



SELECTING PLANTS FOR POLLINATORS



A GUIDE FOR GARDENERS, FARMERS, AND LAND MANAGERS IN THE



LAKE ERIE LOWLAND ECOREGION

THE
GREATER TORONTO AREA,
THE GOLDEN HORSESHOE,
SARNIA, LONDON, WINDSOR
AND
NIAGARA REGION



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This is one of several guides for different regions of North America. We welcome your feedback to assist us in making the future guides useful. Please contact us at feedback@pollinator.org

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LAKE ERIE LOWLANDS
ECOREGION**

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AND NIAGARA REGION



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WHY SUPPORT POLLINATORS?

IN THEIR 1996 BOOK, *THE FORGOTTEN POLLINATORS*, Buchmann and Nabhan estimated that animal pollinators are needed for the reproduction of 90% of flowering plants and one third of human food crops. Each of us depends on these industrious pollinators in a practical way to provide us with the wide range of foods we eat. In addition, pollinators are part of the intricate web that supports the biological diversity in natural ecosystems that helps sustain our quality of life.

Abundant and healthy populations of pollinators can improve fruit set and quality, and increase fruit size. In farming situations this increases production per hectare. In the wild, biodiversity increases and wildlife food sources increase. Alfalfa, clover, apples, blueberries, cranberries, cherries, cucumbers, pears, pumpkins, soybeans, squash, tomatoes, and watermelons are some of the crops raised in the Lake Erie Lowlands ecoregion that rely on honey bees and native bees for pollination. Honey bees pollinate more than \$1 billion worth of crops in Canada each year.

Unfortunately, the numbers of many native pollinators are declining. They are threatened by habitat loss, disease, climate change, and the excessive and inappropriate use of pesticides. As a result research and conservation actions supporting native pollinators are increasingly active. Honey bee colony losses have significantly impacted beekeepers. Parasites, disease, pesticide use, insufficient nutrition, and transportation practices all impact honey bee health, and this in turn can impact the commercial pollination services honey bees provide. The efforts to understand the threats to commercial bees should help us understand other pollinators and their roles in the environment as well.

It is imperative that we take immediate steps to help pollinator populations thrive. The beauty of the situation is that by supporting pollinators' need for habitat, we support our own needs for food and support diversity in the natural world.

Thank you for taking time to consult this guide. By adding plants to your landscape that provide food and shelter for pollinators throughout their active seasons and by adopting pollinator friendly landscape practices, you can make a difference to both the pollinators and the people that rely on them.



Val Dolcini
President & CEO
Pollinator Partnership

“**FLOWERING PLANTS
ACROSS WILD,
FARMED AND EVEN
URBAN LANDSCAPES
ACTUALLY FEED THE
TERRESTRIAL WORLD,
AND POLLINATORS
ARE THE GREAT
CONNECTORS WHO
ENABLE THIS GIANT
FOOD SYSTEM TO
WORK FOR ALL WHO
EAT... INCLUDING US.**”

— ROGER LANG, CHAIRMAN,
POLLINATOR PARTNERSHIP



GETTING STARTED



THIS REGIONAL GUIDE IS JUST ONE in a series of plant selection tools designed to provide you with information on how to plant local native plants for pollinators. Each of us can have a positive impact by providing the essential habitat requirements for pollinators including food, water, shelter, and enough space to raise their young.

Pollinators travel through the landscape without regard to property ownership or provincial boundaries. We've chosen to use the ecoregional classification system and to underscore the connections between climate and vegetation types that affect the diversity of pollinators in the environment.

The Canadian ecoregions are based on the National Ecological

Framework Report. The National Ecological Framework for Canada is a system created as a management tool and is used to predict responses to land management practices throughout large areas. This guide addresses pollinator-friendly land management practices in what is known as the Lake Erie Lowland ecoregion.

The seasonal cycle of sun and shade within the forests has created a changing pattern of bloom time for food plants and shelter needs for foraging, nesting, and migrating pollinators. Farms and residential areas provide a diverse range of soil types in both sunny and shady areas. With this diversity of locations many different species of plants may be used to improve pollinator habitats where they are lacking.

Long before there were homes and farms in the Lake Erie Lowland, natural vegetation provided essential opportunities for wildlife, including pollinators. Farmers, land managers, and gardeners in this region have a wide palette of plants to use in the landscape. In choosing plants, aim to create habitat for pollinators that allow adequate food, shelter, and water sources. Most pollinators have very small home ranges. You will make a difference by understanding the vegetation patterns on the farm, forest, or neighbour's yard adjacent to your property. With this information in hand, your planting choices will better support the pollinators' need for food and shelter as they move through the landscape.

UNDERSTANDING THE LAKE ERIE LOWLANDS



- ✿ The Lake Erie Lowlands ecoregion is part of the larger Mixed Wood Plains ecozone which includes the following ecoregions; St. Lawrence Lowlands, Frontenac Axis, and Manitoulin Lake-Simcoe. Most of the region lies southwest of the Niagara Escarpment, where the land surface gradually slopes southwestward with ongoing rolling topography. The Lake Erie Lowlands has one of the warmest climates in Canada, marked by humid, warm to hot summers and mild, snowy winters. The dominant land cover is agriculture, followed by forests and urban development.
- ✿ Not sure about which region you live or work in? Go to www.pollinator.org and click on **Ecoregion Locator** for help.
- ✿ 24,000 square kilometres Ontario.
- ✿ The most striking topographic feature is the Niagara Escarpment
- ✿ Elevations ranging from 74 to 228 metres.
- ✿ The mean summer temperature is 18°C and the mean winter temperature is -2.5°C.
- ✿ Average annual precipitation is between 750-900 mm.
- ✿ Rich and diverse fertile soils throughout with numerous glacial deposits.

CHARACTERISTICS

- ✿ Part of the most floralistically diverse ecozone in Canada with mixed and deciduous forests.
- ✿ Herbaceous layer of woodland forbs that bloom from spring into fall.
- ✿ Dissected by population centres, farms, and roads.



Lake Erie Lowlands includes:

- The Greater Toronto Area
- The Golden Horseshoe
- Windsor
- London
- Sarnia
- Niagara Region

MEET THE POLLINATORS

WHO ARE THE POLLINATORS?

BEES

Bees are the best documented pollinators in the natural and agricultural landscapes of the Lake Erie Lowland ecoregion. A wide range of plants in the Aster and Rose Families, blueberry crops, and tomatoes are just a few plants that benefit from bee pollinators.

Most of us are familiar with the colonies of honey bees that have been the workhorses of agricultural pollination for years in Canada. They were imported from Europe almost 400 years ago and continue to be managed for honey production and pollination services. There are over 800 species of native ground and twig nesting bees in Canada. Most of these bee species live a solitary life; a minority are social and form colonies or nest in aggregations.

Native bees visit and pollinate many crops; in many cases they are better at transferring pollen than honey bees. Our native bees can be encouraged to do more to support agricultural endeavours if their needs for nesting habitat are met and if suitable sources of nectar, pollen, and water are provided. Bees come in a variety of body shapes and sizes, and even have tongues of different lengths. Native bees visit the widest range of flowers and crops of any pollinator group.

Bumble bees (*Bombus* spp.) form small colonies, usually underground making use of old rodent burrows or dense thatches. They are generalists, feeding on a wide range of plant types from May to September and are important pollinators of tomatoes and blueberries.

Sweat bees (family Halictidae) are medium to small-sized, slender bees that commonly nest underground. Various species are solitary while others form loose colonies, nesting side-by-side. Other common solitary bees include carpenter bees (*Xylocopa virginica*), which nest by chewing into wood; mining bees (*Andrena* spp.), which nest underground and are common in the spring; leaf-cutter bees (*Megachile* spp.), which prefer dead trees or branches for their nest sites; and mason bees (*Osmia* spp.), which utilize cavities they find in stems and dead wood that they fill with mud.

BUTTERFLIES

Butterflies prefer open and sunny areas such as meadows and along woodland edges that provide bright flowers, water sources, and specific host plants for their caterpillars. Gardeners have been attracting butterflies to their gardens for some time. To encourage butterflies place flowering plants where they have full sun and are protected from the wind. They usually look for flowers that provide a good landing platform. Butterflies need open areas (e.g., bare earth, large stones) where they can bask, and moist soil from which they wick needed minerals. Butterflies eat rotten fruit and even dung, so don't clean up all the messes in your garden! By providing a safe place to eat and nest, gardeners can also support the pollination role that butterflies play in the landscape. In the Lake Erie Lowland ecoregion it is common to see the Tawny-edged Skipper (*Polites themistocles*), the Giant Swallowtail (*Papilio cresphontes*), the Great Spangled Fritillary (*Speyeria cybele*), and the Pearl Crescent (*Phyciodes tharos*) butterfly.

Photo courtesy of Tim Dunne



Ruby-throated Hummingbird, a summer species in the Lake Erie Lowlands.

Eastern Tiger Swallowtail.



Photo courtesy of Lara Roketenetz



MOTHS

Moths are most easily distinguished from butterflies by their antennae. Butterfly antennae are simple with a swelling at the end. Moth antennae differ from simple to featherlike, but never have a swelling at the tip. Butterfly bodies are not very hairy, while moth bodies are quite hairy and much more stout. In addition, butterflies typically are active during the day; moths at night. They are attracted to flowers that are strongly sweet smelling, open in late afternoon or night, and are typically white or pale coloured.

BEETLES

There are more than 9000 species of beetles in Canada and many of them can be found easily by looking inside flower heads. Gardeners have yet to intentionally draw beetles to their gardens, possibly because beetle watching isn't as inspiring as butterfly or bird watching. Yet beetles do play a role in pollination. Some have a bad reputation because they can leave a mess behind, damaging plant parts as they eat pollen. Beetle pollinated plants tend to be large, strong scented flowers and have the anthers and stigma exposed. Beetles are known to pollinate magnolia, paw paws, and yellow pond lilies.

FLIES

It may be hard to imagine why one would want to attract flies to the garden. However, flies are one of the most diverse group of pollinators. They include colourful flower flies and hover flies (*Syrphidae*), active bee flies

(*Bombyliidae*), and tiny midges that visit many plant species. Like bees, flies are hairy and can easily transport pollen from flower to flower. Flies primarily pollinate small flowers that bloom under shade and in seasonally moist habitats, but are also economically important as pollinators for a range of annual and bulbous ornamental flowers. Plants pollinated by flies include the pawpaw (*Asimina triloba*), skunk cabbage (*Symplocarpus foetidus*), goldenrod (*Solidago* spp.), and members of the carrot family.

BIRDS

Hummingbirds are the primary birds that play a role in pollination in North America. Their long beaks and tongues draw nectar from tubular flowers. Pollen is carried on both their beaks and feathers. Regions closer to the tropics, with warmer climates, boast the largest number of hummingbird species and the greatest number of native plants to support their need for food. The Ruby-throated Hummingbird (*Archilochus colubris*) is the only common species in Ontario. Hummingbirds can see the colour red; bees cannot. Many tropical flowers, grown as annuals in the Lake Erie Lowland, along with native woodland edge plants, attract hummingbirds.

BATS

Though bat species in Canada are not pollinators, bats in the southwestern United States and Mexico play an important role in agave and cactus pollination. The head shape and long tongues of

nectar bats allows them to delve into flower blossoms and extract both pollen and nectar; pollen covers their hairy bodies and is transfer as they move from plant to plant.

SPECIES AT RISK

Species at Risk include endangered species, such as the Rusty-patched bumble bee, as well as threatened and special concern species. Some pollinator species, such as the Karner Blue butterfly have already been extirpated from Ontario. Other species are of conservation concern because of their rarity in Ontario, but their formal conservation status has yet to be determined. Because habitat loss is one of the largest threats facing pollinators, the very best thing you can do is plant for them.

Karner Blue Butterfly

- The Karner Blue has a lifespan of about five days as an adult butterfly.
- Karner Blue caterpillars feed exclusively on wild lupine leaves; as an adult butterfly they feed on a variety of flowering plants.
- Declines of wild lupine populations and oak savannah habitats are responsible for the extirpation of Karner Blue and are also likely responsible for the extirpation of two other butterfly species in Ontario, the Frosted Elfin and the Eastern Persius Duskywing.

PLANT TRAITS

WHICH FLOWERS DO THE POLLINATORS PREFER?

NOT ALL POLLINATORS ARE found in each province, and some are more important in different parts of Canada. Use this page as a resource to understand the plants and pollinators where you live.

Plants can be grouped together based on the similar characteristics of their flowers. These floral characteristics can be useful to predict the type of pollination method or animal that is most effective for that group of plants. This association between floral characteristics and pollination method is called a pollination syndrome.

The interactions of animal pollinators and plants have influenced the evolution of both groups of organisms. A mutualistic relationship between the pollinator and the plant species helps the pollinator find necessary pollen and nectar sources and helps the plant reproduce by ensuring that pollen is carried from one flower to another.

Plant Trait	Pollinator			
	Bees	Beetles	Birds	
Colour	Bright white, yellow, blue, or UV	Dull white or green	Scarlet, orange, red or white	
Nectar guides	Present	Absent	Absent	
Odour	Fresh, mild, pleasant	None to strongly fruity or fetid	None	
Nectar	Usually present	Sometimes present; not hidden	Ample; deeply hidden	
Pollen	Limited; often sticky and scented	Ample	Modest	
Flower Shape	Shallow; have landing platform; tubular	Large bowl-like, Magnolia	Large funnel like; cups, strong perch support	

This chart and more information on pollinator syndromes can be found at:



AND THE POLLINATORS THEY ATTRACT

Pollinator

	Butterflies	Flies	Moths	Wind
	Bright, including red and purple	Pale and dull to dark brown or purple; flecked with translucent patches	Pale and dull red, purple, pink or white	Dull green, brown, or colourless; petals absent or reduced
	Present	Absent	Absent	Absent
	Faint but fresh	Putrid	Strong sweet; emitted at night	None
	Ample; deeply hidden	Usually absent	Ample; deeply hidden	None
	Limited	Modest in amount	Limited	Abundant; small, smooth, and not sticky
	Narrow tube with spur; wide landing pad	Shallow; funnel like or complex and trap-like	Regular; tubular without a lip	Regular; small and stigmas exerted

<http://www.fs.fed.us/wildflowers/pollinators/syndromes.shtml>



DEVELOPING LANDSCAPE PLANTINGS THAT PROVIDE POLLINATOR HABITAT

WHETHER YOU ARE A FARMER of many hectares, land manager of a large tract of land, or a gardener with a small lot, you can increase the number of pollinators in your area by making conscious choices to include plants that provide essential habitat for bees, butterflies, moths, beetles, hummingbirds and other pollinators.

FOOD:

Flowers provide nectar (high in sugar and necessary amino acids) and pollen (high in protein) to pollinators.

Fermenting fallen fruits also provide food for bees, beetles and butterflies.

Specific plants, known as host plants, are eaten by the larvae of pollinators such as butterflies.

- Plant in groups to increase pollination efficiency. If a pollinator can visit the same type of flower over and over, it doesn't have to relearn how to enter the flower and can transfer pollen to the same species, instead of squandering the pollen on unreceptive flowers.
- Plant with bloom season in mind, providing food from early spring to late fall. (see Bloom Periods pp.16-19)
- Plant a diversity of plants to support a variety of pollinators. Flowers of different colour, fragrance, and season of bloom on plants of different heights will attract different pollinator species and provide pollen and nectar throughout the seasons.
- Many herbs and annuals, although not native, are very good for

pollinators. Mint, oregano, garlic, chives, parsley and lavender are just a few herbs that can be planted. Old fashioned zinnias, cosmos, and single sunflowers support bees and butterflies.

- Recognize weeds that might be a good source of food. For example, dandelions provide nectar in the early spring before other flowers open. Milkweed is a host for the Monarch butterfly.
- Learn and utilize Integrated Pest Management (IPM) practices to address pest concerns. Minimize or eliminate the use of pesticides.

SHELTER:

Pollinators need protection from severe weather and from predators as well as sites for nesting and roosting.

- Incorporate different canopy layers in the landscape by planting trees, shrubs, and different-sized perennial plants.
- Leave dead snags for nesting sites of bees, and other dead plants and leaf litter for shelter.
- Avoid applying thick layers of mulch that are hard to dig through.
- Build bee boxes to encourage solitary, non-aggressive bees to nest on your property.
- Ground nesting bees are also attracted to lawns and short grass areas, especially if there is a south facing slope.
- Leave some areas of soil uncovered to provide ground nesting insects easy access to underground tunnels.
- Group plantings so that pollinators

can move safely through the landscape protected from predators.

- Include plants that are needed by butterflies during their larval development.

WATER:

A clean, reliable source of water is essential to pollinators.

- Natural and human-made water features such as running water, pools, ponds, and small containers of water provide drinking and bathing opportunities for pollinators.
- Ensure the water sources have a shallow or sloping side so the pollinators can easily approach the water without drowning.

Your current landscape probably includes many of these elements. Observe wildlife activity in your farm fields, woodlands, and gardens to determine what actions you can take to encourage other pollinators to feed and nest. Evaluate the placement of individual plants and water sources and use your knowledge of specific pollinator needs to guide your choice and placement of additional plants and other habitat elements. Minor changes by many individuals can positively impact the pollinator populations in your area. Watch for - and enjoy - the changes in your landscape!

- **CAUTION LAND MANAGERS:** Remember that pesticides are largely toxic to pollinators. Extreme caution is warranted if you choose to use any pesticide. Strategically apply pesticides only for problematic target species.



FARMS



Soybean, alfalfa, blueberry, clover, cranberry, sunflowers, strawberry, stone fruits, and tomatoes are a few of the food crops in the Lake Erie Lowlands that will benefit from strong native bee populations that boost pollination efficiency. Incorporate different plants throughout the farm that provide food for native populations when targeted crops are not in flower.

Farmers have many opportunities to incorporate pollinator-friendly land management practices on their land which will benefit the farmer in achieving his or her production goals:

- Minimize the use of pesticides to reduce the impact on native pollinators. Spray when bees aren't active (just before dawn) and choose
- targeted ingredients.
- Be conscientious of the fact that different bees forage at different times of day. *Peponapis pruinosa*, the squash bee, is active from dawn until noon. In the case of squash production, the best time to spray is in the evening rather than the early morning.
- Carefully consider the use of herbicides. Some weeds can provide needed food for pollinators.
- Minimize tillage to protect ground nesting pollinators.
- Consider creating designated permanently untilled areas for ground nesting bees along internal farm laneways.
- Ensure water sources are scattered throughout the landscape.
- Choose a variety of native plants to act as windbreaks, riparian buffers,

and field borders throughout the farm.

- Plant unused areas of the farm with temporary cover crops that can provide food or with a variety of trees, shrubs, and flowers that provide both food and shelter for pollinators.
- Check with local not-for-profit organizations, local Conservation Authorities, and Ministry of Natural Resources and Forestry offices to see what technical support might be available to assist you in your effort to provide nectar, pollen, and larval food sources for pollinators on your farm.



Illustrations by Carolyn Vibbert



Public lands are maintained for specific reasons ranging from high impact recreation to conservation. In the Lake Erie Lowlands, forests have been cut to allow for roads, energy infrastructure, buildings, open lawn areas, boat ramps, and vistas. These other lands can provide benefits to pollinator when managed correctly. Pollinators are encouraged by timed mowing, opening tree canopies, and planting of native flowers. Less disturbed natural areas can be augmented with plantings of native plant species. Existing plantings around buildings and parking areas should be evaluated to determine if pollinator-friendly plants can be substituted or added to attract and support pollinators. Public land managers have a unique opportunity to use their plantings as an education tool to help others understand

the importance of pollinators in the environment through signs, brochures, and public programs. In an effort to increase populations of pollinators the land manager can:

- Inventory and become knowledgeable of local pollinators.
- Provide connectivity between vegetation areas by creating corridors of perennials, shrubs, and trees that provide pollinators shelter and food as they move through the landscape.
- Maintain a minimum of lawn areas that support recreational needs.
- Restrict the use of insecticides and herbicides.
- Provide water sources in large open areas.
- Maintain natural meadows and openings that provide habitats for sun-loving wildflowers and grasses.
- Remove invasive species.



Gardeners have a wide array of plants to use in their gardens. Native plants, plants introduced from years of plant exploration from around the world, and plants developed by professional and amateur breeders can be found in garden centres, in catalogs, and on web-sites. Use your knowledge of pollinator needs to guide your choices.

- Choose a variety of plants that will provide nectar and pollen throughout the growing season.
- Resist the urge to have a totally manicured lawn and garden. Leave bare ground for ground nesting bees. Leave areas of dead wood and leaf litter for other insects.
- Find local resources to help you in your efforts. Contact your local garden club or local Conservation Authority. Visit your regional botanic gardens and arboreta.

The scale of your plantings will vary but it is important to remember that you are trying to provide connectivity to the landscape adjacent to your property. Don't just look within your property boundaries. If your neighbour's property provides an essential element, such as water, which can be utilized by pollinators visiting your land, you may be able to devote more space to habitat elements that are missing nearby. It is best to use native plants which have evolved to support the needs of specific native pollinators. Some pollinators, however, are generalists and visit many different plants, both native and non-native. Be sure that any non-native plants you choose to use are not invasive. Remember that specialized cultivars sometimes aren't used by pollinators. Flowers that have been drastically altered, such as cultivars with double petals or completely different colour than the wild species, often prevent pollinators from finding and feeding on the flowers. In addition, some cultivars don't contain the same nectar and pollen resources that attract pollinators to the wild types.

- **CAUTION:** Take time to evaluate the source of your plant material. You want to ensure you get plants that are healthy and correctly identified. Your local garden club can help you make informed decisions when searching for plants.



PLANTS THAT ATTRACT POLLINATORS

IN THE LAKE ERIE LOWLANDS

The following chart lists plants that attract pollinators. It is not exhaustive, but provides guidance on where to start. Annuals, herbs, weeds, and cover crops provide food and shelter for pollinators, too.

Botanical Name	Common Name	Height	Colour	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
Trees and Shrubs								
<i>Acer rubrum</i>	red maple	12-20m+	red, greenish, yellow	March - April	sun to partial shade	dry to wet	bees	X
<i>Acer saccharum</i>	sugar maple	12-20m+	red, greenish, yellow	March - April	sun to partial shade	dry to wet	bees	X
<i>Aesculus glabra</i>	Ohio buckeye	20-30m	greenish yellow	April - May	sun to shade	moist	bees, flies	
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	less than 1m	white, cream, pink	May - July	sun to partial shade	well drained to dry	hummingbirds, bees	X
<i>Aronia melanocarpa</i>	black chokeberry	2m	white	May - June	sun to partial sun	dry to moist	bees, beetles, flies	X
<i>Cornus alternifolia</i>	alternateleaf dogwood	2-5.5m	white	April - July	sun to shade	dry to wet	bees, beetles, flies, butterflies	X
<i>Cornus stolonifera</i>	Red-osier Dogwood	1-3m	white	June-August	sun to partial shade	moist	bees, butterflies, flies	X
<i>Hamamelis virginiana</i>	eastern witch-hazel	3.5-4.5m	yellow-orange	September - November	sun to shade	moist	moths, beetles	X
<i>Lindera benzoin</i>	northern spicebush	1-5m	yellow green	March - May	sun to shade	moist	bees, flies	X
<i>Physocarpus opulifolius</i>	eastern ninebark	1-3m	white	May - June	sun to partial shade	dry to wet	bees, butterflies, flies	X
<i>Prunus pensylvanica</i>	pin cherry	7.5-12m	white	May - June	sun	dry to moist, well drained	bees	X
<i>Rhus aromatica</i>	aromatic sumac	1.5-2m	yellow green	April - May	sun to partial shade	dry to moist, well drained	flies, bees	X
<i>Ribes triste</i>	red currant	1-3m	greenish white, white, pink, red	March - June	sun to shade	moist to dry, well drained	flie, beetles, bees	
<i>Sambucus racemosa</i>	red elderberry	1.5-5m	white	May - June	sun to partial shade	dry to wet	bees, beetles, flies	X
<i>Sassafras albidum</i>	sassafras	10-18m	yellow green	March - June	sun to partial shade	dry to wet	flies	X
<i>Tilia americana</i>	basswood	up to 25m	yellow white	April - June	sun to partial shade	moist, well drained	bees, flies, moths	X
<i>Vaccinium macrocarpon</i>	cranberry	less than 1m	white to pink	April - June	sun to partial shade	dry to moist, well drained	bees	X
<i>Viburnum acerifolium</i>	mapleleaved viburnum	1-2m	white, cream	May - July	sun to shade	dry to moist, well drained	butterflies	X
Forbs								
<i>Actaea racemosa</i>	black cohosh	1-2.5m	white	June - July	shade to partial sun	moist	bees, flies	X
<i>Anemone canadensis</i>	Canada anemone	less than 1m	white, cream	April-August	sun to shade	moist, well drained	bees	
<i>Aquilegia canadensis</i>	red columbine	up to 1m	red with yellow	April - July	partial shade to sun	moist, well drained	hummingbirds, bees, moths	X
<i>Arisaema triphyllum</i>	Jack in the pulpit	up to 1m	purple, greenish brown	April-June	deciduous shade (spring sun)	moist to wet, well drained	gnats, thrips	

Botanical Name	Common Name	Height	Colour	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Asclepias incarnata</i>	swamp milkweed	0.30-1.5m	purple, pink	June-August	sun	moist to wet	butterflies, bees	X
<i>Asclepias tuberosa</i>	butterfly weed	less than 1m	yellow, orange	June-September	sun to partial shade	dry, well drained	hummingbirds, butterflies, bees	X
<i>Campanula gieseckeana</i>	harebell	less than 1m	blue, purple	June-September	sun to partial shade	dry, well drained	hummingbirds	
<i>Chelone glabra</i>	white turtlehead	up to 1m	white, cream, pink	July - September	sun to shade	moist to wet	butterflies, bees	X
<i>Cirsium discolor</i>	field thistle	1-2m	purple, pink	June - September	sun	dry, well drained	butterflies	X
<i>Coreopsis lanceolata</i>	laceleaf tickseed	up to 1m	yellow	May - August	sun to partial sun	moist to dry	bees, butterflies	
<i>Dasiphora fruticosa</i>	shrubby cinquefoil	0.5-1.5m	yellow, white, cream	June-September	sun	dry, well drained	butterflies, bees	
<i>Desmodium canadense</i>	showy tick trefoil	0.5-2m	purple, pink	July - August	sun to partial shade	dry to moist, well drained	hummingbirds, bees	X
<i>Erythronium americanum</i>	yellow trout lily	less than 1m	yellow	April - June	shade	moist	bees	
<i>Eutrochium maculatum</i>	spotted Joe Pye weed	0.5-2m	purple, pink	July - September	sun to partial shade	moist to wet, well drained	butterflies, bees	
<i>Eupatorium perfoliatum</i>	common boneset	1-1.5 m	white	July - Septepmber	sun	well drained to moist	bees, butterflies, flies	
<i>Gentiana andrewsii</i>	closed gentian	less than 1m	blue, purple	August-September	sun to partial shade	moist to wet, well drained	bees	
<i>Gentianopsos crinita</i>	fringed gentian	0.5-1m	blue	August-October	sun to partial shade	wet to moist	bees	
<i>Geranium maculatum</i>	wild geranium	less than 1m	purple, pink	April-June	sun to partial shade	dry, well drained	butterflies, bees	X
<i>Helenium autumnale</i>	sneezeweed	1-1.5m	yellow, brown	July - September	sun to partial shade	moist to wet	bees, wasps, flies, butterflies	X
<i>Helianthus divaricatus</i>	woodland sunflower	0.5-1.5m	yellow	July-September	sun to partial shade	dry, well drained	butterflies, bees	X
<i>Impatiens capensis</i>	jewelweed	0.5-1.5m	yellow, orange, greenish brown	July-October	partial shade to shade	moist to wet	hummingbirds, butterflies, bees	
<i>Iris versicolor</i>	wild blue iris	up to 1m	blue, purple	May-August	sun to partial shade	moist to wet	hummingbirds, bees	
<i>Lilium philadelphicum</i>	wood lily	up to 1m	red, orange	June-August	sun to partial shade	dry	hummingbirds	
<i>Lobelia cardinalis</i>	cardinal flower	1-1.5m	red	August - October	sun to partial shade	moist to wet	bees, hummingbirds	
<i>Lobelia siphilitica</i>	great blue lobelia	0.5-1.5m	blue	August-September	sun to partial shade	moist to wet, well drained	hummingbirds, butterflies, bees	
<i>Lysimachia ciliata</i>	fringed loosestrife	0.5-1.5m	yellow	June-August	partial shade to shade	moist	bees	
<i>Lysimachia terrestris</i>	swamp candles	up to 1m	yellow	June-August	sun to partial shade	moist	bees	

CONTINUED ON PAGE 18

PLANTS THAT ATTRACT POLLINATORS IN THE LAKE ERIE LOWLANDS

<i>Botanical Name</i>	<i>Common Name</i>	<i>Height</i>	<i>Colour</i>	<i>Flower Season</i>	<i>Sun</i>	<i>Soil Moisture</i>	<i>Pollinators</i>	<i>Also a host</i>
<i>Mentha canadensis</i>	Canada mint	less than 1m	white to pink, violet	July-October	partial shade	moist to wet	bees	
<i>Monarda didyma</i>	bee balm	1-2m	scarlet red	July - September	sun to partial shade	moist to wet	hummingbirds, butterflies, bees	X
<i>Monarda fistulosa</i>	wild bergamot	1m	lavender pink to violet blue	July - September	sun to partial sun	moist	butterflies, hummingbirds, bees, wasps,	X
<i>Oenothera biennis</i>	common evening primrose	0.5-2m	yellow	July - October	sun to partial shade	well drained, dry to moist	butterflies, bees	
<i>Packera paupercula</i>	balsam ragwort	less than 1m	yellow	May-August	partial shade	moist	bees	
<i>Penstemon hirsutus</i>	hairy beardtongue	up to 1m	purple, pink	May-July	sun to partial shade	dry, well drained	hummingbirds, bees	
<i>Phlox divaricata</i>	wild blue phlox	less than 1m	blue, white, cream, pink	April-June	partial shade to shade, deciduous shade (spring sun)	moist, well drained	butterflies	X
<i>Phystostegia virginiana</i>	obedient plant	1-1.5m	pink to pale lilac	August-November	sun to shade	moist	hummingbirds, butterflies	
<i>Potentilla arguta</i>	tall cinquefoil	up to 1m	white, cream	June - September	sun	dry to well drained		
<i>Rudbeckia hirta</i>	black-eyed Susan	0.5-1.5m	yellow with dark brown center	June - September	sun to partial sun	moist to dry	bees, butterflies, beetles, wasps	X
<i>Rudbeckia laciniata</i>	cutleaf coneflower	1-3m	yellow, brown	June - September	sun to partial shade	moist to dry	bees, butterflies, beetles, wasps	X
<i>Scrophularia marilandica</i>	carpenter's square	1.5-3m	red	July - September	sun to partial shade	well drained	flies, wasps, bees	
<i>Solidago altissima</i>	late goldenrod	0.5-2m	yellow	August - November	partial shade	moist	butterflies, bees	
<i>Solidago canadensis</i>	Canada goldenrod	0.5-1.5m	yellow, orange	July-October	sun to partial shade	dry, well drained	butterflies, bees	
<i>Solidago juncea</i>	early goldenrod	0.5-1.5m	yellow	July-September	sun to partial shade	dry, well drained	butterflies, bees	
<i>Solidago nemoralis</i>	grey goldenrod	1m	yellow	August-October	sun to partial shade	dry	butterflies, bees	
<i>Spiraea tomentosa</i>	steep bush	0.5-1.5m	purple, pink	July-September	sun to partial shade	moist	butterflies	X
<i>Symphyotrichum ciliolatum</i>	fringed blue aster	up to 1m	blue, purple	July-October	sun	dry, well drained	butterflies	X
<i>Symphyotrichum cordifolium</i>	heart-leaf aster	1-2m	white to purple	June - August	sun	moist	bees, butterflies, flies	
<i>Symphyotrichum ericoides</i>	heath aster	up to 1m	white, cream	August-October	sun	dry to moist, well drained	butterflies, bees	X
<i>Symphyotrichum laeve</i>	smooth blue aster	0.5-1.5m	blue, purple	August - November	sun	dry	butterflies	X



Botanical Name	Common Name	Height	Colour	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Symphotrichum lanceolatum</i>	lance-leaved aster	0.5-1m	white, cream	September-October	sun	moist to wet	butterflies	X
<i>Symphotrichum oolentangiense</i>	azure aster	up to 1m	blue to purple	September - November	sun to partial shade	dry to well drained	bees, butterflies, flies	
<i>Symphotrichum puniceum</i>	purple-stemmed aster	0.5-2m	blue, purple	August-September	sun	moist to wet, well drained	butterflies, bees	X
<i>Symphotrichum novae-angliae</i>	New England aster	up to 1m	purple	September - October	sun to partial shade	moist, well-drained	bees, butterflies, flies	
<i>Tiarella cordifolia</i>	foamflower	less than 1m	white	April - May	sun to shade	moist	bees, flies, moths	
<i>Verbena hastata</i>	swamp verbena	0.5-2m	blue, purple	June - September	sun to partial shade	moist to wet, well drained	butterflies, bees	X
<i>Verbena stricta</i>	hoary vervain	less than 1m	purple	July - September	sun	dry, drained to sandy	bees, butterflies	X
<i>Zizia aurea</i>	golden Alexanders	up to 1m	yellow	May - July	sun to partial sun	moist to wet	flies, bees	X
Vines								
<i>Campsis radicans</i>	trumpet creeper	up to 15m	orange-red	June - October	sun to partial sun	dry to moist	hummingbirds, bees	X
<i>Clematis virginiana</i>	virgin's bower	3m+	white	July - August	sun to partial sun	moist	flies, bees	
<i>Parthenocissus quinquefolia</i>	Virginia creeper	15m+	greenish white	May - June	sun to shade	dry to moist	bees, flies	X
<i>Vitis aestivalis</i>	summer grape	18m+	greenish yellow	May - June	sun to partial sun	moist, well drained	bees, flies	X
Shelter Plants								
<i>Andropogon gerardii</i>	big bluestem	1-2.5m	yellow to brown	August - November	sun to partial shade	moist		
<i>Calamagrostis canadensis</i>	bluejoint	0.5-2m	purple, greenish brown	June - August	sun to shade	moist to wet		
<i>Carex retrorsa</i>	knotsheath sedge	0.5-1.2m	greenish brown	May - June	partial shade to shade	moist to wet		
<i>Carex vulpinoidea</i>	fox sedge	less than 1m	greenish brown	May - June	sun	moist to wet		
<i>Elymus canadensis</i>	Canada wildrye	up to 1.5m	yellow, green, brown	March - June	sun to partial shade	moist		
<i>Panicum virgatum</i>	switchgrass	0.5-2m	purple, greenish brown, pink	July - September	sun	dry to moist, well drained		X
<i>Schizachyrium scoparium</i>	little bluestem	0.5-1.5m	yellow, green, brown	June - December	sun to partial shade	dry		
<i>Sorghastrum nutans</i>	indiangrass	1-2.5m	yellow	August - September	sun to partial shade	dry to moist, well drained	butterflies	X
<i>Sporobolus cryptandrus</i>	sand dropseed	less than 1m	yellow	May - November	sun to partial shade	dry		

HABITAT HINTS

FOR THE LAKE ERIE LOWLANDS

BEE-POLLINATED GARDEN FLOWERS AND CROPS

	Bumble	Digger	Lg Carpenter	Sm Carpenter	Squash/ Gourd	Leafcutter	Mason	Sweat	Plasterer	Yellow- faced	Andrenid
FLOWERS											
Catalpa			x								
Catnip	x	x					x				
Clover		x									x
Columbine	x										
Cow parsley										x	
Goldenrod	x	x				x		x			
Impatiens	x										
Irises	x		x								
Lavender	x	x	x			x					
Milkwort								x			
Morning glory				x							
Penstemon	x	x					x				
Phacelia	x	x		x		x	x	x	x		x
Potentilla										x	
Rose	x		x				x	x		x	
Salvia	x	x	x			x	x				
Saxifrages								x		x	
Sorrel				x							
Sunflowers	x	x	x	x		x		x	x		x
Violet								x			x
Wild Mustard		x							x		
Willow catkins									x		x
CROPS											
Apple							x				
Blueberry	x	x									x
Cherry							x				x
Eggplant	x		x					x			
Gooseberry	x										x
Legumes	x	x				x		x			
Water melon	x							x			
Squash/ Pumpkins/ Gourds			x		x						
Tomatoes	x	x	x					x			
Thyme	x	x					x	x		x	



HABITAT AND NESTING REQUIREMENTS:

Honey Bees:

Honey bees are colonial cavity nesters. Occasionally in the spring and summer you might encounter a swarm of honey bees on the move to a new home. The majority of honey bees are managed by beekeepers in hives. Beekeepers with commercial operations can have bee yards with tens to hundreds of hives commonly in agricultural, rural and some natural habitats. In urban and garden settings it is common to see a single or a handful of honey bee hives – usually wooden boxes painted white or other light colours. Give honey bees space and don't approach their hive. Even beekeepers minimize the amount of time they spend working bees. Honey bees have different feeding needs than native bees. Their colony can last multiple years and they feed on flowers from the beginning of spring bloom to the fall. Honey bees visit crops when they are in bloom and forage on a diversity of wildflowers as well. Honey bees also need plants that produce a large amount of nectar to make honey. Clovers, lavenders, mints, and sages are great nectar sources. Honey bees also like to feed off of the pollen of trees and shrubs such as maples, willows, and roses. Fields of goldenrod are an excellent pollen source.

Bumble Bees:

Bumble bees nest in cavities such as abandoned mouse nests, other rodent burrows, upside down flower pots, under boards, and other human-made cavities. Colonies are founded by a queen in the spring. The number of workers in a colony can grow to 300 at the peak of summer bloom. Bumble bee colonies die out in the fall after producing new queens. New queens mate and then overwinter, hiding in cracks or small crevices. Bumble bees are usually active during the morning hours and forage at colder temperatures than honey bees, even flying in light rain.

Large carpenter bees:

Large carpenter bees chew nests into dead wood, poplar, cottonwood or willow trunks and limbs. They also make nests in structural timbers including redwood and cedar. Depending on the species, there may be one or two brood cycles per year. These bees can be active all day even in the hottest and coolest weather.

Digger bees:

Digger bees can be found nesting in sandy, compacted soils, and along stream banksides. These bees are usually active in the morning hours, but can be seen at other times of the day as well. To attract these bees have some areas of exposed soil in your garden and avoid applying thick layers of mulch that are hard to dig through.

Small carpenter bees:

Small carpenter bees chew into pithy stems, including roses and blackberry canes, where they make their nests. These bees are more active in the morning but can be found at other times.

Squash and Gourd bees:

Squash and gourd bees prefer to nest in sandy soil but also may nest in gardens (where pumpkins, squash and gourds are grown). These bees are early risers and can be found in pumpkin patches before dawn. Males often sleep in wilted squash flowers.

Leaf-cutting bees:

Leaf-cutting bees nest in pre-existing circular tunnels of various diameters in dead wood created by emerging beetles. Some also nest in the ground. Leafcutter bees line and cap their nests with leaves or flower petals. These bees can be seen foraging throughout the day even in very hot weather.

Mason bees:

Mason bees use pre-existing tunnels of various diameters in dead wood made by emerging beetles, or human-made nesting substrates such as drilled wood blocks or cardboard tubes. These bees get their name from the fact that they cap their nests with mud. Mason bees are generally more active in the morning hours.

Sweat bees:

Sweat bees need bare ground in sunny areas not covered by vegetation for nesting. Some will nest in small pre-existing holes, much like leaf-cutting or mason bees. Like most bees, sweat bees forage for pollen earlier in the morning and then for nectar later in the day. To help these bees nest, keep some parts of your garden exposed and avoid applying thick layers of mulch that are hard to dig through.

Plasterer or cellophane bees:

Plasterer or cellophane bees get their name from the unique, clear waterproof lining they make around their nest. Similar to sweat bees they prefer bare ground, stream banks or slopes. These bees can be active in the morning or later in the day.

Yellow-faced bees:

Yellow-faced bees are tiny, hairless bees that make their nesting by chewing into small dead stems. These bees are more active during morning hours.

Mining bees:

Mining bees prefer sunny, bare ground, and sand soil. They are also known to nest under leaf litter or in the soil along banksides and cliffs. Mining bees are active in the spring and most commonly seen on flowers during the morning when pollen and nectar resources are abundant.



A BASIC CHECKLIST

S.H.A.R.E. - SIMPLY HAVE AREAS RESERVED FOR THE ENVIRONMENT.

- ✂ Planting for pollinators is the first step. Put your pollinator habitat on the S.H.A.R.E. map and connect to pollinator conservation efforts across North America. Visit pollinator.org/SHARE
- ✂ Farmers can also certify their habitat with Bee-Friendly Farming. Visit pollinator.org/bff

BECOME FAMILIAR WITH POLLINATORS IN YOUR LANDSCAPE.

- ✂ Watch for activity throughout the day and the seasons.
- ✂ Keep a simple notebook of when and what comes to your garden.
- ✂ Take part in citizen science monitoring and get involved in local programs.
- ✂ Consult a local field guide or web site when you are ready to learn more details.

ADD NATIVE PLANTS TO ATTRACT MORE NATIVE POLLINATORS.

- ✂ List the plants you currently have in your landscape.
- ✂ Determine when you need additional flowers to provide nectar and pollen throughout the growing season.
- ✂ Add plants that provide additional seasons of bloom, create variable heights for shelter, and attract the types of pollinators you want.
- ✂ Don't forget to include host plants that provide food and shelter for larval development.
- ✂ Contact your local native plant society or extension agent for more help.

USE POLLINATOR FRIENDLY LANDSCAPE PRACTICES TO SUPPORT THE POLLINATORS YOU ATTRACT.

- ✂ Use Integrated Pest Management (IPM) practices to address pest concerns.
- ✂ Tolerate a little mess – leave dead snags and leaf litter, keep areas bare for ground nesting insects, and leave some weeds that provide food for pollinators.
- ✂ Provide safe access to clean water.

NOTICE THE CHANGES THAT YOU HAVE HELPED TO CREATE!



RESOURCES

Many books, websites, and people were consulted to gather information for this guide. Use this list as a starting point to learn more about pollinators and plants in your area.

ECOREGION PROFILE

Lake Erie Lowland

<http://www.statcan.gc.ca/pub/16-002-x/2010001/article/11135-eng.htm>

Environment Canada Ecozones Program – Lake Erie Lowland

<http://www.ecozones.ca/english/region/135.html>

Government of Ontario – Species at Risk

<https://www.ontario.ca/page/species-risk>

POLLINATION/POLLINATORS

Pollinator Partnership

www.pollinator.org

North American Pollinator Protection Campaign

www.nappc.org

Pollination Canada

www.pollinationcanada.ca

Seeds of Diversity

www.seeds.ca

Canadian Biodiversity Information Facility: Butterflies of Canada

www.cbif.gc.ca/eng/species-bank/butterflies-of-canada/?id=1370403265518

North American Butterfly Association

www.naba.org

Canadian Honey Council

www.honeycouncil.ca

Buchmann, S.L. and G.P. Nabhan. 1997. *The Forgotten Pollinators*

Island Press: Washington, DC.

Committee on the Status of Pollinators in North America. 2007. *Status of Pollinators in North America* The National Academies Press: Washington, DC.

NATIVE PLANTS

Tallgrass Ontario

www.tallgrassontario.org

Ontario Wildflowers

www.ontariowildflowers.com

Toronto Botanical Garden

www.torontobotanicalgarden.ca

Royal Botanical Gardens

www.rbg.ca

FEEDBACK

We need your help to create better guides for other parts of North America. Please e-mail your input to **feedback@pollinator.org**.

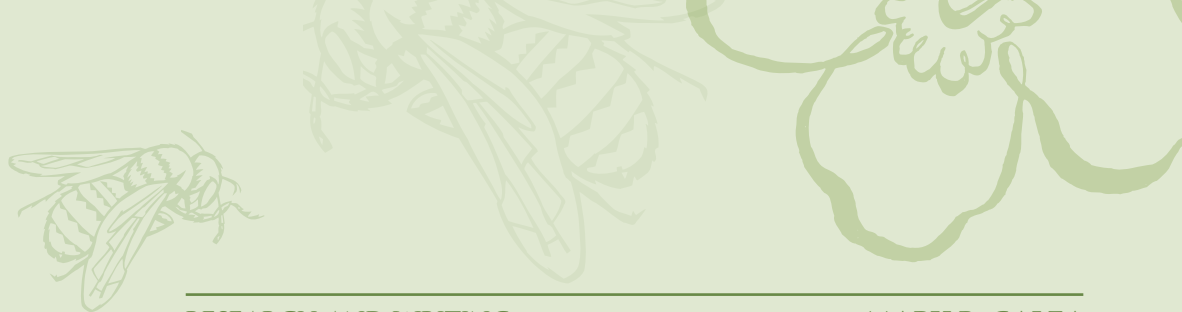
✿ How will you use this guide?

✿ Do you find the directions clear? If not, please tell us what is unclear.

✿ Is there any information you feel is missing from the guide?

✿ Any other comments?

**THANK YOU
FOR TAKING
THE TIME TO HELP!**



RESEARCH AND WRITING :

**MARY B. GALEA
VICTORIA WOJCIK**

EDITORIAL :

MARY B. GALEA, VICTORIA WOJCIK

CONTRIBUTORS :

Susan Chan ____ Manager, Native Pollinator Program, Farms at Work
Carol Dunk ____ Ontario Hort Society and Roadside Pollinator Plantings
Elizabeth Elle ____ Simon Fraser University
Shona Ellis ____ Associate Head of Biology for UBC
Kim Fellows ____ Pollination Canada
Kristy Grigg-McCuffin ____ Pome Fruit IPM Specialist - OMAFRA
Jennifer Heron ____ COSEWIC Chair, BC Ministry of Ag
Patricia Houle ____ Environment Canada
Victoria MacPhail ____ ED of Pollination Guelph
Walter Muma ____ Ontario Wildflowers
Jon Peter ____ Royal Botanical Gardens - Hamilton
Lacey Samuels ____ UBC Botanical Gardens and Centre of Plant Research
Cynthia Sayre VanDusen ____ Botanical Gardens
Bob Wildfong ____ Seeds of Diversity
Tom Woodcock ____ Rare Charitable Trust
Paul Zammit ____ Director of Horticulture Toronto Botanical Garden

DESIGN :

MARGUERITE MEYER

FUNDING :

Stanley Smith Horticultural Trust and Growing Forward 2

PHOTO CONTRIBUTORS :

Lara Roketenetz, Tim Dunne

ILLUSTRATIONS :

Carolyn Vibbert



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www.nappc.org