behind. Disturbed areas may also result from invasive species removal. To prevent invasive species from colonizing (or recolonizing) your garden, it is important to introduce native plants into the area quickly, before invasive or other non-native species can take hold. Some native plants that are great for growing in recently disturbed areas include:

- Black-eyed Susan (*Rudbeckia hirta*)
- Fireweed (*Chamerion angustifolium*)
- Common Juniper (*Juniperus communis*)
- Chokecherry (*Prunus virginiana*)
- Black Chokeberry (*Aronia melanocarpa*)
- Purple Flowering Raspberry (*Rubus odoratus*)
- Black Raspberry (*Rubus occidentalis*)
- White Birch (*Betula papyrifera*)



Rocky Soils

Rock soils can be difficult and frustrating to deal with, however as you may have guessed, there are several native plants that can tolerate rocky soils. Some plants you may like to consider using in the rocky areas of your garden are:

- Bearberry (*Arctostaphylos uva-ursi*)
- Canada Anemone (*Anemone Canadensis*)
- Creeping Juniper (*Juniperus horizontalis*)
- Grey Goldenrod (*Solidago nemoralis*)
- Harebell Campanula (*Campanula rotundifolia*)
- Hoary Vervain (*Verbena stricta*)
- Narrow Leaved Meadowsweet (*Spiraea alba*)
- Wild columbine (*Aquilegia canadensis*)



Septic Beds

Septic systems are very common throughout The Land Between. Landowners typically opt for an area of lawn over their leaching beds (the area in which treated wastewater seeps back into the soil). Lawn is a fine option for a properly functioning leaching bed, as it provides protection from the eroding forces of wind, rain and runoff. However, lawns do not offer any ecological function. To enhance ecological function, and well as the esthetic appeal, consider supplementing the area on and around your leaching bed with native plants.

Please note however, that it is important to only plant plants that are considered safe on and around your leaching bed. In

general, it is best to plant only plants with shallow root systems and drought tolerance. This is to prevent any root growth from disrupting and interfering with the proper function of your septic system, and to reduce the need to water these plants. Excess watering of plants on or near your septic bed can saturate the soil, inhibiting the decomposition carried out by bacteria in the soil that require oxygen to function. Many native herbs and wildflowers fit this bill nicely, including:

- Bunchberry (*Cornus canadensis*)
- Winter green (*Gaultheria procumbens*)
- Bearberry (*Arctostaphylos uva-ursi*)
- Common Blue Violet (*Viola sororia*)
- Canadian Wild Ginger (*Asarum canadense*)
- Barren Strawberry (*Waldsteinia fragarioides*)



These plants will not only protect the leaching bed from erosion, but also help to filter any remaining toxins from the treated water. The plants will also act to absorb excess moisture in the soil, allowing the bacteria that break down the remaining pathogens and toxins from the treated effluent to function more efficiently.

vi. Non-Invasive Groundcovers

Just like many of the plants that are commonly recommended by garden centres for difficult-to-grow-in shady areas, some

commonly available groundcovers such as English Ivy (*Hedera helix*), Periwinkle (*Vinca minor*) and Winter Creeper (*Euonymus fortunei*), can become incredibly invasive. If you are in search of a native groundcover that will not take over your entire garden, consider trying one of the plants listed below.

- Common Blue Violet (*Viola sororia*)
- Canadian Wild Ginger (*Asarum canadense*)
- Large Cranberry (*Vaccinium macrocarpon*)
- Small Cranberry (*Vaccinium oxycoccos*)
- Bearberry (*Arctostaphylos uva-ursi*)
- Lowbush Blueberry (*Vaccinium angustifolium*)
- Velvetleaf Blueberry/ Velvetleaf Huckleberry (*Vaccinium myrtilloides*)
- Partridge- berry/ Twinberry (*Mitchella repens*)
- Canada Anemone (*Anemone canadensis*)
- Bunchberry (*Cornus canadensis*)
- Wintergreen (*Gaultheria procumbens*)
- Foam flower (*Tiarella cordifolia*)
- Barren strawberry (*Waldsteinia fragarioides*)

A more complete description of each of the plants can be found in Appendix A.





Sourcing Your Native Plants and Seeds

Now that you have chosen the plants you would like to use in your garden, you need to purchase them. Your local native plant nursery is a good place to start! You can also look online for nurseries specializing in native plants and seeds. Some companies will even ship plants or seeds right to your door!

Whichever method you choose, ensure the plants you order are in fact the correct species. The best way to do this is to use the Latin name of the plant. There are often multiple common names for a species, and in some cases, multiple species have the same common name, however there is only one Latin name for each species.

Unfortunately, many plant nurseries sell plants that are, or can easily become, invasive. For this reason it is important to ensure you do not inadvertently order or plant any locally invasive species. A list of some of the locally invasive species to The Land Between can be found in Appendix A.

Planting Your Shoreland Garden

Finally, what you have been waiting for! Planting your shoreland garden and watching it grow is the most exciting part of the Design-your-own Shoreland Garden process. In this section we outline the steps and considerations to follow and consider when planting your shoreland garden.

Please note that it is recommended you plant your native plants in either the spring or early fall.

Step 1. Prep the Planting Area

To begin, prep the planting area by first removing any grass and/or sod. This is a necessary first step because grasses can outcompete and prevent new plants from establishing.



Step 2. Loosen the Soil

Next, turn or till the planting area to loosen the soil. If the soil is too compacted, it can prevent roots from growing and establishing.

Step 3. Add Topsoil

After loosening the soil, a good quality topsoil from a reputable source should be added to the planting area. This soil should

ideally consist of black earth, compost, and peat to provide optimal nutrients and retain moisture longer. Do your best to ensure your topsoil is free of contaminants and invasive species.

Step 4. Add Additional Features

If you have chosen any extra features for your garden, such as rocks, logs, birdhouses, etc., it is best to add them at this point in the process (before planting). This way you will be able to plant around these features, and avoid trampling your new plants!

Step 5. Planting

When it comes to planting, there are different considerations depending on whether you choose to use seeds or potted plants. If you will be planting your garden from seeds, consider the following steps:

1. Gently drop seeds throughout the planting area ensuring they are well spread out



2. Rake the area to shake seeds into soil
3. Add a light, thin layer of straw or peat mulch on top of the seeded area – this will help retain moisture and protect the seeds from being eaten
4. Water the seeds sufficiently, being careful not to flood the area
5. Germination (sprouting) should occur within 20-30 days of planting depending on the seeds used. Be sure to check

individual seed planting requirements, as some seeds require additional time and/or steps for germination to occur



If you will be planting using potted stock or plugs (the plants that you buy from a garden centre, either individually or in trays), consider the following steps:

1. Dig a hole an inch or two wider and deeper than the pot or container the plant is in
2. Holding the stem and root wad, gently squeeze the pot to remove the plant. If necessary, cut the pot down the side to remove the plant
3. Massage the root wad with your fingers to loosen the soil, being careful not to remove too much
4. Place the plant in the hole and fill the hole with soil. Firmly press the soil down around the base of the plant (the soil should be level with root crown).
5. Add a thick layer of mulch around the stems of the newly planted plants to deter competitive grasses and weeds, retain moisture, provide nutrients and insulate the roots through the winter
6. Water the plants generously



Caring for and Maintaining Your Shoreland Garden

Caring for and maintaining your shoreland garden is key to creating a flourishing, naturally healthy area that can be enjoyed by you, your family, and all sorts of wildlife for years to come. Just like humans, shoreland gardens also require more care and attention when they are young, but they eventually grow up to be self-sustaining and require little maintenance. In this section, we cover everything you need to know to care for and maintain your shoreland garden.

i. Watering

When to Water

- Water newly planted areas regularly for the first one to three years, especially during spring (April to June) when plants are growing the most. Adjust your watering according to the amount of rainfall received and the regular soil moisture in a given area
- It is best to water the plants in the early morning or late evening to reduce the loss of water from the soil by evaporation
- Once established, the plants will likely only need to be watered during periods of drought. Signs of drought in your plants can include yellow or brown leaves, drooping leaves, loss of crown leaves, and blistering or cracking bark

How to Water

- Directly above the base of the plants
- Place watering hose or nozzle on a gently setting to ensure enough water infiltrates the ground while preventing damage to the plants

How Much to Water

- Wildflowers: saturate approximately the first 15-30 cm of soil
- Trees and large shrubs: 20-30 litres weekly at the base of trunk or main stem
- Smaller shrubs: 10-20 litres weekly
- Ground cover: only when the soil is dry



ii. Mulching

When to Mulch

- At initial planting
- Every year or two after planting to prevent grasses and weeds from establishing, ideally during the spring
- Stop mulching when the area is well-established and there are no open areas

What Mulch to Use

- Use mulch consisting of wood chips, leaf mould, hemp, compost, or a mix of any of these
- Make sure mulch is partially composted (listed on package) – mulch that is too fresh can remove nitrogen from the soil

How to Mulch

- Remove old layers of mulch first or mix old layers with new (do not add the new layer on top of the old layer)

- For the first mulch, cover as far as the spread of the underground roots
- For all subsequent mulches, cover as far as the bottom branches of the shrub or tree reach
- Place mulch in a funnel shape (thinning the mulch close to the stem). The funnel will direct the water towards the stems and roots. Avoiding placing mulch at the stem to ensure the stem receives enough aeration to avoid rot
- Add mulch to a depth of 5-10 cm (2-4 inches)

iii. Pruning

Pruning is usually not required but if you would like to maintain certain esthetics or sightlines, consider the following guidelines:

When to Prune

- During late fall to early winter when the plant is dormant. This will reduce stress on the plant, limit sap loss and reduce the spread of diseases
- For flowering shrubs, early spring before buds emerge or after flowers die
- When signs of aging are visible - rejuvenation pruning will encourage new growth



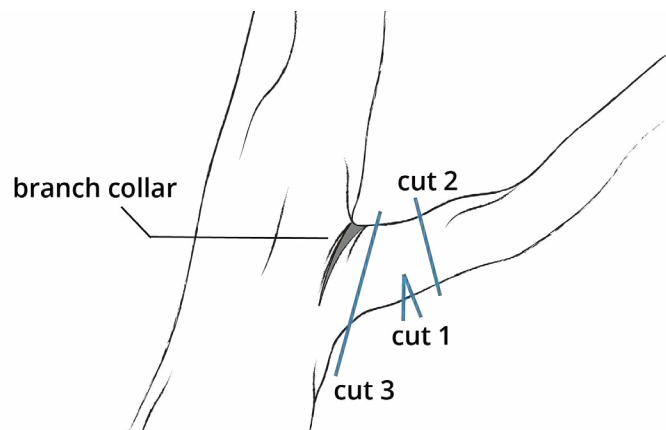
What to Prune

- Dead, diseased, or damaged plant parts. This helps protect the plant from the spread of disease or damage

- Suckers. Some suckers are good for soil stabilization, but too many can prevent the main body of the plant from receiving the necessary amount of nutrients

How to Prune

- Always disinfect pruning tools between each shrub or tree with one part soap and three parts water to avoid spreading fungal diseases and insect infestations
- To reduce damage, bark peeling and deter diseases, always prune at the branch collar (where the branch becomes thin after the location of swelling nearest to the main branch or trunk).
- Start by making a wedge-shaped cut on the underside of the branch. The cut should be approximately 1/4 of the width of the branch, and 12 cm away from the collar. DO NOT CUT THE BRANCH ALL THE WAY THROUGH. Next, starting from the topside of the branch, cut all the way through the branch approximately 20-30 cm away from the collar. Finally, remove the remaining nub by cutting all the way through the branch at the branch collar. This final cut should be made parallel to the branch collar. Use caution to avoid cutting the branch collar itself, as this can damage the tree or shrub.
- Refer to Watershed Canada's Maintaining Your Natural Shoreline: Native Plant Care for more information on pruning requirements for specific species of plants.



How Much to Prune

- Less pruning the better. It is recommended to avoid pruning more than 25% of the crown of the tree or shrub
- Branches should comprise at least 2/3 of the shrub or tree to ensure there are enough mature leaves for growth and survival

iv. Weeding

Weeds can be any plant growing in an area where they are unwanted. Some 'weeds' are native species that are naturally occurring in a given area and will likely pose no harm to your garden plants, while others may be invasive and pose a significant risk to the survival of your garden plants, even hardier native species.



An established shoreland garden with a variety of native plant species requires little to no maintenance when it comes to weeds, especially when the garden area has been sufficiently mulched. However, weed pulling may be necessary during the first year or two when plants are establishing and are not large enough to ward off unwanted plants. Newly disturbed areas, such as newly planted shoreland gardens, can be particularly susceptible to opportunistic weeds.

What to Weed

Before you remove anything you suspect to be a weed, ensure that it is in fact, a weed. If a plant is taking over your garden and preventing other plants from growing in it, it is likely a weed (and potentially an invasive one at that!). Some of the most common weeds in Ontario include:

- Bindweed (*Convolvulus arvensis*)
- Dandelion (*Taraxacum officinale*)
- Plantain (*Plantago major*)
- Canada Thistle (*Cirsium arvense*)

Some of the more invasive species, which can also be considered weeds, include:

- Dog-Strangling Vine (*Vincetoxicum rossicum* and *Vincetoxicum nigrum*)
- Garlic mustard (*Alliaria petiolata*)
- Buckthorn (*Rhamnus cathartica*)
- Japanese Knotweed (*Reynoutria japonica*)

A quick Google search should allow you to determine if the species in question is a non-native species to Ontario.



How to Weed

- Hand pulling, hoeing, or digging are all potential methods to consider
- It is important to remove the entire plant, including the roots and rhizomes. In most cases, if the entirety of the weed is not removed, the soil disruption caused by weeding can actually stimulate the growth of the weeds even further
- Dispose of weeds in the garbage rather than the compost where their seeds could re-enter the environment
- Wash your gardening tools after weeding



When to Weed

- After a good rain or watering. Moist soil allows for easier removal of plant roots.
- In general, weeding is most effective in the fall or early spring before the plant has gone to seed.

v. Spreading Wood Ash

Wood ash is a great natural fertilizer and pest deterrent for shoreland gardens. Not only does it add essential nutrients such as lime (calcium and magnesium) and potassium needed for plant growth to the soil, it also helps supply the lake ecosystem with calcium which many aquatic organisms need to survive.

However, because wood ash can be fairly alkaline (high pH value), there are certain precautions that must be taken before using it. Before spreading wood ash on your property, please consider the following guidelines:

- Aim to use wood ash obtained from burning hardwood trees (oak and maple) rather than softwoods (pines and firs), as hardwood ash contains higher levels of nutrients
- Compost your fireplace ashes beforehand to leach away excess lye and salt which may burn plants
- Be careful not to apply too much wood ash as salts and high levels of calcium can harm the soil and lake.
- Wood ash is only safe to apply regularly if your soil's pH (determined from a pH test) is already acidic (below the optimal neutral pH of 6.5 - 7). If your soil is already within the optimal pH range of 6.5 - 7, apply no more than 20 pounds (or a 5-gallon bucket) per 1,000 square feet of soil once per year
- It is typically recommended that wood ash be applied to soils in the fall.
- After application, mix the wood ash into the top 2-4 inches of the soil.
- Be careful not to spread the ash around seedlings or acidic soil-loving plants such as raspberries, blueberries and some other fruit-bearing bushes as this could harm them.
- If using wood ash for control of slugs and other soft-bodied pests, sprinkle a little around the base of affected plants, and refresh the ash supply if it gets wet (salt leaches away in rain) if your soil pH permits. The salt in the ash will kill these pests.





Other Habitat Improvements

In this section, we outline some additional measures you can take to elevate the quality of your shoreland habitat even further. If you are looking to take your shoreland and surrounding backyard habitat to the next level, consider integrating some of these additional, easy practices into your regular routine.

i. Leave your Leaves

Rather than raking up or blowing away the leaves on your property, consider leaving them where they fall. As the leaves decompose, they release nutrients back into the soil, allowing for stronger, healthier plant life. Leaves also act as a kind of natural mulch, blocking weed establishment in your garden soil or on your lawn. The leaf layer also functions as an important habitat for many microorganisms and amphibians. These creatures are also important in the maintenance of healthy soil, as they aid in decomposition and pest control. Best of all, leaving the leaves saves you time that could be much better spent doing something fun!

If you would still like to get the leaves off your lawn and out of your field of view, consider raking them into a pile and leaving

them somewhere out of sight where animals and plants alike can still benefit from them. Leaf piles make excellent hiding places for insects, snakes, small rodents and more. What's more, as the leaf pile breaks down, it will provide a source of nutrients for nearby plants.



ii. Leave Driftwood and Fallen Shoreland Trees in Place

Leaving your fallen shoreland trees and driftwood in place is a great way to not only foster important shoreland habitat, but also to naturally help combat erosion. The logs act as a natural and gentle wave break, absorbing some wave energy before they hit your shore. These logs will also create excellent habitat for fish and basking areas for turtles. Leaving the stumps and roots of these fallen trees in place is also important as, even though the tree is dead, the roots still hold the soil on the shoreland in place and prevent further erosion.

iii. Leave Dead Standing Trees Standing

If they do not pose a hazard to you, your property, or your neighbors property, consider leaving dead standing trees standing. As trees get older they start to rot and lose integrity. Trees with heart rot (rot in the centre of the trunk) are perfect for woodpeckers and nuthatches to chip into to find food and create nesting sites. Dead standing trees and snags also make excellent roosting habitat for bats. These areas serve as places for bats to

rest safely during the day so that they have plenty of energy to eat the mosquitos on your property at night.

Many common mammals such as chipmunks, squirrels, and weasels also depend on snags for many aspects of their lives. Dead standing trees are used as dens to rear their young, as a safe retreat from danger, and as a warm place to wait out the winter. Dead trees are also home to countless species of insects. While that may not sound very appealing to you, insects provide food for a wide variety of forest species.



iv. Do Not Remove Aquatic Vegetation

The vegetation that occurs naturally in the water provides critical habitat and food source for many native species that help keep your lake clean and enjoyable to swim in. What's more, by allowing the native aquatic vegetation to grow, you are preventing the area from being taken over or occupied by other, much more aggressive and densely growing species such as millfoil.

v. Limit or Eliminate Night Lighting

Unlike humans, plants and animals do not have the luxury of going inside, closing the blinds and turning off the lights when it's time to go to sleep. Areas where outdoor lights shine all night long can have drastic effects on the health and survival of wildlife species because artificial night lighting interferes with the natural

cycle of day and night. This natural cycle sends signals to all living things around the world, telling them when to eat, sleep, mate, and migrate. Any change to this regular pattern of light and dark as a result of light pollution can cause confusion, disorientation, and even death.

Some animals may be drawn or attracted to an area with artificial lighting, which may expose them to potential predators, steer them off their natural migration routes, or even cause their death (like a moth to a flame). Night lighting can also scare or repel animals away from an area, cutting off habitat corridors and transforming otherwise suitable habitat into unsuitable habitat. Furthermore, artificial lighting at night can trick some animals into thinking it's still day time. This has a strong effect on most mammals across the world who rely on darkness to survive – to find food, shelter, and mates, or for other animals who need shelter to hide from predators. This causes confusion and disrupts sleeping states and patterns. Plants also have natural cycles, influenced by the regular pattern of light and darkness.



Many plants use the length of the day to signal flowering, and to determine when to go into dormancy for the winter. Light pollution can trick plants into thinking that the days are longer than they actually are, throwing the timing of many of these processes out of whack. Lastly, artificial night lighting also attracts

bugs, including pesky mosquitoes that primarily come out at dusk, decreasing the desirability of your outdoor space.

Luckily however, there are many simple, easy and effective changes that can be made to limit the impacts of night lighting. The best option is to turn off outdoor lights at night altogether. However, if you still prefer to have lights on your property at night, you can reduce its impacts by:

- Aiming lights downward towards the ground and not at the night sky
- Capping or shielding your lights to reduce their radius of influence
- Reducing the use of your lights by only turning them on when needed, by using them only in areas that are needed and/or by installing motion sensors
- Choosing low wattage bulbs, non-LEDs, and amber or red lights since the wavelengths produced by this colour of light are dimmer to nocturnal animals that primarily use rod vision
- Abiding by local bylaws regarding night lighting



vi. Avoid the Use of Mosquito Sprays

Backyard chemical mosquito sprays (pyrethroids) have become increasingly popular among permanent and seasonal lakeside residents. This is in spite of their potential impacts to human health, significant environmental toll, and ineffectiveness

as a mosquito control method. Even 'natural' versions of backyard mosquito sprays (chemically imitated pyrethrins from chrysanthemum flowers) can be harmful to you and your pets, as well as the birds and bats that consume mosquitoes and help keep their populations naturally in-check.

Only about 0.0001% of flying insects are actually affected by chemical pesticide sprays. This is because air sprays for mosquitoes are often carried off in the wind to other areas beyond where they are originally sprayed. This not only damages neighbouring habitats, but also wastes time and money, and results in the unnecessary input of chemicals into the environment.



Further, backyard chemical sprays can only treat mosquitoes that are present at the time of spraying. Mosquitoes can travel up to 5 km distances, making it easy for them to quickly repopulate your backyard after it has been sprayed. In addition, most pesticide companies spray during the day when beneficial insects such as dragonflies, bees and butterflies are most active. As a result, chemical sprays tend to be more detrimental to 'desirable' wildlife than the targeted mosquitoes we are trying to eliminate. To more effectively manage mosquitoes in your backyard without causing harm to the lake environment and your backyard's wild inhabitants, consider the following:

- Maintain and enhance the natural shoreland area with a variety of flowering native plants and habitat features which support dragonflies, birds and bats who love to feast on mosquitoes
- Use a fan to deter mosquitoes from outdoor patio and deck areas - mosquitoes are weak fliers so this tool can deter them from specific gathering areas while keeping you cool at the same time
- One of the best and most effective natural ways to deter mosquitos is through the use of smoke. The fire pit you have near your shoreland is an excellent and controlled source of smoke that should help to keep the mosquitos away. If you find that you are in need of more thorough coverage, you can set up several pots of smoking material around your sitting area. A combination of a dry egg carton and some dry moss in a flame proof container (old can, maple syrup bucket, etc.) should smolder for an extended period of time. The smoldering will create plenty of smoke to deter mosquitoes from frequenting your sitting area.
- For personal use, avoid using repellents made with toxic DEET. Instead, consider using oil of lemon eucalyptus (OLE) which is just as effective as chemical insect repellents.



vii. Know and Avoid Locally Invasive Species

Locally invasive species are those that may not grow in an invasive manner everywhere, but that have a tendency to become invasive in certain localities. Below is a list of some of the species that have been identified as locally invasive in The

Land Between. Unfortunately, some of these species, such as periwinkle (*Vinca minor*), are still sold by local nurseries. Please avoid planting the species listed below, and if you find that one or more of these species is already present on your property, please consider removing them. A more detailed description of each of these plants including how to identify them and the impact they can have on your shoreland environment can be found in Appendix B.

Trees

- Norway Maple (*Acer platanoides*)

Shrubs

- False Spirea (*Sorbaria sorbifolia*)
- Wild Black Currant (*Ribes americanum*)*



** Wild Black Currant is not considered locally invasive; however, it has been included on this list because it is a carrier of White Pine Blister Rust, a fungal disease that can be fatal to White Pine trees. For this reason, we strongly encourage all landowners to avoid growing Wild Black Currants within 1.6 km of White Pines.*

Flowers

- Yellow Iris (*Iris pseudacorus*)
- Shasta Daisies (*Leucanthemum × superbum*)
- Bachelors Buttons (*Centaurea cyanus*)
- Large-leaved Lupines (*Lupinus polyphyllus*)

Grasses

- All variegated and ornate varieties

Ground Cover

- Periwinkle (*Vinca minor*)
- Lamb's Ear/Purse (*Stachys byzantina*)
- Creeping Jenny (*Lysimachia nummularia*)
- Lily of the Valley (*Convallaria majalis*)
- European/English Mint Species

viii. Avoid the Use of Fireworks

While fireworks can be fun to set off and observe, the impact of these displays of sound, light and colour cannot be ignored. Fireworks pose a serious risk to the health and well-being of the natural world, and the plants and animals that inhabit it. For the benefit of your shoreland garden habitat, and all the species that depend on it, we encourage you to avoid the use of fireworks, not only on your own property, but as much as possible.



Firework explosions cause panic, confusion, fear, and anxiety in wild animals, as well as many pets. This is in part because fireworks do not last long enough for animals to become accustomed to the sound, resulting in a panic with every boom. What's more, the ears of most animals are considerably more sensitive than the human ear, so the explosions are even louder and even more disturbing to them. There are documented cases of fireworks causing ground nesting birds to abandon their nests, leaving flightless chicks permanently separated from their parents during the confusion, resulting in death. In addition, birds have been observed to fly into buildings as a result of their fear and disorientation.



Further, fireworks normally contain perchlorates, a common ingredient in rocket fuel, explosives, road flares and air bag inflation systems. They also contain metals to produce a variety of colours. Because most fireworks, particularly in The Land Between, are set off in close proximity to lakes, these chemicals and metals are making their way into our water.

ix. Don't Feed the Deer

Deer are a common sight throughout most of cottage country. Though they are quite flighty, deer are also curious, and it does not take much for deer to become comfortable around people.

During the winter months, many people are inclined to feed the deer, either to help them survive, or because they enjoy having the animals around. However, deer are more than adept at surviving through the Canadian winters without the help of humans. Having thick fur and fat stores, these animals are adapted for winter climates. They often reduce their activity levels in the winter months so as to not burn through energy stores, and actually require less food during this period. Though they will lose body fat throughout the winter, they will make it up again the following spring and summer.



Though well intentioned, feeding deer actually causes more harm to deer (and humans) than good. Feeding deer can lead to habituation, malnutrition, browse shortages, increased disease and predation, and increased risk to human life

Habituation

Habituation occurs when animals lose their natural fear of people. Deer are especially easy to habituate, as they are often found in herds. This loss of their natural fear can be passed down to their offspring, resulting in generations of deer comfortable living in close proximity to humans.

Malnutrition

Though you may be feeding deer to help them survive a harsh winter, it is likely that the food you are feeding them is not what

they are meant to be eating, and is not providing the deer with the proper nutrients they need to survive. Feeding deer improper foods can lead to malnutrition and ultimately death.

Browse Shortages

If deer are being fed, they will be more inclined to stay in the same area for longer than they otherwise would. Though they are being fed, they will continue to browse on nearby vegetation as well. As a result, feeding deer reduces the amount of natural browse in a given area for future years. The more natural browse consumed in a given year, the less there will be every year following.

Disease and Predation

Deer grouping in one area makes it far easier for diseases to spread throughout herds. Prolonged stays in one area also makes the deer more vulnerable to predators.



Dangers to Humans

Having deer so close to human environments (roadways, urban areas, houses) can cause a number of issues including increased wildlife collisions, increased wildlife-domestic animal conflict, property damage from browsing, and unwanted interactions with deer. When deer lose their natural fear of humans, they are not as cautious in human-dominated environments. Their presence is increased on roadways as they access different feeding areas,

they can cause significant property damage when browsing on garden plants, and they may engage with people because they associate them with food.

The best way to help deer through the winter months and beyond is by not feeding them at all. They are more than capable of surviving through the winter and do not need our assistance. If you choose to feed deer during the winter, please do some research. Consider what you are feeding them, and look up municipal laws and regulations before placing any feed out.



Additional Considerations

In this section we cover some additional, potential concerns you may want to address in order to make your shoreland and lake habitat as healthy and beautiful as possible. Topics covered in this section include boating, calcium levels and lyme disease.

i. Boating

Boats are a critical ingredient in the lake vacation culture of many people throughout cottage country. Unfortunately, some kinds of boating can have devastating impacts on wildlife including fish, turtles, frogs and shorebird habitats.

Submerged motors and recreational water-vehicles churn waters, mixing warm water at the surface deeper into the lake, much like stirring a bath. As the water temperature increases, the dissolved oxygen content decreases, causing fish to become stressed or die. Increasing warm water areas and disturbed habitats also provide more suitable conditions for competing species such as Rock Bass and invasive species such as Eurasian Watermilfoil. Further, boat propellers can stir up sediment, destroy aquatic vegetation, and spread invasive species. These factors combine to reduce available fish habitat, meaning fish have a smaller area to forage and thus must compete more heavily for food and other resources.

Boating at high speeds in areas where wakes will reach shores or shallows can result in more erosion at the shore from wave washing, causing soils to move into shallows and get suspended in the water column. Along with these sediments comes an increase in available phosphorus, a precursor nutrient to algal blooms, as well as settling out of particles on spawning areas, covering eggs and hatchlings.

However, this does not mean you need to forgo the boat! A day out on the lake can be fun while still protecting shorelands and water quality at the same time. All you have to do is reduce your speed to under 10 km/h (the slower the better) within 30 m of a shore, shallow area, loon nesting area and/or spawning area.



If you are in the market for a boat, it is a good idea to purchase a four-stroke engine rather than a two-stroke as they are much cleaner and more fuel-efficient. In addition, lifting your motor up as much as you can in shallow areas will help to reduce damage to aquatic vegetation and vital fish and amphibian nurseries. Following all of these suggestions will help mitigate disturbance to shoreland habitats (including where many waterfowl nest) and reduce erosion and turbidity (cloudiness) which contribute to poor water quality and degradation of fish habitat.

ii. Calcium

Calcium is an essential nutrient for all forms of life. It helps build teeth, bones, and shells in many animals, and it is even consumed by plants. In fact, calcium makes up about 1% of trees, 2-8% of fish, and over 20% of clams and crayfish!

Unfortunately, a century of harsh acid rain, poor logging practices (which remove calcium-rich trees), forest fire suppression and shoreland development have depleted calcium from our environment, creating an environmental illness that scientists have coined “ecological osteoporosis” (environmental calcium

decline). To make matters worse, the problem is much more prevalent in areas where soils are thin and located on granitic bedrock (which has little calcium to begin with). Unfortunately, this is exactly the kind of landscape found across much of The Land Between, meaning we have less calcium in our waters to begin with, making our lakes more susceptible to the effects of acid rain.

A lack of calcium in a lake environment can be detrimental to aquatic life. For example, *Daphnia* are microscopic animal plankton or “water fleas” made up of around 5% calcium. *Daphnia* are a great food source for many fish, and help keep waters clean by eating algae. Due to a lack of calcium, they have already disappeared from some lakes in The Land Between. When *Daphnia* are not present, their food source, algae, is able to grow unimpeded, ultimately contributing to the increasing occurrence and severity of algal blooms. Other aquatic species including clams, amphipods and crayfish, are also in decline due to limited calcium supplies in lakes. As a result of declining food supplies, predators of these species are expected to decline as well.



Even humans are affected by calcium deficiencies in lakes. *Daphnia* are being replaced with the Jelly-clad Water Flea, *Holopedium*. This water flea can clog water filters on intake pipes at lakeside residences, causing headaches and potentially expensive repair and maintenance costs.

But fear not! Calcium can be added to the soils on lakefront properties in the form of wood ash! Wood ash from burning hardwood trees in household stoves can increase the pH, calcium, magnesium and potassium concentrations (among other nutrients) in soil. Plus it can help add calcium to the lake environment when it runs off or is leached into the water. But be careful, since wood ash is alkaline, it should only be added if the soil's pH is already acidic or below the optimal neutral pH of 6.5 - 7. In general, soil pH should be tested before considering adding wood ash because if too much is added, there is a risk of making the soil too alkaline (high pH value).



However, soil that is already within the optimal pH range can still withstand wood ash addition without affecting the pH level too much. The general application amount for soil with a pH of 6.5 is no more than 20 pounds (or a 5-gallon bucket) per 1,000 square feet of soil once per year (typically in the fall). The ash should be mixed into the top 2-4 inches of soil. Be careful not to spread the ash around seedlings or acid-loving plants, such as raspberries and blueberries, as this could harm them. In The Land Between bioregion, most properties will naturally have more acidic soils,

and thus can withstand additions of calcium without becoming too alkaline.



iii. Lyme Disease

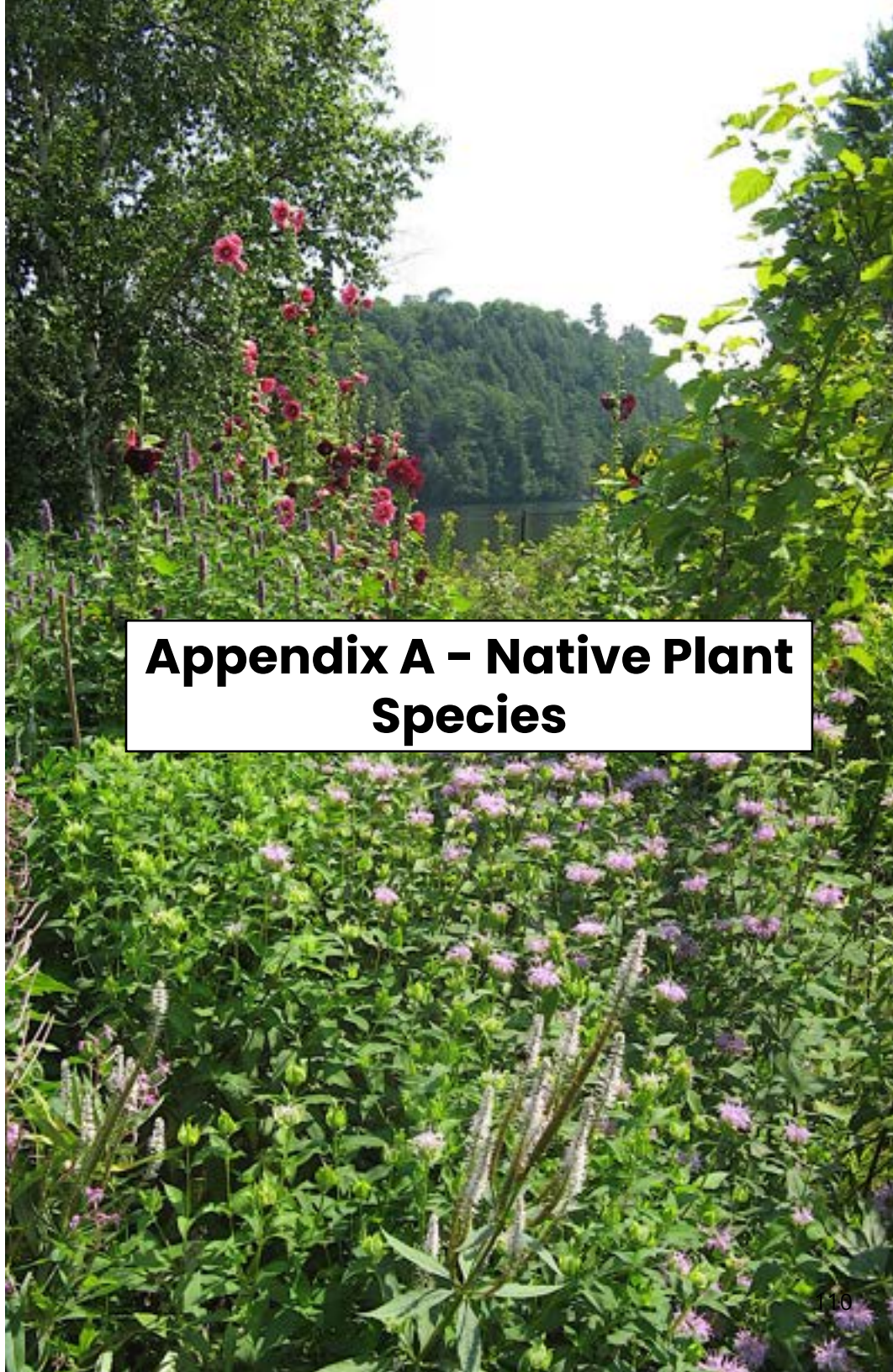
Lyme disease is caused by the bacterium, *Borrelia burgdorferi*, which is spread to humans through a bite from an infected blacklegged tick, otherwise known as the deer tick (note that not all blacklegged ticks carry Lyme Disease, rather only an average of 20% of ticks have the bacteria in Ontario, although the number is increasing). The infection usually presents itself in humans anywhere between 3 days to 4 weeks after a bite and can cause a circular red rash, known as a "bulls-eye", as well as skin rash, fatigue, stiff neck, joint pain, headache and even fatality if left untreated. Blacklegged ticks live in forests, grasslands, and bushed areas where they parasitize animals such as deer, squirrels, mice and even birds. As temperatures rise due to climate change, the breeding season for ticks gets lengthened, causing them to become more prominent and expand their range northward.

Although natural shorelands may provide suitable habitat for ticks, there are numerous effective options to manage the threat of Lyme Disease without resorting to removing shoreland vegetation. These include:

- Mowing only the areas where humans frequent, such as lawn spaces for sports and recreation since ticks are deterred by

sunny, open spaces with short grass - natural vegetation areas can still be maintained where humans do not walk or play

- Creating a 'buffer zone of protection' between recreational areas and wooded or grassy areas by putting down a 1 m wide strip of woodchips or gravel
- Planting native vegetation that naturally deter ticks, such as marigolds
- Ensuring your woodpiles are stacked neatly in a sunny area to allow for sufficient aeration - this not only helps season your wood better but also deters ticks which prefer cool, damp areas
- Instead of removing leaf piles, consider moving them to natural grassy or woody areas and away from recreational areas
- Deterring deer, vectors of ticks and Lyme disease, by reducing the size of your lawn and open spaces - heavily vegetated areas are unappealing to deer
- Deterring mice, vectors of ticks and Lyme disease, from your yard by making sure your garbage is always put away and secure from animals
- Protecting yourself by wearing light-coloured clothing and long pants tucked into socks when walking in wooded or tall grass areas, using non-toxic insect repellent such as cedar oil spray, neem oil or eucalyptus oil, and checking yourself and others thoroughly for ticks after you leave these areas
- To protect your pets, keep their monthly tick medication up to date, outfit them with herbal tick collars, and check their bodies for ticks after being in wooded and grassy areas



Appendix A – Native Plant Species

Herbs & Wildflowers

Great Blue Lobelia (*Lobelia siphilitica*)



Description: 1 m (1-3 ft) high. Light green leaves. Tall, dense clusters of flowers.

Soil Moisture: Wet to moist

Soil Type: Rich, poorly drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Dark blue

Bloom Time: July to September

Lifespan: Perennial

Hardiness Zone: 2b - 5b

Notes: Low maintenance. Does not tolerate dry conditions or drought. Tolerates periodic flooding, shade and deer grazing. Provides food for birds and small mammals.

Blue Vervain (*Verbena hastata*)



Description: 1.5 m (5 ft) high. Slender plant. Several dense flowering spikes on top of flowering stem; flowers bloom from bottom of spike up.

Soil Moisture: Wet to moist

Soil Type: Rich

Sun Conditions: Full sun to partial shade

Bloom Colour: Blue/purple

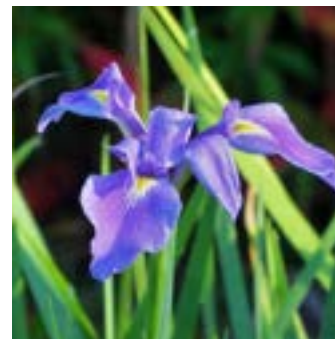
Bloom Time: July to September

Lifespan: Perennial

Hardiness Zone: 3a - 7a

Notes: Tolerates deer grazing, periodic flooding and drought. Spreads well (up to 1 m per plant) and can form small colonies. Seeds provide food for birds and small mammals.

Blue-flag Iris (*Iris versicolor*)



Description: 0.5 m (1.6 ft) high. Light green leaves. Tall flowering stalk with 2-4 flowers.

Soil Moisture: Wet to moist

Soil Type: Loam, humus, rocky

Sun Conditions: Full sun to partial shade

Bloom Colour: Purple/blue

Bloom Time: May to June

Lifespan: Short-lived perennial

Hardiness Zone: 2a - 6a

Notes: Tolerates periodic flooding. Low maintenance. Spreads quickly. Root ball can be separated and replanted in the fall. Rhizomes are toxic to humans and animals if eaten. Seeds provide food for birds and small mammals.

Tall Larkspur (*Delphinium glaucum*)



Description: 1.5 m (5 ft) high. Dark green, mostly basal leaves. Flowers on a terminal spike followed by upright, purple seed pods.

Soil Moisture: Normal to moist

Soil Type: Rich, poorly drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Dark purple

Bloom Time: July to August

Lifespan: Perennial

Hardiness Zone: 3a - 8b

Notes: Toxic to humans and livestock.

Cylindrical Blazing Star (*Liatris cylindracea*)



Description: 0.5 m (1 ft) high. Cylindrical blooms.
Soil Moisture: Normal to dry
Soil Type: Sandy loam
Sun Conditions: Partial shade to full sun
Bloom Colour: Purple
Bloom Time: Late summer to fall
Lifespan: Perennial
Hardiness Zone: 5b - 7a

Notes: Drought tolerant. Non-competitive. Should be planted with non-aggressive, slow growing plants.

Giant Hyssop (*Agastache foeniculum*)



Description: 1 m (3 ft) high. Small flowers in dense cylindrical spikes pattern at the end of stems.
Soil Moisture: Normal to dry
Soil Type: Well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: Purple
Bloom Time: June to September
Lifespan: Perennial

Hardiness Zone: 3a - 5b

Notes: Drought tolerant. Deadhead old flowers to promote new blooms. Flowers, seeds and leaves are edible.

Hairy Beardtongue (*Penstemon hirsutus*)



Description: 0.5 m (2 ft) high. Stalks of trumpet-shaped flowers on hairy stems.
Soil Moisture: Dry to normal
Soil Type: Loam
Sun Conditions: Full sun to partial shade
Bloom Colour: Purple
Bloom Time: Spring
Lifespan: Perennial

Hardiness Zone: 3a - 7b

Notes: Tolerates drought and cold. Deadhead and divide every few years to promote growth. Attracts hummingbirds.

Harebell (*Campanula rotundifolia*)



Description: 0.3 m (1 ft) high. Delicate, bell-shaped flowers that hang individually or in small clusters.
Soil Moisture: Dry to normal
Soil Type: Sandy, well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: Purple
Bloom Time: Summer to fall (on

and off)

Lifespan: Perennial

Hardiness Zone: 1a - 6b

Notes: Fast growing; blooms usually produced within the first year. Long lasting blooms. Perfect for rock gardens. Attracts hummingbirds.

New England Aster (*Symphyotrichum novae-angliae*)



Description: 1.2 m (4 ft) high. Large flowers clustered at the end of stem.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun

Bloom Colour: Purple with orange centre

Bloom Time: Late summer/early fall

Lifespan: Perennial

Hardiness Zone: 4a - 7a

Notes: Good for naturalizing un-vegetated areas.

Prairie Thistle (*Cirsium flodmanii*)



Description: 0.5 m (1.6 ft) high. Dark green, wavy leaves. Thistles on prickly stems.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Purple

Bloom Time: June to August

Lifespan: Short-lived perennial

Hardiness Zone: 4a - 7a

Notes: Tolerates dry and wet conditions. Low maintenance. Provides food for birds and small mammals.

Hoary Vervain (*Verbena stricta*)



Description: 1 m (3 ft) high. Grey-green leaves. Spikes of flowers bloom from the bottom up.

Soil Moisture: Moist to dry

Soil Type: Well-drained

Sun Conditions: Full sun

Bloom Colour: Lavender

Bloom Time: May to September

Lifespan: Perennial

Hardiness Zone: 4a - 7b

Notes: Tolerates shallow soil.

Smooth Blue Aster (*Symphyotrichum laeve*)



Description: 1 m (3 ft) high.

Smooth, green leaves. Flowers on top of stem.

Soil Moisture: Moist to dry

Soil Type: Well-drained

Sun Conditions: Full sun

Bloom Colour: Lavender with yellow centre

Bloom Time: August to October

Lifespan: Perennial

Hardiness Zone: 3b - 7a

Notes: Tolerates frost and drought.

Dense Blazing Star (*Liatris spicata*)



Description: 1.5 m (5 ft) high. Slender. Tall spike of clustered flowers that bloom from the top down.
Soil Moisture: Wet to moist
Soil Type: Sandy loam
Sun Conditions: Partial shade to full sun
Bloom Colour: Pinkish purple
Bloom Time: Mid-summer to early

fall

Lifespan: Perennial

Hardiness Zone: 3b - 7a

Notes: Drought tolerant. Hardy and disease resistant. Fast growing.

Fireweed (*Chamerion angustifolium*)



Description: 1.5 m (5 ft) high. Light green, narrow leaves. Flowers bloom on tall stalk.
Soil Moisture: Moist
Soil Type: Rich
Sun Conditions: Full sun to partial shade
Bloom Colour: Purple to pink
Bloom Time: June to September
Lifespan: Perennial

Hardiness Zone: 1a - 4b

Notes: Good for erosion control and naturalizing un-vegetated areas. Spreads well from rhizomes and grows in dense patches. Can become aggressive in moist conditions.

Showy Tick Trefoil (*Desmodium canadense*)



Description: 1 m (3 ft) high. Hairy stem and leaf underside. Crowded clusters of flowers at the end of stems.
Soil Moisture: Moist
Soil Type: Rich
Sun Conditions: Full sun to partial shade
Bloom Colour: Purple-pink
Bloom Time: Late summer and fall

Lifespan: Perennial

Hardiness Zone: 4a - 6b

Notes: Seeds provide food for birds and small mammals. Can grow in a variety of soil types and conditions. Can take over a small garden. Roots host nitrogen fixing bacteria, increasing the soil nitrogen levels for other nearby plants. Seeds stick to clothes.

Wild Bergamot/Bee Balm (*Monarda fistulosa*)



Description: 1 m (3 ft) high. Pom pom-like, showy flowers. Leaves smell like oregano when crushed.
Soil Moisture: Dry to moist
Soil Type: Sandy, clay, loam
Sun Conditions: Full sun to partial shade
Bloom Colour: Lavender to pink
Bloom Time: July to September
Lifespan: Perennial

Hardiness Zone: 3a - 7a

Notes: Tolerates heat. Spreads well and easy to grow. Good for erosion control and naturalizing un-vegetated areas. Water roots directly to avoid accumulation of mildew.

Wild Geranium (*Geranium maculatum*)



Description: 0.7 m (2 ft) high. Lobed, basal leaves. Delicate flowers.

Soil Moisture: Moist

Soil Type: Rich

Sun Conditions: Full to partial shade

Bloom Colour: Lavender to pink

Bloom Time: May to June

Lifespan: Perennial

Hardiness Zone: 3a - 7a

Notes: Spreads from rhizomes but not aggressive. Good for erosion control.

Purple Coneflower (*Echinacea purpurea*)



Description: 1 m (3 ft) high. Dark green leaves. Long-lasting, daisy-like flowers.

Soil Moisture: Dry

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Pink to purple

Bloom Time: June to August

Lifespan: Perennial

Hardiness Zone: 4a - 7a

Notes: Does not tolerate long, dry periods. Spreads well and easy to grow. Good for erosion control and naturalizing un-vegetated areas. Provides food for birds and small mammals.

Spotted Joe-pye Weed (*Eupatorium maculatum*)



Description: 1.5 m (5 ft) high. Large leaves. Flowers in flat clusters at top of stem.

Soil Moisture: Wet to moist

Soil Type: Sand, loam, clay

Sun Conditions: Full sun to partial shade

Bloom Colour: Pink/purple

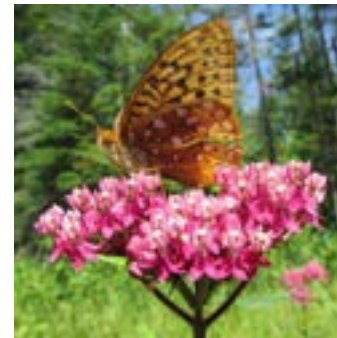
Bloom Time: August to September

Lifespan: Perennial

Hardiness Zone: 2b - 7a

Notes: Tolerates periodic flooding. Good for erosion control.

Swamp Milkweed (*Asclepias incarnata*)



Description: 1.5 m (5 ft) high. Narrow, light green leaves. Clusters of flowers. Long, brown seed pod.

Soil Moisture: Wet to moist

Soil Type: Rich loam, clay, humus

Sun Conditions: Full sun to partial shade

Bloom Colour: Pink

Bloom Time: July to August

Lifespan: Perennial

Hardiness Zone: 5a - 7a

Notes: Tolerates periodic flooding.

Common Milkweed (*Asclepias syriaca*)



Description: 1 m (3 ft) high. Large leaves with prominent veins. Clusters of flowers at the top of plant. Green seed pods and seeds with white tufts of hair.

Soil Moisture: Dry to moist

Soil Type: Sand, loam, clay, rocky

Sun Conditions: Full sun to partial shade

Bloom Colour: Pinkish white

Bloom Time: June to August

Lifespan: Perennial

Hardiness Zone: 4a - 7a

Notes: Tolerates drought. Low maintenance. Larval host for monarch butterfly. Good for erosion control and stabilizing shorelines. It is a vigorous grower and not recommended for small gardens.

Nodding Onion (*Allium cernuum*)



Description: 0.5 m (1.5 ft) high. Drooping clusters of small, bell-shaped flowers. Entire plant has a faint onion smell.

Soil Moisture: Moist to dry

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White to pink

Bloom Time: Mid to late summer

Lifespan: Perennial

Hardiness Zone: 2a - 7a

Notes: Tolerates drought and deer. Best planted in clusters. Doesn't like competition. Bulbs and leaves are edible but should not be eaten raw in large quantities.

Turtlehead (*Chelone glabra*)



Description: 1 m (3 ft) high. Dark green leaves. Flowers shaped like a turtle's head.

Soil Moisture: Wet to moist

Soil Type: Acidic

Sun Conditions: Full sun to partial shade

Bloom Colour: Pinkish-white

Bloom Time: August to October

Lifespan: Perennial

Hardiness Zone: 4b - 6b

Notes: Tolerates periodic flooding.

Common Yarrow (*Achillea millefolium*)



Description: 0.5 m (1 ft) high. Small white flowers with yellow, honey-comb like centres bloom in clusters for long periods. Feathery, green leaves.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White with yellow

centre

Bloom Time: June to September

Lifespan: Perennial

Hardiness Zone: 1a - 6a

Notes: Tolerates drought, poor soil quality and disturbed areas. Spreads well and can be used to naturalize un-vegetated areas. Good for erosion control.

Flat-topped White Aster (*Doellingeria umbellata*)



Description: 0.5-2 m (2-7 ft) high. Stem is usually unbranched except where flowers are. Flowers in flat-topped clusters.
Soil Moisture: Moist
Soil Type: Sand, loam
Sun Conditions: Full sun
Bloom Colour: White with yellow centre
Bloom Time: August to September

Lifespan: Perennial

Hardiness Zone: 4a - 6a

Notes: Important nectar and larval plant for butterflies. Forms large colonies over time. Low maintenance. Winter cover is recommended.

Foam Flower (*Tiarella cordifolia*)



Description: 0.3 m (1 ft) high. Spikes of small, bell-shaped flowers on stems with no leaves. Leaves turn bright purple in the fall.
Soil Moisture: Moist
Soil Type: Rich, well-drained, acidic soils
Sun Conditions: Full shade to partial sun
Bloom Colour: White

Bloom Time: Mid-spring to mid-summer

Lifespan: Perennial

Hardiness Zone: 4a - 7a

Notes: Provides food for birds. Spreads well from rhizomes and grows in dense patches. Can be used as ground cover.

Foxglove Beardtongue (*Penstemon digitalis*)



Description: 1.2 m (4 ft) high. Clustered spikes of small, tubular flowers that grow in pairs.
Soil Moisture: Moist
Soil Type: Rich, well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: White
Bloom Time: Early to mid-summer
Lifespan: Perennial

Hardiness Zone: 4a - 8a

Notes: Drought and cold tolerant. A top pollinator plant; attracts bees, butterflies and hummingbirds.

Pearly Everlasting (*Anaphalis margaritacea*)



Description: 1 m (3 ft) high. Long, narrow leaves. Clusters of small flowers.
Soil Moisture: Dry to moist
Soil Type: Well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: White with yellow centre
Bloom Time: July to August

Lifespan: Perennial

Hardiness Zone: 2a - 6a

Notes: Tolerates drought. Spreads quickly.

Star-flowered Solomon's Seal (*Maianthemum stellatum*)



Description: 0.5 m (1.6 ft) high. Clustered flowers at the top of stem. Berries ripen from green to red - black by fall.

Soil Moisture: Moist

Soil Type: Sand, loam, clay, rock

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: May to June

Lifespan: Perennial

Hardiness Zone: 2b - 7a

Notes: Tolerates shade. Hardy. Spreads well. Provides food for birds.

Boneset (*Eupatorium perfoliatum*)



Description: 1.5 m (5 ft) high. Dark green, wrinkly leaves. Small flowers arranged in flat-topped clusters.

Soil Moisture: Wet to moist

Soil Type: Poorly drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Off white

Bloom Time: July to September

Lifespan: Perennial

Hardiness Zone: 3b - 7a

Notes: Tolerates periodic flooding. Spreads well, can be used to naturalize un-vegetated areas. All parts of this plant are toxic.

Tall Cinquefoil (*Potentilla arguta*)



Description: 1 m (3 ft) high. Sticky-hairy leaves. Five-petaled flowers in branching clusters.

Soil Moisture: Dry

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow-white

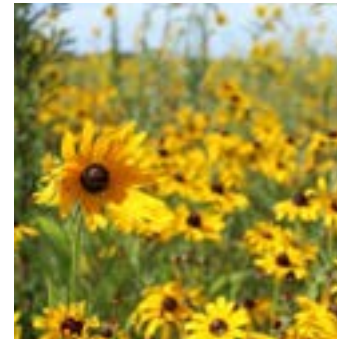
Bloom Time: June to September

Lifespan: Perennial

Hardiness Zone: 2a - 7a

Notes: Tolerates drought.

Black-eyed Susan (*Rudbeckia hirta*)



Description: 0.5 m (1.6 ft) high. Flowers last a long time.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow with black centre

Bloom Time: June to September

Lifespan: Short-lived perennial

Hardiness Zone: 4a - 7a

Notes: Tolerates drought. Grows well in disturbed environments. Good for erosion control. Tolerates deer grazing. Individuals bloom every other year. May exhibit aggressive growth if conditions are too favorable and lacks competition. Seeds provide food for birds and small mammals.

Common Evening Primrose (*Oenothera biennis*)



Description: 1 m (3 ft) high. Pointed, light green leaves. Cup-shaped flowers.

Soil Moisture: Dry to moist

Soil Type: Well-drained

Sun Conditions: Full sun

Bloom Colour: Yellow

Bloom Time: June to September

Lifespan: Perennial

Hardiness Zone: 3b - 7a

Notes: Flowers open in the evenings. Tolerates drought. No flowers produced in the first year.

Common Sunflower (*Helianthus annuus*)



Description: 3 m (10 ft) high. Leafy. Many large flowers.

Soil Moisture: Dry

Soil Type: Dry, disturbed clays or heavy sand

Sun Conditions: Full sun

Bloom Colour: Yellow

Bloom Time: August to September

Lifespan: Annual

Hardiness Zone: 2a - 7a

Notes: Seeds provide food for birds. Spreads quickly.

Green-headed Coneflower (*Rudbeckia laciniata*)



Description: 2.5 m (8 ft) high. Dark green leaves, larger near the bottom. Clusters of flowers at the end of stem. Centre of flower starts green and matures to yellow.

Soil Moisture: Moist

Soil Type: Acidic loam, clay, humus

Sun Conditions: Partial shade

Bloom Colour: Yellow

Bloom Time: Summer to Fall

Lifespan: Perennial

Hardiness Zone: 5b - 7a

Notes: Tolerates clay soils. Good for erosion control. Provides food for birds. It is a vigorous grower and not recommended for small gardens.

Grey Goldenrod (*Solidago nemoralis*)



Description: 0.5 m (1.6 ft) high. Grey-green, narrow leaves. Plumes of bright flowers.

Soil Moisture: Moist to dry

Soil Type: Sand, loam, clay, rock

Sun Conditions: Full sun

Bloom Colour: Yellow

Bloom Time: August to October

Lifespan: Perennial

Hardiness Zone: 3a - 7b

Notes: Tolerates drought and deer. Can be aggressive.

Lance-leaf Coreopsis (*Coreopsis lanceolata*)



Description: 0.9 m (3 ft) high. Basal, thick, lance-shaped leaves. Solitary, showy flowers.

Soil Moisture: Dry to moist

Soil Type: Well-drained

Sun Conditions: Full sun

Bloom Colour: Yellow

Bloom Time: May to July

Lifespan: Perennial

Hardiness Zone: 5a - 7a

Notes: Tolerates drought and nutrient poor soil. Easy to grow and spreads quickly. Good for naturalizing un-vegetated areas.

Ten-petaled Sunflower (*Helianthus decapetalus*)



Description: 1.5 m (5 ft) high. Large, green leaves and large flowers.

Soil Moisture: Moist to dry

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow

Bloom Time: July to September

Lifespan: Perennial

Hardiness Zone: 4a - 8b

Notes: Easy to grow. Spreads quickly and forms small colonies. Seeds provide food for birds and small mammals. Also known as Thinleaf Sunflower.

Woodland Sunflower (*Helianthus divaricatus*)



Description: 2 m (6.5 ft) high. Individual or clusters of 2 to 9 flowers.

Soil Moisture: Dry

Soil Type: Sandy

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow

Bloom Time: July to September

Lifespan: Perennial

Hardiness Zone: 3a - 7a

Notes: Deer resistant. Also known as Rough Sunflower.

Woodland Sunflower (*Helianthus strumosus*)



Description: 1.5 m (5 ft) high.

Soil Moisture: Dry to moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow

Bloom Time: July to September

Lifespan: Perennial

Hardiness Zone: 4a - 4b

Notes: Easy to grow and spreads quickly. Seeds provide food for birds. Also known as Pale-leaved Sunflower.

Sweet Oxeeye (*Heliopsis helianthoides*)



Description: 2 m (6.5 ft) high. Long-lasting blooms.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow-orange with orange centre

Bloom Time: Summer to fall

Lifespan: Perennial

Hardiness Zone: 4a - 7a

Notes: Tolerates drought. Hardy. Attracts hummingbirds.

Butterfly Milkweed (*Asclepias tuberosa*)



Description: 0.5 m (1.6 ft) high. Narrow, green leaves. Flowers in clusters.

Soil Moisture: Dry to moist

Soil Type: Well-drained sand or loam

Sun Conditions: Full sun to partial shade

Bloom Colour: Bright orange

Bloom Time: June to August

Lifespan: Perennial

Hardiness Zone: 6a - 7a

Notes: Tolerates drought. Low maintenance.

Larval host for Monarch Butterfly. Spreads well and can be used to naturalize unvegetated areas. Good for erosion control. It is a vigorous grower and not recommended for small gardens.

Indian Paintbrush (*Castilleja coccinea*)



Description: 0.5 m (1.6 ft) high. Fan shaped flowers on tall stalk look like they've been dipped in paint.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Red-orange

Bloom Time: June to August

Lifespan: Biennial

Hardiness Zone: 5a - 7a

Notes: Attracts pollinators that can hover, such as hummingbirds. Good for erosion control. Does not respond well to transplantation due to intricate root system - often kills the plant.

Wild Columbine (*Aquilegia canadensis*)



Description: 0.5 m (1.6 ft) high. Nodding, intricate flowers.

Soil Moisture: Moist to dry

Soil Type: Well-drained, thin, sandy soils

Sun Conditions: Full to partial shade

Bloom Colour: Red and yellow

Bloom Time: One of the first in the spring

Lifespan: Perennial

Hardiness Zone: 3a - 7a

Notes: Tolerates a range of soil and moisture levels. Does not tolerate full sun - leaves will burn. Rich soil causes weak stems and shortens lifespan. One of the first to bloom in the spring - beneficial to early-emerging pollinators.

Cardinal Flower (*Lobelia cardinalis*)



Description: 1.5 m (5 ft) high. Unbranched, showy spikes of flowers.

Soil Moisture: Wet to moist - tolerates some standing water

Soil Type: Rich loam

Sun Conditions: Full sun to partial shade

Bloom Colour: Red

Bloom Time: Early summer to fall

Lifespan: Perennial

Hardiness Zone: 5a - 7a

Notes: Nectar attracts hummingbirds, bees and butterflies. Can be difficult to grow. Great for rain gardens. Clean up in early spring before active growing resumes.

Oswego Tea (*Monarda didyma*)



Description: 0.5 m (1.6 ft) high. Flowers clustered together to look like one flower.

Soil Moisture: Moist to wet

Soil Type: Well-drained, rich

Sun Conditions: Full sun to partial shade

Bloom Colour: Red

Bloom Time: May to October

Lifespan: Perennial

Hardiness Zone: 3a - 7a

Notes: Tolerates deer grazing. Susceptible to infection with powdery mildew if planted in dry soil.

Jack-in-the-pulpit (*Arisaema triphyllum*)



Description: 0.6 m (2 ft) high. Large, hooded flower. Bright red berries in late summer.

Soil Moisture: Prefers moist but can adapt to various

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Green and brown striped

Bloom Time: Early spring

Lifespan: Perennial

Hardiness Zone: 3a - 6b

Notes: Easy to grow. Leave leaf matter at the base to decompose and return nutrients to plant. Cover through winter.

Shrubs

Purple Flowering Raspberry (*Rubus odoratus*)



Description: 2 m (6.5 ft) high. Maple-like leaves. Large, fragrant flowers. Long-lasting blooms.
Soil Moisture: Moist
Soil Type: Well-drained
Sun Conditions: Full sun to shade
Bloom Colour: Light purple/pink
Bloom Time: Early summer
Hardiness Zone: 3a - 7b
Notes: Tolerates shade. Few to no

thorns. Spreads quickly and can become aggressive. Provides food for birds and small mammals.

Smooth Wild Rose (*Rosa blanda*)



Description: 1.5 m (5 ft) high. Dense. Only a few thorns near the base. Bright red rose hips (fruiting bodies) through winter.
Soil Moisture: Dry to moist
Soil Type: Well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: Pink with a yellow centre

Bloom Time: June to July

Hardiness Zone: 3a - 7b

Notes: Tolerates drought. Fast growing. Provides food and shelter for a variety of birds. Provides food for small mammals. Good for erosion control. Good for uptake and removal of excess nutrients from the environment.

Bog Rosemary (*Andromeda polifolia*)



Description: 0.3 - 0.6 m (1 -2 ft) high. Glossy, blue-green leaves. Small, urn-shaped flowers at the end of branches. Blue seed capsules.
Soil Moisture: Moist to wet
Soil Type: Organic
Sun Conditions: Full sun to partial shade
Bloom Colour: Pinkish white
Bloom Time: May

Hardiness Zone: 3a - 6b

Notes: Tolerates flooding, high winds, and ice. Low maintenance. Branches grow in shoots from the base of plant. Leaves turn yellow in alkaline soil. Roots good for breaking up compacted soils.

Snowberry (*Symphoricarpos albus*)



Description: 1 m (3 ft) high. Numerous, delicate branches. Bell-shaped flowers and large white berries.
Soil Moisture: Dry to moist
Soil Type: Well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: Pinkish white
Bloom Time: Summer

Hardiness Zone: 3a - 6b

Notes: Provides food and cover for a variety of wildlife in the winter. Good for erosion control. Good for use as a fence row.

Alternate-leaved Dogwood (*Cornus alternifolia*)



Description: 3 m (10 ft) high. Wide clusters of flowers. Clusters of red-purple berries on red stems. Leaves turn red-purple in fall.

Soil Moisture: Moist to wet

Soil Type: Cool, acidic

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: Spring

Hardiness Zone: 4a - 6b

Notes: Provides food for birds and small mammals. Best planted with other shrubs or trees. Mulch around shrub to keep soil moist and cool.

Black Raspberry (*Rubus occidentalis*)



Description: 1.5 m (5 ft) high. Small flowers followed by dark purple/black fruit.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: May to June

Hardiness Zone: 5a - 6b

Notes: Provides food for birds and small mammals. Good for naturalizing un-vegetated areas. Prickly stems. Berries are edible. It is a vigorous grower and not recommended for small gardens. Regular pruning will control spread and increase fruit production.

Chokecherry (*Prunus virginiana*)



Description: 6 - 9 m (9 - 30 ft) high. Dense, cylindrical clusters of flowers. Cherry-like fruit starts red then darkens to purple/black.

Soil Moisture: Dry to moist

Soil Type: Cool, acidic

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: Late spring

Hardiness Zone: 3a - 7b

Notes: Tolerates cold and shade. Provides food for birds and various mammals. Good for erosion control. Good for use as a hedgerow. Used as shelter by a variety of wildlife throughout winter.

Gray Dogwood (*Cornus racemosa*)



Description: 2.5 m (8 ft) high. Young twigs and flower/berry stalks are red into winter. Short-lived white berries.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: Spring

Hardiness Zone: 5a - 7b

Notes: Tolerates dry soil. Provides food for birds and small mammals. Good for erosion control and naturalizing of un-vegetated areas. Resistant to many diseases and insect pests.

Leather Leaf (*Chamaedaphne calyculata*)



Description: 1 m (3 ft) high. Evergreen but leathery leaves become reddish brown in winter. Clusters of small, bell-shaped flowers. Reddish brown berries.
Soil Moisture: Moist to wet
Soil Type: Sand, loam, acidic
Sun Conditions: Full sun to partial shade
Bloom Colour: White

Bloom Time: May to June

Hardiness Zone: 0a - 6b

Notes: Highly branched and often grows in dense patches.

Nannyberry/Sweet Viburnum (*Viburnum lentago*)



Description: 5 m (16 ft) high. Small, showy flowers in clusters. Leaves turn burgundy in fall. Blue to black berries in fall and winter.
Soil Moisture: Wet to moist
Soil Type: Various
Sun Conditions: Full sun to partial shade
Bloom Colour: White
Bloom Time: May to June

Hardiness Zone: 3a - 7b

Notes: Easy to grow and wide spreading. Good for hedgerows. Provides food for birds. Good for uptake and removal of excess nutrients from the environment.

Red Elderberry (*Sambucus racemosa*)



Description: 3 m (10 ft) high. Large clusters of small flowers. Bright red berries in fall.
Soil Moisture: Moist to wet
Soil Type: Sand, loam, acidic
Sun Conditions: Full sun to partial shade
Bloom Colour: White
Bloom Time: June
Hardiness Zone: 2a - 7b

Notes: Tolerates flooding. Provides food for birds and small mammals.

Shadblow Serviceberry (*Amelanchier canadensis*)



Description: 3 - 5 m (10 - 16 ft) high. Dark green leaves turn orange-red in fall. Showy clusters of flowers. Purple berries in fall.
Soil Moisture: Dry to moist
Soil Type: Various
Sun Conditions: Full sun to partial shade
Bloom Colour: White
Bloom Time: Early spring - before

leaves are produced

Hardiness Zone: 2a - 7b

Notes: Provides food for birds. Good for erosion control. Susceptible to many diseases and insect pests - affects aesthetics rather than health of plant in most cases.

Sweet Gale/Sweet Bayberry (*Myrica gale*)



Description: 1.2 m (4 ft) high.

Elliptical, green leaves have a pleasant smell when crushed.

Soil Moisture: Moist to very wet

Soil Type: Loam

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: Early spring

Hardiness Zone: 0a - 8a

Notes: Good for erosion control and wave breaks. Water loving.

White Meadow-sweet (*Spiraea alba*)



Description: 1.2 m (4 ft) high.

Dense, pyramid-shaped spikelet of flowers.

Soil Moisture: Moist to wet

Soil Type: Well-drained

Sun Conditions: Partial shade

Bloom Colour: White with pink-orange centre

Bloom Time: June to September

Hardiness Zone: 1a - 7b

Notes: Good for erosion control and wave breaks. Likes consistently moist soils. Provides cover for waterfowl and other birds.

Wild Black Currant (*Ribes americanum*)



Description: 1 - 2 m (3 - 6 ft) high.

Low shrub. Hanging clusters of small, bell-shaped flowers. Purple berries.

Soil Moisture: Moist to wet

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: Early spring

Hardiness Zone: 3a - 7b

Notes: Good for erosion control. Provides shelter for a variety of wildlife. Can carry a disease that can kill White Pine trees, do not grow within 1.6 km of White Pines.

Black Elderberry (*Sambucus nigra*)



Description: 4 m (13 ft) high. Round shape. Green leaves turn yellow in fall. Clusters of flowers. Purple-black berries in fall.

Soil Moisture: Moist

Soil Type: Sand, clay

Sun Conditions: Full sun to partial shade

Bloom Colour: Ivory

Bloom Time: May to June

Hardiness Zone: 2a - 8a

Notes: Fast growing. Shallow roots. Berries are edible. Provides food for birds and small mammals. Not usually consumed by beavers.

Wild Red Raspberry (*Rubus idaeus*)



Description: 2 m (6.5 ft) high. Small clusters of flowers followed by bright red berries.

Soil Moisture: Dry to moist

Soil Type: Sand, clay, loam

Sun Conditions: Full sun to partial shade

Bloom Colour: White/cream

Bloom Time: Summer

Hardiness Zone: 1a - 5b

Notes: Good for erosion control. Berries are edible. Hollow stems used by bees for hibernation.

Ninebark (*Physocarpus opulifolius*)



Description: 3 m (10 ft) high. Full, rounded shrub. Yellow-green, lobed leaves; red to dark purple in fall. Clusters of flowers.

Soil Moisture: Adaptable

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White/cream

Bloom Time: May to June

Hardiness Zone: 3a - 7b

Notes: Tolerates drought and periodic flooding. Provides food for birds. Fast-growing and hardy.

Red Osier Dogwood (*Cornus stolonifera*, *Cornus sericea*)



Description: 2 m (6.5 ft) high. Bright red twigs. Dense clusters of flowers. Clusters of white-bluish berries.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Cream/white

Bloom Time: Late June

Hardiness Zone: 1a - 6b

Notes: Good for excess nitrogen removal. Used as browse for deer and rabbits. Provides food for birds. Can grow in a variety of soil types.

Winterberry (*Ilex verticillata*)



Description: 3 m (10 ft) high. Dark green/purple leaves turn black with frost. Bright red berries on females plants through winter.

Soil Moisture: Moist to wet

Soil Type: Various

Sun Conditions: Partial sun

Bloom Colour: White/green-yellow

Bloom Time: June to July

Hardiness Zone: 4b - 7a

Notes: Tolerates periodic flooding. Good for erosion control and naturalizing un-vegetated areas. Provides food for birds and small mammals. Both a male and female plant must be present for berries to be produced.

Mountain Holly/Catberry (*Ilex mucronata*)



Description: 3 m (10 ft) high. Light green leaves, deep yellow in fall. Small, red berries.

Soil Moisture: Moist to wet

Soil Type: Acidic, loam, clay

Sun Conditions: Full sun to partial shade

Bloom Colour: Green-white

Bloom Time: Spring

Hardiness Zone: 3a - 6b

Notes: This is the only Holly that is native to Eastern North America.

Pussy Willow (*Salix discolor*)



Description: 2 - 3 m (6 - 10 ft) high. Shiny, bright green leaves. Fuzzy catkins (flowers).

Soil Moisture: Wet

Soil Type: Rich, loam

Sun Conditions: Full sun to partial shade

Bloom Colour: Silver-grey

Bloom Time: Spring

Hardiness Zone: 1a - 7b

Notes: Fast growing but short-lived. Provides nesting, shelter and food to a variety of birds. Good for erosion control. Can become aggressive if conditions are consistently wet.

Silverberry/Wolf Willow (*Elaeagnus commutata*)



Description: 5 m (16 ft) high. Silvery green leaves and berries.

Soil Moisture: Moist to wet

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow/grey

Bloom Time: June to July

Hardiness Zone: 1a - 6a

Notes: Tolerates poor, alkaline soils and drought. Fast spreading and good for erosion control. Long lifespan. Good for use as hedgerow. Used as browse for a variety of animals. Transplants well and resistant to many diseases and insect pests.

Beaked Willow (*Salix bebbiana*)



Description: 2 - 3 m (6 - 10 ft) high. Catkins (flowers) before dull-grey leaves.

Soil Moisture: Wet

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Straw-yellow

Bloom Time: Spring

Hardiness Zone: 1a - 5b

Notes: Good for erosion control. Fast growing but short-lived. Provides nesting and shelter to a variety of birds.

Mountain Fly Honeysuckle (*Lonicera villosa*)



Description: 1 m (3 ft) high. Sparse. Yellow-brown leaves in fall. Hairy-looking flowers in pairs. Black berries in late summer.

Soil Moisture: Moist to wet

Soil Type: Acidic, sand, clay, loam

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow

Bloom Time: Spring

Hardiness Zone: 0a - 5b

Notes: Slow growing and short-lived.

Northern Bayberry (*Myrica pensylvanica*)



Description: 2 m (6.5 ft) high. Leathery, dark green leaves. Clusters of catkins (flowers). Small, silvery-grey fruits present in winter.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellowish green

Bloom Time: April to May

Hardiness Zone: 3a - 7a

Notes: Very hardy and tolerates harsh conditions. Good for erosion control and naturalizing un-vegetated areas. Not usually browsed by deer. Provides food for birds and small mammals.

Sandbar Willow/Narrow Leaved Willow (*Salix exigua*)



Description: 4 m (13 ft) high. Grey-green leaves. Catkins (flowers). Reddish helicopter-like fruit.

Soil Moisture: Dry to wet

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow to green/brown

Bloom Time: Late spring to early

summer

Hardiness Zone: 2a - 7b

Notes: Tolerates drought. Good for erosion control. Provides nesting and shelter to a variety of birds.

Common Juniper (*Juniperus communis*)



Description: 0.5 m (1.5 ft) high. Evergreen shrub. Blue-green needles. Wide growing. Does not flower - produces dark cones. Dark blue berries.

Soil Moisture: Dry

Soil Type: Well-drained

Sun Conditions: Full sun

Bloom Time: Spring

Hardiness Zone: 0a - 6b

Notes: Grows in wide mats. Good for erosion control. Berries provide food for birds and small mammals.

Creeping Juniper (*Juniperus horizontalis*)



Description: 0.5 m (1.5 ft) high. Evergreen shrub. Slender branches grow along ground. Does not flower - produces dark cones. Dark blue berries.

Soil Moisture: Dry

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Time: Spring to summer

Hardiness Zone: 1a - 6b

Notes: Tolerates drought. Can be used as groundcover. Good for erosion control.

Canada Yew/American Yew (*Taxus canadensis*)



Description: 2 m (6.5 ft) high. Evergreen shrub. Dark green needles turn reddish brown in winter. Does not flower - produces small seed cones. Red berries in fall.

Soil Moisture: Moist to wet

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Time: April to May

Hardiness Zone: 2a - 7b

Notes: Sensitive to heat and drought. Should be covered in winter to protect from wind. Provides shelter for various game birds in winter. Also known as Ground Hemlock.

Groundcover

Common Blue Violet (*Viola sororia*)



Description: Light and dark green leaves. Flowers on drooping stems.

Soil Moisture: Moist

Soil Type: Moisture-holding

Sun Conditions: Full shade to partial sun

Bloom Colour: Violet

Bloom Time: May to June

Hardiness Zone: 4b - 6b

Notes: Good for erosion control.

Provides food for birds and small mammals. Spreads well - up to 0.5 m (1.6 ft). Can become aggressive if conditions are too favourable.

Small Cranberry (*Vaccinium oxycoccos*)



Description: Evergreen. Small, shiny dark green leaves. Small, showy flowers. Large, red berries through winter.

Soil Moisture: Moist to wet

Soil Type: Acidic, poorly-drained

Sun Conditions: Full sun

Bloom Colour: Reddish pink

Bloom Time: June and July

Hardiness Zone: 1a - 7b

Notes: Does not tolerate shade. Provides food for birds and small mammals. Good for naturalizing un-vegetated areas.

Large Cranberry (*Vaccinium macrocarpon*)



Description: Evergreen. Leathery, green leaves turn red-purple in fall. Small flowers at branch ends. Red cranberries in fall.

Soil Moisture: Moist to wet

Soil Type: Acidic, sand, loam

Sun Conditions: Full sun

Bloom Colour: Pink

Bloom Time: June to August

Hardiness Zone: 2a - 7b

Notes: Roots should be kept cool and moist. Does not transplant well.

Bearberry (*Arctostaphylos uva-ursi*)



Description: Evergreen. Thick, leathery, yellow-green leaves turn reddish in fall. Clusters of small flowers on bright red stems. Red berries into through fall and into winter.

Soil Moisture: Dry to moist

Soil Type: Acidic, well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Pink or white

Bloom Time: May to July

Hardiness Zone: 1a - 5b

Notes: Berries provide food for birds and small mammals. Best to grow in non-compacted soil.

Lowbush Blueberry (*Vaccinium angustifolium*)



Description: 0.5 m (1.6 ft) high. Glossy leaves; red in spring, dark green in summer, and maroon in fall. Clusters of small, bell-shaped flowers. Blueberries.

Soil Moisture: Moist

Soil Type: Acidic, well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: White/pinkish

Bloom Time: May to June

Hardiness Zone: 0a - 5b

Notes: Tolerates acidity, salt and drought. Berries provide food for birds and small mammals. Berries are edible. Plant near non-competitive plants.

Velvetleaf Blueberry (*Vaccinium angustifolium*)



Description: 0.5 m (1.6 ft) high. Small, bell-shaped flowers. Blueberries.

Soil Moisture: Dry to wet

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White-pink

Bloom Time: Summer

Hardiness Zone: 1a - 5b

Notes: Grows in dense patches. Berries provide food for birds and small mammals. Berries are edible. Distinguishable from other blueberries by soft hairs covering leaves and young stems. Also known as Velvetleaf Huckleberry.

Partridgeberry/Twinberry (*Mitchella repens*)



Description: Trailing vine. Glossy leaves. Pairs of fragrant flowers. Red berries through winter.

Soil Moisture: Moist

Soil Type: Rich, well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: White and pink

Bloom Time: Spring

Hardiness Zone: 4 - 8

Notes: Berries provide food for birds and small mammals. Shade loving and slow growing. Sensitive to disturbance.

Barren Strawberry (*Waldsteinia fragarioides*)



Description: Glossy, green leaves.

Soil Moisture: Moist

Soil Type: Organic

Sun Conditions: Full sun to partial shade

Bloom Colour: Yellow

Bloom Time: Spring

Hardiness Zone: 4a

Notes: Tolerates shade and dry soils. Easy to grow. Does not

produce berries.

Canada Anemone (*Anemone canadensis*)



Description: Individual flowers. Long-lasting blooms.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: White with yellow centre

Bloom Time: May to June

Hardiness Zone: 2a - 7a

Notes: Tolerates shade and drought. Fast spreading and may outcompete other species if conditions are favourable. Flowering may decrease if plants are crowded - divide in fall as necessary.

Bunchberry (*Cornus canadensis*)



Description: 0.3 m (1 ft) high. Shiny, dark green leaves; red in fall. Star-shaped flowers. Orange/red berries in clusters.

Soil Moisture: Moist

Soil Type: Acidic

Sun Conditions: Full sun to partial shade (prefers partial shade)

Bloom Colour: Creamy-white

Bloom Time: Summer

Hardiness Zone: 0a - 5b

Notes: Planting under evergreen trees provides shade and acidity. Scatter pine need to increase soil acidity.

Wintergreen (*Gaultheria procumbens*)



Description: Evergreen. Dark green leaves; turn reddish in the cold. Red berries in August. Small, bell-shaped flowers in nodding clusters.

Soil Moisture: Moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: June to July

Hardiness Zone: 2a - 6b

Notes: Provides food for birds and small mammals. Browsed by deer in winter.

Canada Wild Ginger (*Asarum canadense*)



Description: Large, green, heart-shaped leaves. Non-showy flowers.

Soil Moisture: Moist

Soil Type: Rich, well-drained

Sun Conditions: Full shade to partial sun

Bloom Colour: Brownish red

Bloom Time: April to June

Hardiness Zone: 3a - 6b

Notes: Good for erosion control.

Tolerates acidic soils and wet areas.

Vines

Purple Clematis (*Clematis occidentalis*)



Description: 6 m (19 ft) high. Woody vine. Green, pointed leaves. Large, drooping flowers.

Soil Moisture: Moist

Soil Type: Rich, well-drained

Sun Conditions: Full shade to partial sun

Bloom Colour: Violet to pink/purple

Bloom Time: May to June

Hardiness Zone: 2b - 6a

Notes: Grows up if supported or along the ground if not.

Virginia Creeper (*Parthenocissus quinquefolia*)



Description: 15 m (50 ft) high if supported. Green leaves; orange-red in fall. Inconspicuous flowers. Dark blue berries.

Soil Moisture: Moist

Soil Type: Various

Sun Conditions: Full shade to partial sun

Bloom Colour: Green

Bloom Time: June to July

Hardiness Zone: 4a - 7b

Notes: Provides food for birds and small mammals. Good for erosion control. Tolerates drought, shade, clay and pollution. Can be aggressive.

American Bittersweet (*Parthenocissus quinquefolia*)



Description: 7 m (23 ft). Woody vine. Dark green leaves; yellowish in fall. Non-showy flowers. Showy, orange seed capsule in September; opens to reveal red seed.

Soil Moisture: Dry to moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Bloom Colour: Greenish

Bloom Time: May to June

Hardiness Zone: 5a - 7b

Notes: Also known as Climbing Bittersweet. Provides food for birds. Seeds toxic to humans.

Virgin's Bower (*Clematis virginiana*)



Description: 6 m (19 ft) high. Woody vine. Aromatic flowers followed by tufted fruits.

Soil Moisture: Wet to moist

Soil Type: Sand, loam

Sun Conditions: Full sun to partial shade

Bloom Colour: White

Bloom Time: August to September

Hardiness Zone: 4a - 7b

Notes: Grows up if supported or as dense mat if not. Leaves are toxic to humans.

Grasses

Big Bluestem/Turkeyfoot (*Andropogon gerardii*)



Description: Less than 2 m (6.5 ft) high. Blue-green leaves in spring, reddish in summer, and bronze in fall. Three part flower; resembles a turkey's foot. Red-brown seed pods in fall.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Purple

Bloom Time: September to February

Hardiness Zone: 3b - 6b

Notes: Good for erosion control. Provides food and cover for birds and small mammals. Tolerates drought and poor growing conditions. Low maintenance. Spreads well. Can become aggressive and top heavy if conditions are too favourable.

Switch Grass/Panic Grass (*Panicum virgatum*)



Description: 1.5 m (5 ft) high. Blue-green leaves, yellow in fall and tan in winter. Flowers are wide-spreading spikelets.

Soil Moisture: Moist to wet

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Purple-pink

Bloom Time: August to September

Hardiness Zone: 5a - 7a

Notes: Good for erosion control. Provides food for birds. Tolerates range of adverse growing conditions. Low maintenance.

Indian Grass (*Sorghastrum nutans*)



Description: 1.5 m (5 ft) high. Blue-green leaves; orange-yellow in fall. Feather-like flower structures.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Reddish-brown

Bloom Time: September to February

Hardiness Zone: 4b - 7a

Notes: Tolerates drought, infertile soil and poor growing conditions. Low maintenance. Good for erosion control. Provides food for birds and small mammals.

Prairie Cordgrass (*Spartina pectinata*)



Description: 1.5 m (5 ft) high. Glossy, thin, dark green leaves; yellow in fall. Clusters of flowers on tall stems.

Soil Moisture: Moist to wet

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Straw yellow

Bloom Time: July to August

Hardiness Zone: 3b - 7a

Notes: Also known as Ripgut and Slough Grass. Tolerates flooding and drought. Good for erosion control. Provides food for birds and small mammals. Rarely produces seeds. Low maintenance.

Canada Wild Rye (*Elymus canadensis*)



Description: 1.5 m (5 ft) high. Blue-green leaves. Arched flowers - resembles oat.

Soil Moisture: Dry to moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Bloom Colour: Greenish yellow

Bloom Time: July to September

Hardiness Zone: 3a - 7a

Notes: Tolerates drought, infertile soil and poor growing conditions. Good for erosion control. Provides food for birds and small mammals.

Plantain-leaved Sedge (*Carex plantaginea*)



Description: 0.5 m (1.6 ft) high. Arching, lime green, wrinkly leaves. Evergreen. Small flower spikes.

Soil Moisture: Moist

Soil Type: Various

Sun Conditions: Full to partial shade

Bloom Colour: Green

Bloom Time: May to June

Hardiness Zone: 4b - 7a

Notes: Tolerates dry soil in shaded locations. Tolerates deer grazing. Good for erosion control. Provides food for birds and small mammals. Low maintenance.

Ferns

Interrupted Fern (*Osmunda claytoniana*)



Description: 1 m (3 ft) high. Leaflets on centre of stem wither in spring leaving a bare stem between top and bottom leaflets. No flowers.

Soil Moisture: Moist to wet

Soil Type: Rich

Sun Conditions: Full shade to partial sun

Hardiness Zone: 2a - 6b

Notes: Good for erosion control and naturalizing un-vegetated areas. Tolerates acidic and rocky soils.

Ostrich Fern (*Matteuccia struthiopteris*)



Description: 1.5 m (5 ft) high. Clustered stems. Feathery, ostrich plume-shaped leaves. No flowers.

Soil Moisture: Moist

Soil Type: Rich, well-drained

Sun Conditions: Full shade to partial sun

Hardiness Zone: 3b - 7a

Notes: Low maintenance.

Royal Fern (*Osmunda regalis*)



Description: 1 m (3 ft) high. Well-separated, rounded leaflets. No flowers.

Soil Moisture: Moist to wet

Soil Type: Rich

Sun Conditions: Full shade to partial sun

Hardiness Zone: 3b - 7a

Notes: Tolerates acidic soil and periodic flooding.

Sensitive Fern (*Onoclea sensibilis*)



Description: 1 m (3 ft) high. Light green, lobed leaves. No flowers.

Soil Moisture: Moist to wet

Soil Type: Rich

Sun Conditions: Full shade to partial sun

Hardiness Zone: 4a - 7a

Notes: Tolerates acidic soil and periodic flooding. Does not tolerate drought or frost.

Trees

Balsam Fir (*Abies balsamea*)



Description: 25 m (82 ft) high. Coniferous tree. Flat, dark green needles. Dark, upright cones. No flowers.

Soil Moisture: Moist to wet

Soil Type: Sand, loam

Sun Conditions: All

Hardiness Zone: 1a - 6b

Notes: Shallow roots. Tolerates shade.

Eastern White Cedar (*Abies balsamea*)



Description: 9 m (30 ft) high. Coniferous tree. Red-brown flaky bark. Scale-like leaves. Small, light green cones. No flowers.

Soil Moisture: Moist

Soil Type: Various

Sun Conditions: Full sun to partial shade

Hardiness Zone: 2a - 6b

Notes: Tolerates occasional flooding

and drought.

Red Pine (*Pinus resinosa*)



Description: 20 m (65 ft) high. Coniferous tree. Scaly bark with red tinge. Long needles bunched in 2. Small, oval-shaped, light brown cones. No flowers.

Soil Moisture: Moist to dry

Soil Type: Well-drained

Sun Conditions: Full sun

Hardiness Zone: 1a - 8a

Notes: Tolerates drought, wind, steep slopes and deer grazing. Provides food for birds and small mammals. Good for erosion control.

White Pine (*Pinus strobus*)



Description: 30 m (98 ft) high. Coniferous tree. Scaly bark with red tinge. Soft needles bunched in 5. Long, yellow-green cones. No flowers.

Soil Moisture: Moist

Soil Type: Well-drained

Sun Conditions: Full sun to partial shade

Hardiness Zone: 2a - 7b

Notes: Hardy. Susceptible to White Pine Blister Rust.

Paper Birch (*Betula papyrifera*)



Description: 25 m (82 ft) high. Slender trunk. White, flaky bark. Green leaves turn yellow in fall. Catkins (flowers).
Soil Moisture: Moist
Soil Type: Well-drained, cool
Sun Conditions: Full sun to partial shade
Bloom Colour: Yellow-green
Bloom Time: Spring

Hardiness Zone: 1a - 6b

Notes: Does not tolerate full shade.

Red Maple (*Acer rubrum*)



Description: 25 m (82 ft) high. Branches begin halfway up trunk. Green leaves turn red in fall. Small flowers grow in clusters. Seed keys in summer.
Soil Moisture: Moist to wet
Soil Type: Well-drained
Sun Conditions: Full sun to partial shade
Bloom Colour: Dark red

Bloom Time: May

Hardiness Zone: 3a - 7b

Notes: Fast growing. Shallow roots.

Sugar Maple (*Acer saccharum*)



Description: 35 m (115 ft) high. Green leaves turn red, orange and yellow in fall.
Soil Moisture: Moist
Soil Type: Well-drained, deep
Sun Conditions: Full sun to partial shade
Bloom Colour: Yellow-green
Bloom Time: Spring
Hardiness Zone: 3a - 7b

Notes: Does not tolerate drought, compacted soils or pollution. Slow growing.

Appendix B – Invasive Plant Species

Invasive Flowers

Bachelor's Button (*Centaurea cyanus*)



Description: 0.25 - 0.9 m (1 - 3 ft) high. Silvery-green, slender leaves and a tall stem with a single flower.

Bloom Colour: Bright blue

Bloom Time: Late spring to fall

Lifespan: Annual

Origin: Western Europe and Asia

Ecological Impacts: Produces large amounts of seed and can easily invade meadows, grasslands, and

fields. Outcompetes native vegetation and wildflowers.

Notes: Historically a blue flower but now comes in a variety of colours. Good for drying.

Large-leaved Lupine (*Lupinus polyphyllus*)



Description: 1.5 m (5 ft) high. Rich-green, compound, palm-like leaves. Dense clusters of flowers on a tall spike.

Colour: Blue to purple

Bloom Time: Spring to early summer

Lifespan: Annual, perennial

Origin: Western North America

Ecological Impacts: Outcompetes native wildflowers, including Wild Lupine, that provide a food source to local wildlife. Seeds are often toxic to wildlife.

Notes: Flowers typically blue to purple but can be pink, white or two-toned. Part of the legume family and is related to peas.

Shasta Daisy (*Leucanthemum × superbum*)



Description: 0.5 - 1 m (2 - 3 ft) high. Grows in groups; up to 40 flowering stems.

Bloom Colour: White with yellow centre

Bloom Time: Spring to early fall

Lifespan: Perennial

Origin: California*

Ecological Impacts: Forms dense stands and spreads rapidly due to

large number of seeds and underground root system. Displaces native vegetation.

Notes: *A hybrid produced in California from 3 different daisies native to Europe and Asia.

Yellow Iris (*Iris pseudacorus*)



Description: 1 m (3 ft) high. Grows in groups of 2 or more. Smooth stem with flat, sword-shaped leaves. 3 upward pointing petals and 3 downward pointing petals.

Colour: Yellow

Bloom Time: Early spring to mid-summer

Lifespan: Perennial

Origin: Europe, northern Africa, and

temperate Asia

Ecological Impacts: Dense growth chokes out wetlands and waterways, displacing native plants and reducing habitat availability. All parts of the plant are toxic to humans and animals.

Notes: Capable of absorbing heavy metals.

Invasive Shrubs

False Spirea (*Sorbaria sorbifolia*)



Description: 2 - 3 m (6 - 10 ft) high and equally as wide. Compound leaves made up of 12 - 25 leaflets. Tiny, dense flowers.

Bloom Colour: White

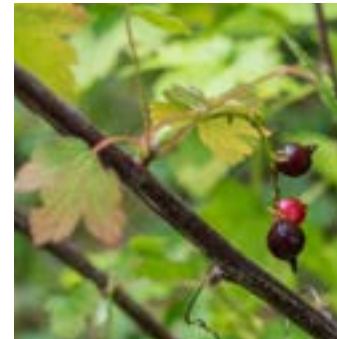
Bloom Time: Summer

Origin: Asia

Ecological Impacts: Dense root system spreads aggressively and outcompetes native vegetation.

Notes: Somewhat less aggressive in clay soils.

Wild Black Currant (*Ribes americanum*)*



Description: 1.5 m (5 ft) high and equally as wide. Toothed leaves with 5 lobes.

Bloom Colour: Yellow-white

Bloom Time: Early to mid-spring

Origin: North America

Ecological Impacts: *Wild Black Currant is not considered locally invasive; however it is a carrier of White Pine Blister Rust, a fungal

disease that can be fatal to White Pine trees.

Notes: To complete its life cycle, the fungus causing White Pine Blister Rust alternates between White Pine Trees and Ribes species (a classification of shrubs), including Wild Black Currant. For this reason, we strongly encourage all landowners to avoid growing Wild Black Currants within 1.6 km of White Pines.

Common Buckthorn (*Rhamnus cathartica*)



Description: 3 - 7 m (10 - 23 ft) high. Smooth, finely toothed, dark green leaves. Flowers turn into clusters of black fruit.

Bloom Colour: Yellow-green

Bloom Time: Late spring to summer

Origin: Europe

Ecological Impacts: Grows in dense thickets crowding and outcompeting native plants. Alters nitrogen levels

in the soil making it harder for native species to survive.

Notes: Most branches older than one year end in a short, sharp, thorn-like tip. Buckthorn is one of the first shrubs to leaf out in the spring and the last to drop its leaves late in the fall.

Glossy Buckthorn (*Rhamnus frangula*)



Description: 3 - 7 m (10 - 23 ft) high. Shiny, dark-green leaves with wavy edges. No thorns on the end of twigs. Flowers turn into red, then black fruit clusters.

Bloom Colour: Yellow-green

Bloom Time: Late spring to late summer

Origin: North Africa, Asia and Europe.

Ecological Impacts: Grows in dense thickets crowding and outcompeting native plants for sunlight and nutrients. Can host fungus and pests that are detrimental to food crops.

Notes: Fruits act as a natural laxative to animals that eat them, ensuring the seeds pass through.

Invasive Groundcover

Periwinkle (*Vinca minor*)



Description: Dark green, glossy leaves on a slender stem. Stem can grow over a meter along the ground.

Bloom Colour: Blue-purple

Bloom Time: Spring

Origin: Mediterranean basin

Ecological Impacts: Spreads aggressively and limits sunlight to other vegetation, affecting plant diversity. Particularly damaging to

forest understories.

Notes: Periwinkle has medicinal properties and has long been used to treat problems of the circulatory system.

Peppermint (*Mentha x piperita*)



Description: Green, pointed leaves with toothed edges. Leaves are smooth.

Bloom Colour: Light purple

Bloom Time: Summer

Origin: Middle East and Europe

Ecological Impacts: Spreads aggressively through underground rhizomes. Outcompetes native vegetation and decreases

biodiversity.

Notes: Most species of mint are highly invasive in Ontario.

Lamb's Ear (*Stachys byzantina*)



Description: Soft, fuzzy, silver-green leaves. Flowers grow on a tall spike.
Bloom Colour: Light purple
Bloom Time: Late spring to summer
Origin: Middle East
Ecological Impacts: Spreads rapidly and can survive droughts, outcompeting native vegetation.
Notes: Also known as Lamb's Purse. Relatively easy to remove.

Garlic Mustard (*Alliaria petiolata*)



Description: 1 m (3 ft) high. Dark green leaves with hairy stems.
Bloom Colour: White
Bloom Time: Spring to summer
Origin: Europe
Ecological Impacts: One of Ontario's most aggressive forest invaders. Spreads rapidly and displaces native vegetation. Roots produce chemicals to prevent the

growth of other plants. Toxic to some native butterflies.

Notes: Produces a strong garlic scent when leaves are crushed. Adult plants contain cyanide.

Lily of the Valley (*Convallaria majalis*)



Description: Large, lance-shaped basal leaves with a pointed tip. Small, bell-shaped flowers that dangle to one side.
Bloom Colour: White
Bloom Time: Late spring to early summer
Origin: Europe and Asia
Ecological Impacts: All parts are considered toxic to humans and

wildlife. Forms large colonies and outcompetes native vegetation.

Notes: Flowers emit a strong fragrance. Lily of the Valley is deeply rooted in Christian religion.

Creeping Jenny (*Lysimachia nummularia*)



Description: Crawling plant with small, round leaves. Leaf colour varies from golden yellow to chartreuse depending on sun exposure.
Bloom Colour: Yellow
Bloom Time: Summer
Origin: Europe
Ecological Impacts: Spreads rapidly through underground rhizomes and seeds forming a mat-like growth. Chokes out native vegetation.
Notes: Also known as Moneywort.

Invasive Grasses

Phragmites/Common Reed (*Phragmites australis*)



Description: 5 m (15 feet) high. Dense stands of tan stems with blue-green leaves. Stands contain high percentage of dead stalks. Dense seedheads.

Bloom Colour: Purple-brown

Bloom Time: Summer to late fall

Origin: Middle East and Europe

Ecological Impacts: Rapid growth crowds out native vegetation lowers

water levels. Provides poor habitat and food source for wildlife. Increased fire hazard and road safety hazard.

Notes: More than 80% of annual biomass is below ground in the form roots and rhizomes which release toxins to hinder the growth of and kill surrounding plants.

Plume Grass (*Saccharum ravennae*)



Description: 2 - 3.5 m (8 - 12 ft) high. Gray-green, thin, serrated leaves sharp to the touch.

Bloom Colour: Pinkish-silver

Bloom Time: September to October

Origin: Mediterranean

Ecological Impacts: Prolific self-seeding plant that forms dense stands and crowds out native vegetation.

Notes: Previously known as *Erianthus ravennae*. Related to sugarcane.

Chinese Silvergrass (*Miscanthus sinensis*)



Description: 3.7 m (12 ft) high. Upright, densely bunched, green stalks. Blooms turn silver later in the season.

Bloom Colour: Copper-red

Bloom Time: Spring

Origin: Asia

Ecological Impacts: Invades disturbed areas such as roadsides and old fields. Forms dense bunches

outcompeting native vegetation and is extremely flammable.

Notes: Giant miscanthus, a sterile hybrid, can be grown for biofuel.

Reed Canary Grass (*Phalaris arundinacea* subsp. *arundinacea*)



Description: 1 - 2 m (3 - 6.5 feet) high. Smooth, hollow stems. Long, flat, bright green, tapered leaves. Flowers change from green to purple to beige.

Bloom Colour: Green

Bloom Time: Early summer

Origin: Europe

Ecological Impacts: Displaces native species. Clogs wetlands and

waterways increasing flood risk.

Notes: Invasive Reed Canary Grass is a subspecies of the native Reed Canary Grass, *Phalaris arundinacea*.

Invasive Trees

Norway Maple (*Acer platanoides*)



Description: 12 - 18 m (40 - 60 ft) high. Widely-spreading crown with dark green leaves. Leaves similar to Sugar Maple but are wider than tall.

Bloom Colour: Green

Bloom Time: May

Origin: Europe

Ecological Impacts: Dense canopy blocks sunlight from native species. Root system prevents native

seedlings from establishing.

Notes: Outcompetes Sugar Maple due to its shade tolerance. Produces "helicopter seeds".

Appendix C – Resources

Building a Bat Box/House - Canadian Wildlife Federation

<https://cwf-fcf.org/en/explore/bats/bat-house.html>

The Dock Primer: A Cottager's Guide to Waterfront-Friendly Docks

<https://www.kawarthaconservation.com/en/resources/The-dock-primer-a-cottagers-guide-to-waterfront-friendly-docks.pdf>

Native Plant Nursery - Botanigals

https://www.botanigals.ca/shop/native_plant_nursery/15

Natural Edge Program - Contact Page

<https://watersheds.ca/contact/>

Natural Edge Program - The Land Between

https://www.thelandbetween.ca/the-natural-edge_shore-renaturalization/

Natural Edge Program - Plant Database

<https://naturaledge.watersheds.ca/plant-database/>

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What is a Shoreland?

Shoreland diagram: Jaime Kearnan (with permission)

Deer drinking water: Tracey McCann (with permission)

Kayaking: Oleksandr Hrebelynyk on Unsplash

Shoreland Dos and Don'ts

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Common Myths

Kid playing on shoreline: Rebecca Krawczyk (with permission)

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Benefits

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Planning your Shoreland

Natural shoreline Horse Lake: Rebecca Krawczyk (with permission)

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Riparian repair shots (stairs): Rebecca Krawczyk (with permission)

Forwarder collects birch: Ma Ti on Unsplash

Designing Your Shoreland Garden

Shoreline planting: The Land Between

Zen shoreline: Rebecca Krawczyk (with permission)

Gardening trowel: Avelino Calvar Martinez (Burst - (CC0))

Sunflowers: Yoshi Sugimoto on Unsplash

Property sketch: Jaime Kearnan (with permission)

Yoko with hobblebush: Rebecca Krawczyk (with permission)

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English cottage garden: Rebecca Krawczyk (with permission)

Pollinator shoreline garden: Rebecca Krawczyk (with permission)

Virginia creeper pergola: Wendy Cutler / "Parthenocissus quinquefolia" / <https://flickr.com/photos/wlcutler/8054862773/> / (CC BY 2.0)

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Wheelbarrow: Annie Spratt on Unsplash

Rain garden and deck: cultivar413 / "CBG Plant Science Cntr - Rain Garden" / <https://www.flickr.com/photos/131880272@N06/20335239211/> / (CC BY 2.0)

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Sweet Oxeeye: Alves Gaspar / "Heliopsis - July 2011-2" / https://commons.wikimedia.org/wiki/File:Heliopsis_July_2011-2.jpg / (CC BY-SA 3.0)

Big brown bat: Michael Durham & Minden Pictures / "Big Brown Bat (Eptesicus fuscus)" / <https://flickr.com/photos/mypubliclands/45195158145/> / (CC BY 2.0)

Bird nest box - (CC0)

Eastern ribbonsnake: Tracey McCann (with permission)

Easy Wins

Ruby-throated hummingbird: Rick from Alabama / "Male Ruby-Throated Hummingbird" / https://flickr.com/photos/rick_al/35193348901/ / (CC BY 2.0)

Solutions to Common Problems

Songbird Meadow seeding: Rebecca Krawczyk (with permission)

Man bending: The Land Between

Eastern white cedar: Dan Keck / "Thuja occidentalis" / <https://flickr.com/photos/140641142@N05/38818985452/> / (CC0 1.0)

Virginia creeper: Ed Ogle / "Virginia creeper Parthenocissus quinquefolia leaves" / <https://flickr.com/photos/157458829@N02/50063688411/> / (CC BY-ND 2.0)

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Garden Beds on Lawn: The Land Between

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Common yarrow: Tero Karppinen / "Achillea millefolium 3" / <https://flickr.com/photos/terokarppinen/51378995553/> / (CC BY 2.0)

Light rays: Colin Knowles / "Light in the forest" / <https://flickr.com/photos/colink/3902823072/> / (CC BY-SA 2.0)

Man watering garden: Greta Hoffman on Pexels

Plants in cracks: Abhishek Pawar on Unsplash

Planting shrub: (CC0)

Large cranberry: Lena Struwe / "cranberry, wild, Vaccinium macrocarpon" / <https://www.flickr.com/photos/vilseskogen/5100758345/> / (CC BY 4.0)

Winterberry: Kristof Zyskowski & Yulia Bereshpolova / "Ericaceae: Gaultheria procumbens (Eastern Teaberry, Creeping Wintergreen) - fruit 1" / https://flickr.com/photos/kz_yb/34656198591/ / (CC BY-NC 2.0)

Sourcing Your Native Plants and Seeds

Native plant nursery: Mark McClure / "Audubon Native Plant Nursery" / <https://flickr.com/photos/memccclure/50548146571/> / (CC BY-NC-ND 2.0) (with permission)

Planting on turned soil: Rebecca Krawczyk (with permission)

Seeds in hand: (CC0)

Plants in truck: Rebecca Krawczyk (with permission)

Caring for and Maintaining Your Shoreland Garden

Sunset over water: Tracey McCann (with permission)

Watering can: David Ballew on Unsplash

Woman pruning: Transition Heathrow / "Pruning" / <https://flickr.com/photos/transitionheathrow/4454004673/> / (CC BY 2.0)

Pruning diagram: Jaime Kearnan (with permission)

Dandelions: Paul Horner / "Dandelions" / <https://flickr.com/photos/paulhorner/5653629888/> / (CC BY-SA 2.0)

Garlic mustard: Plant Image Library / "Alliaria petiolata (Garlic Mustard)" / <https://flickr.com/photos/138014579@N08/33914522553/> / (CC BY-SA 2.0)

Pulling weeds: USDA NRCS Montana (PDM)

Banded wood snail: Krzysztof Niewolny on Unsplash

Other Habitat Improvements

Woody debris garden: Rebecca Krawczyk (with permission)

Kids in leaves: Michael Morse on Pexels

Mink on fallen tree: Tracey McCann (with permission)

Night lighting cabin: Valentina Dominguez on Unsplash

Barn owl: Adam King on Unsplash

Bug jacket: Western Arctic National Parklands / "Just a Few Bugs" / https://flickr.com/photos/nps_wear/8478524012/ / (CC BY 2.0)

River jewelwing eating blackfly: Rebecca Krawczyk (with permission)

Black currant: Doug McGrady / "Ribes americanum (American Black Currant), Mill Stream Run Reservation, Strongsville OH" / https://flickr.com/photos/douglas_mcgrady/33794689194/ / (CC BY 2.0)

Fireworks: Kristian Lovstad on Unsplash

Loon: Jeremy Hynes on Unsplash

White-tailed deer: Christine Warner / "White tailed deer" / <https://flickr.com/photos/christinehawks/50727311718/> / (CC BY 2.0)

Coyote: Tracey McCann (with permission)

Deer on trail: Gary Bendig on Unsplash

Additional Considerations

Boys boating: John Marshall on Unsplash

Daphnia: Ryszard / "Daphnia" / <https://flickr.com/photos/ricosz/16413193553/> / (CC BY-NC 2.0) (with permission)

Wood stove: Daniel Morrison / "Wood Stove" / <https://flickr.com/photos/danielmorrison/1847041324/> / (CC BY 2.0)

Raspberry: freestocks.org (CC0)

Appendix A - Wildflowers & Herbs

Pollinator garden: Rebecca Krawczyk (with permission)

Great blue lobelia: (CC0)

Blue Vervain: 田田 HQ / "Verbena hastata - Wisley Gardens, England" / <https://flickr.com/photos/nhq9801/15050548086/> / (CC BY-SA 2.0)

Blue flag iris: (CC0)

Tall larkspur: Rocky Mountain National Park - Jacob W. Frank / "Tall Larkspur - Delphinium glaucum" / <https://www.flickr.com/photos/rockynps/14989593822/> / (CC BY-ND 2.0)

Cylindrical blazing star: Joshua Mayer / "Cylindrical Blazing Star (Liatris cylindracea)" / <https://www.flickr.com/photos/wackybadger/29043157973/> / (CC BY-SA 2.0)

Giant hyssop: (CC0)

Hairy beardtongue: Ryan Hodnett / "Hairy Beardtongue (Penstemon hirsutus)" / <https://www.flickr.com/photos/ryanhodnett/42609291984/> / (CC BY-SA 2.0)

Harebell: (CC0)
New England aster: (CC0)
Prairie thistle: Krista Lundgren/USFWS / "Bumblebee on a Flodman's thistle" / <https://www.flickr.com/photos/usfwsmtnprairie/44473322661/> / (CC BY 2.0)
Hoary vervain: (CC0)
Smooth blue aster: (CC0)
Dense blazing star: (CC0)
Fireweed: (CC0)
Showy tick trefoil: Judy Gallagher / "Showy Tick-trefoil - Desmodium canadense, Occoquan Regional Park, Lorton, Virginia" / <https://www.flickr.com/photos/52450054@N04/50339245656/> / (CC BY 2.0)
Wild bergamot: (CC0)
Wild geranium: (CC0)
Purple coneflower: (CC0)
Spotted Joe-pye weed: Siena Smith (with permission)
Swamp milkweed: Rebecca Krawczyk (with permission)
Common milkweed: (CC0)
Nodding onion: (CC0)
Turtlehead: (CC0)
Common yarrow: (CC0)
Flat-topped white aster: Joshua Mayer / "Flat-topped Aster (Doellingeria umbellata)" / <https://www.flickr.com/photos/wackybadger/9623572623/> / (CC BY-SA 2.0)
Foam flower: (CC0)
Foxglove beardtongue: Fritz Flohr Reynolds / "Penstemon digitalis, Great Falls Park, 6/3/13" / <https://www.flickr.com/photos/fritzflohrreynolds/8944611120/> / (CC BY-SA 2.0)
Pearly everlasting: (CC0)
Star-flowered Solomon's seal: (CC0)
Boneset: (CC0)
Tall cinquefoil: (CC0)
Black-eyed Susan: (CC0)
Common evening primrose: (CC0)
Common sunflower: Rebecca Krawczyk (with permission)
Green-headed coneflower: (CC0)
Grey goldenrod: (CC0)
Lance-leaf coreopsis: (CC0)
Ten-petaled sunflower: Fritz Flohr Reynolds / "Helianthus decapetalus, C & O Canal Park, 7-20-12" / <https://www.flickr.com/photos/fritzflohrreynolds/7665521898/> / (CC BY-SA 3.0)
Woodland sunflower/rough sunflower: (CC0)

Woodland sunflower/pale-leaved sunflower: (CC0)
Sweet oxeye: Siena Smith (with permission)
Butterfly milkweed: Rebecca Krawczyk (with permission)
Indian paintbrush: (CC0)
Wild columbine: (CC0)
Cardinal flower: (CC0)
Oswego tea: Navin Sasikumar / "Scarlet Beebalm (Monarda didyma)" / <https://www.inaturalist.org/observations/7264601> / (CC BY 4.0)
Jack-in-the-pulpit: (CC0)

Appendix A - Shrubs

Purple flowering raspberry: (CC0)
Smooth wild rose: (CC0)
Bog rosemary: (CC0)
Snowberry: (CC0)
Alternate-leaved dogwood: (CC0)
Black raspberry: (CC0)
Chokecherry: (CC0)
Gray dogwood flower: (CC0)
Leather leaf: (CC0)
Nannyberry/sweet viburnum: (CC0)
Red elderberry: Rebecca Krawczyk (with permission)
Shadblow serviceberry: (CC0)
Sweet gale/sweet bayberry: (CC0)
White meadowsweet: (CC0)
Wild black currant: (CC0)
Black elderberry: (CC0)
Wild red raspberry: (CC0)
Ninebark: (CC0)
Red osier dogwood: (CC0)
Winterberry: Rebecca Krawczyk (with permission)
Mountain holly/catberry: (CC0)
Pussy willow: (CC0)
Silverberry: (CC0)
Beaked willow: (CC0)
Mountain fly honeysuckle: (CC0)
Northern bayberry: (CC0)
Sandbar willow/narrow leaved willow: (CC0)
Common juniper: (CC0)
Creeping juniper: (CC0)
Canada yew: (CC0)

Appendix A - Groundcover

Common blue violet: (CC0)
Small cranberry: (CC0)
Large cranberry: (CC0)
Bearberry: (CC0)
Lowbush blueberry: (CC0)
Velvetleaf blueberry: (CC0)
Partridgeberry/twinberry: Rebecca Krawczyk (with permission)
Barren strawberry: (CC0)
Canada anemone: (CC0)
Bunchberry: Rebecca Krawczyk (with permission)
Wintergreen: (CC0)
Canada wild ginger: (CC0)

Appendix A - Vines

Purple clematis: (CC0)
Virginia creeper: (CC0)
American bittersweet: (CC0)
Virgin's bower: (CC0)

Appendix A - Grasses

Big bluestem/turkeyfoot: Patrick Alexander / (CC0)
Switch grass/panic grass: (CC0)
Indian grass: (CC0)
Prairie cordgrass: (CC0)
Canada wild rye: Matt Lavin / "Elymus canadensis" / https://flickr.com/photos/plant_diversity/28581856221/ / (CC BY-SA 2.0)
Plantain-leaved sedge: (CC0)

Appendix A - Ferns

Interrupted fern: Homer Edward Price / "Interrupted-Fern-sterile" / <https://flickr.com/photos/28340342@N08/2979041113/> / (CC BY 2.0)
Ostrich fern: (CC0)
Royal fern: (CC0)
Sensitive fern: Jaime Kearnan (with permission)

Appendix A - Trees

Balsam fir: Plant Image Library / Abies balsamea (Balsam Fir) / <https://flickr.com/photos/138014579@N08/29010601138/> / (CC BY-SA 2.0)
Eastern white cedar: Dan Keck / (CC0)
Red pine: S. Rae / "Pinus resinosa (American Red Pine)" / <https://flickr.com/photos/35142635@N05/30531086144/> / (CC BY 2.0)
White pine: (CC0)
Paper birch: F.D. Richards / "Betula papyrifera" / <https://flickr.com/photos/50697352@N00/26680344721/> / (CC BY-SA 2.0)

photos/50697352@N00/26680344721/ / (CC BY-SA 2.0)
Red maple: Bruce Bailey / "Red Maple (Acer rubrum)" / <https://www.inaturalist.org/observations/96938986> / (CC BY 4.0)
Sugar maple: F.D. Richards / "Acer saccharum, Sugar Maple 2014" / <https://flickr.com/photos/50697352@N00/14050698798/> / (CC BY-SA 2.0)

Appendix B - Invasive Flowers

Creeping jenny cover: Peter Stevens / "Creeping Jenny" / <https://flickr.com/photos/nordique/50302372048/> / (CC BY 2.0)
Bachelor's buttons: Swallowtail Garden Seeds / "Blue Bachelor's Buttons" / <https://www.flickr.com/photos/swallowtailgardenseeds/26637882364/> / (CC BY 2.0)
Large-leaved lupine: Kallerna / "Lupiini 1" / https://commons.wikimedia.org/wiki/File:Lupiini_1.jpg / (CC BY-SA 3.0)
Shasta daisies: Swallowtail Garden Seeds / "Fresh in mind and fresh in a photo..." / <https://www.flickr.com/photos/swallowtailgardenseeds/29240335892/> / (CC BY 2.0)
Yellow Iris: Myrabella / "Iris pseudacorus iris desmarais" / https://commons.wikimedia.org/wiki/File:Iris_pseudacorus_iris_des_marais.jpg / (CC BY-SA 3.0)

Appendix B - Invasive Shrubs

False spirea: Tatters / "Sorbaria sorbifolia - Рябинник рябинолистный" / <https://www.flickr.com/photos/tgerus/7818865826/> / (CC BY-SA 2.0)
Wild black currant: Krzysztof Golik / "Ribes americanum in La Jaysinia (1)" / https://commons.wikimedia.org/wiki/File:Ribes_americanum_in_La_Jaysinia_%281%29.jpg / (CC BY-SA 4.0)
Common buckthorn: Krzysztof Golik / "Rhamnus cathartica kz01" / https://commons.wikimedia.org/wiki/File:Rhamnus_cathartica_kz01.jpg / (CC BY-SA 4.0)
Glossy buckthorn: Franck Hidvégi / "Rhamnus frangula 2" / https://commons.wikimedia.org/wiki/File:Rhamnus_frangula_2.jpg / (CC BY-SA 4.0)

Appendix B - Invasive Ground Cover

Periwinkle: Lynn Greyling / "Periwinkle Flower" / <https://www.publicdomainpictures.net/en/view-image.php?image=96491&picture=periwinkle-flower> / ©
Peppermint: wonderferret / "peppermint" / <https://flickr.com/photos/wonderferret/432085454/> / (CC BY 2.0)
Lamb's ear: Carl Lewis / "Stachys byzantina" / <https://www.flickr.com/photos/carllewis/1569754553/> / (CC BY 2.0)
Garlic mustard: Katja Schulz / "Garlic Mustard (34130349315)"

/ https://commons.wikimedia.org/wiki/File:Garlic_Mustard_%2834130349315%29.jpg / (CC BY 2.0)

Lily of the valley: Liz West / "Lily of the valley 777" / https://commons.wikimedia.org/wiki/File:Lily_of_the_valley_777.jpg / (CC BY 2.0)

Creeping jenny: Deb Nystrom / "Creeping Jenny" / <https://www.flickr.com/photos/stella12/18821387389/> / (CC BY 2.0)

Appendix B - Invasive Grasses

Phragmites/common reed: Karen (with permission)

Plume grass: Matt Lavin / "Saccharum ravennae" / https://www.flickr.com/photos/plant_diversity/38626020156/ / (CC BY-SA 2.0)

Chinese silvergrass: Harum Koh / "Chinese Silver Grass (Miscanthus sinensis) (22299894533)" / https://commons.wikimedia.org/wiki/File:Chinese_Silver_Grass_%28Miscanthus_sinensis%29_%2822299894533%29.jpg / (CC BY-SA 2.0)

Reed canary grass: Charles Peterson / "Reed Canary Grass - Idaho" / <https://www.flickr.com/photos/petechar/50182389331/> / (CC BY-NC-ND 2.0)

Appendix B - Invasive Trees

Norway maple: James St. John / "Acer platanoides (Norway maple) 3" / <https://www.flickr.com/photos/jsjgeology/31389706617/> / (CC BY 2.0)

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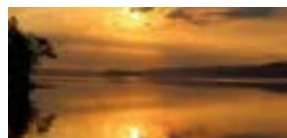
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DESIGN-YOUR-OWN SHORELAND



The Design-your-own Shoreland Guidebook will teach you to naturalize your shoreland using basic gardening principles. Naturalization doesn't have to be messy or "wild." It can be beautifully manicured and maintained while supporting fisheries, water quality and overall biodiversity. This guidebook features coloured photos and detailed descriptions of numerous native plant species in Ontario, and is written in a clear and accessible language for gardeners of all levels. Follow step-by-step instructions to select native plants that suit your palate and property. It's time to start designing your dream shoreland!

Cover design by Jaime
Kearnan
Back cover photographs by
Tracy McCann

