SELECTING PLANTS FOR POLLINATORS

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

ASPEN PARKLAND ECOREGION

SOUTHWESTERN MANITOBA, SASKATCHEWAN TO CENTRAL ALBERTA, INCLUDING RED DEER, EDMONTON, PARTS OF CALGARY, LLOYDMINSTER, NORTH BATTLEFORD, HUMBOLDT, YORKTON, AND BRANDON

POLLINATOR PARTNERSHIP CANADA

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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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A NAPPC AND POLLINATOR PARTNERSHIP CANADA™ PUBLICATION

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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. Much of the land in the Aspen Parkland ecoregion has been converted to agriculture with a large diversity of crops including oilseeds, wheat and other cereals, forage crops, and specialty crops. Many rely on native and honey bees for pollination. Honey bees pollinate more than $4 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

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 Aspen Parkland 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 Aspen Parkland ecoregion, 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 ASPEN PARKLAND

- The Aspen Parkland ecoregion is part of the Prairies Ecozone, and extends from southwestern Manitoba, through Saskatchewan, to central Alberta. The ecoregion has some of the most productive agricultural land in the prairies and much of the ecoregion has been converted to agriculture, with pockets of wildlife habitat.

- Not sure about which region you live or work in? Go to **www.pollinator.org/guides** and click on **Ecoregion Locator** for help.

- Short, warm summers and long cold winters with mean summer temperature of 15°C and mean winter temperature of -12.5°C..

- Mean annual precipitation of 400-500 mm.

- Fertile, warm black soils.

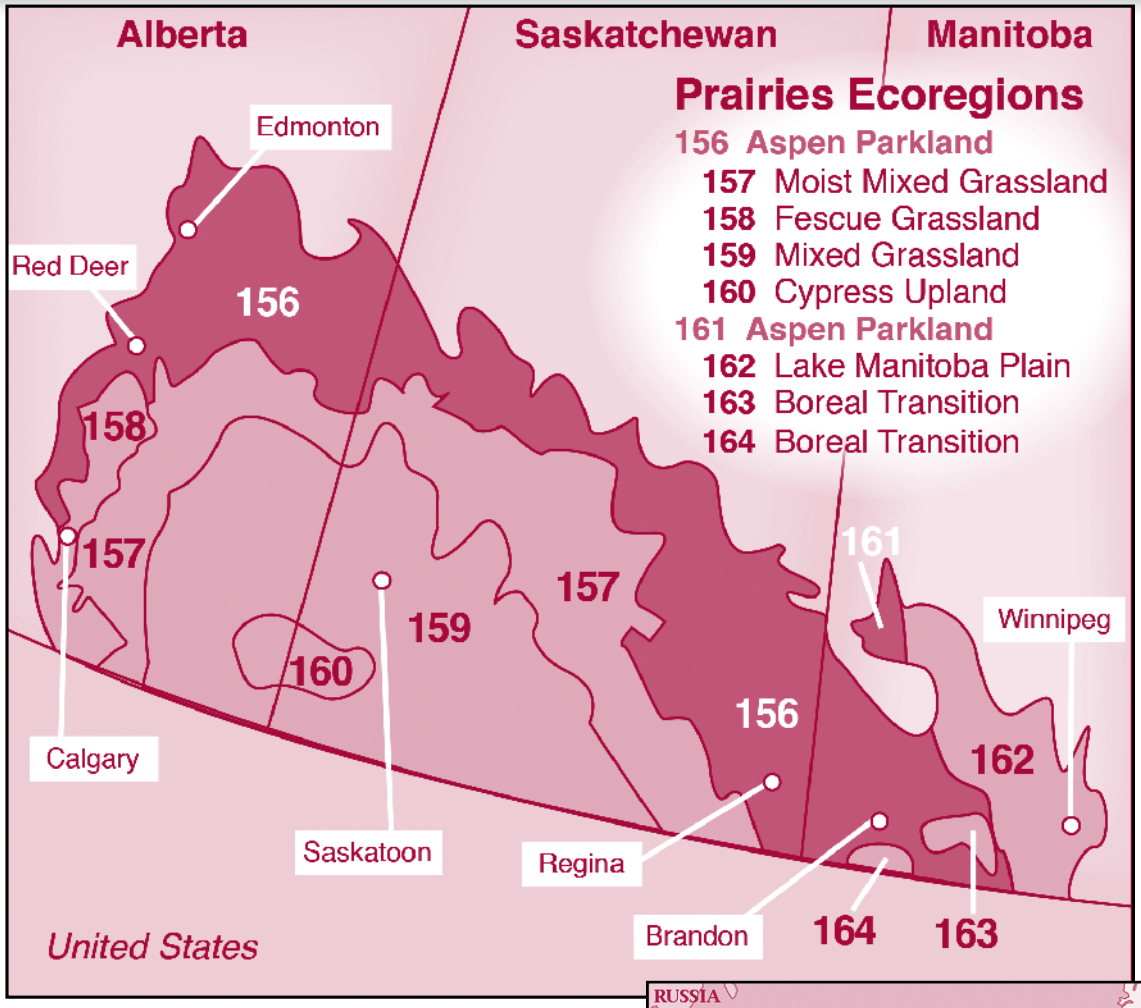
- Some glacial till landscapes with numerous small lakes, ponds, and sloughs.

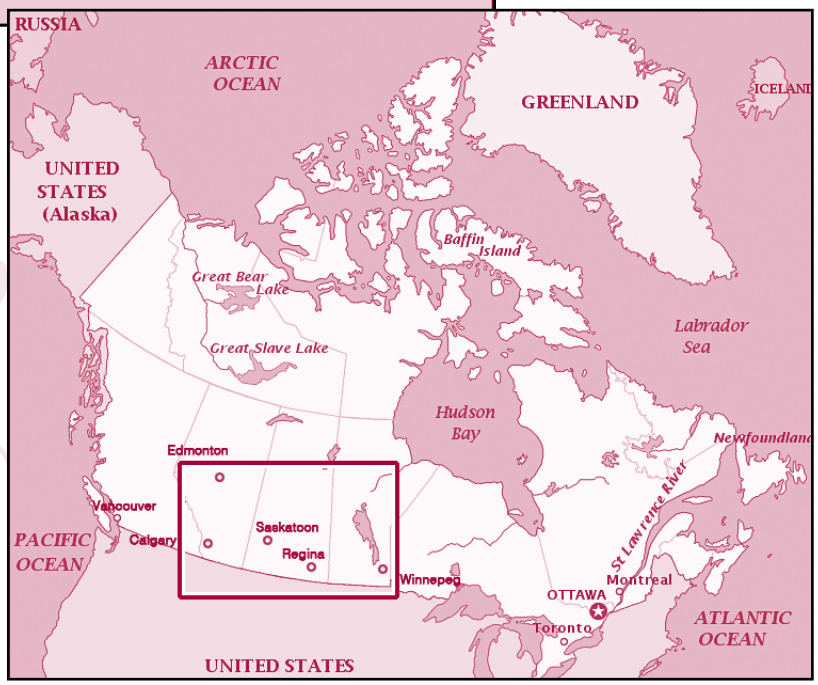
CHARACTERISTICS

- Considered a transitional ecoregion with grasslands to the south and boreal forest to the north.

- Historically characterized by trembling aspen, oak, mixed shrubs, and grasslands.

- Significant breeding area for waterfowl.





The Aspen Parkland ecoregion includes:

Red Deer,

Edmonton,

Parts of Calgary,

Lloydminster,

North Battleford,

Humboldt,

Yorkton,

and Brandon

MEET THE POLLINATORS

Photo courtesy of Tim Dunne

Ruby-throated Hummingbird, a summer species in the Aspen Parkland ecoregion.

Plains Branded Skipper

Photo © Bryan E. Reynolds

WHO ARE THE POLLINATORS?

BEES

Bees are the best documented pollinators in the natural and agricultural landscapes of the Aspen Parkland ecoregion. A wide range of wild and crop plants, including plants in the Aster and Rose Families, canola, specialty crops, and some forage crops 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 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. There is a large diversity of butterflies in the Aspen Parkland ecoregion and it is common to see the Grey Copper (*Lycaena dione*), the Gorgone Checkerspot (*Chlosyne gorgone*), the Alberta Arctic (*Oeneis alberta*), the Plains Skipper (*Hesperia assiniboia*).

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 colouful 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 American 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 a common summer species in the Aspen Parkland. Hummingbirds can see the colour red; bees cannot. Many tropical flowers, grown as annuals, along with native woodland edge plants, attract hummingbirds.

BATS

Though bat species in Canada are not pollinators, bats in the south western United States and Mexico are important pollinators of agave and cactus. 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 Dusky Dune Moth, as well as threatened and special concern species. Some pollinator species have already been extirpated from some regions of Canada such as Ridings' satyr moth (*Neominois ridingsii*), which is no longer found in Manitoba. Other species such as the Yellow-banded Bumble Bee (*Bombus terricola*) were once common across much of Canada, but it is now rare in the prairies and other southern parts of its range. Because habitat loss is one of the largest threats facing many pollinators, the very best thing you can do is plant for them.

Dusky Dune Moth

- The dusky dune moth (*Copablepharon longipenne*) is found in Canada from southern Manitoba, Saskatchewan, to Alberta.
- It is a habitat specialist, requiring sparsely vegetated sand dunes.
- Little is known about it's biology or adult and larval feeding requirements.
- Populations are thought to be declining at a rate of 10-20% per decade.
- Vegetation alterations, livestock grazing, and recreational activities are likely the biggest threats to this species.
- The dusky dune moth is considered endangered in Canada and is protected under the species at risk act (SARA).

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:

	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. Non-native crops, herbs, and ornamental flowers should only be planted in gardens.
- 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 many insecticides are toxic to pollinators. Extreme caution is warranted if you choose to use any insecticide. Strategically apply insecticides only for problematic target species.

FARMS

Many oilseed, forage crops, and specialty crops are grown in the Canadian prairies, and they 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 insecticides to reduce the impact on native pollinators. Spray when bees aren't active (after dark or just before dawn) and choose targeted ingredients.
- Be conscientious of the fact that different bees forage at different times of day. *Peponapsis 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, or government agencies 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

Public lands are maintained for specific reasons ranging from high impact recreation to conservation. In the Canadian prairies, forests and grasslands have been cut and altered 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 and the plant list in this document 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 conservation groups. 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 ASPEN PARKLAND

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	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
Trees and Shrubs								
Acer spp.	maples	12-20m+	red, greenish, yellow	March - April	sun to partial shade	dry to wet	bees	X
Amelanchier alnifolia	Saskatoon serviceberry	1-5m	white	April - July	sun to partial shade	moist to dry	bees, flies	X
Arctostaphylos uva-ursi	kinnikinnick	less than 1m	pink	April - June	sun to shade	dry to moist	bees	
Cornus sericea [stolonifera]	red-osier dogwood	2-4m	white	May - June	partial shade	moist	butterflies	X
Lonicera dioica	limber honeysuckle	1-3m	yellow, orange	May - June	sun, partial shade to shade	dry to moist	bees, hummingbirds	
Lonicera involucrata	twinberry honeysuckle	1-3m	yellow to red	April - August	sun, partial shade to shade	moist	bees, hummingbirds	
Populus tremuloides	trembling aspen	12-25m	green to brown	March - April	sun to partial shade	dry to wet	butterflies	X
Prunus pensylvanica	pin cherry	10-15m	white	April - May	sun	dry, well drained	bees	
Prunus virginiana	chokecherry	6-10m	white	May - July	sun to shade	dry to moist	bees, butterflies, moths	X
Quercus macrocarpa	bur oak	12-18m	yellow, green, brown	April - May	sun to partial shade	dry to wet	butterflies, showy insects	X
Ribes spp.	currants and gooseberrys	various	green to white to pink	March - June	sun to shade	dry, well drained, moist	bees, hummingbirds	
Rosa acicularis	prickly rose	1+m	pink	June - July	sun to partial shade	dry to wet	bees	
Rosa arkansana	prairie rose	less than 1m	pink	May - September	sun	dry to moist	butterflies	
Rosa blanda	meadow rose	up to 1.5m	white to cream, pink	June - July	sun	dry	bees, butterflies	
Rosa woodsii	Wood's rose	up to 1.5m	pink	May - July	sun, partial shade to shade	dry to moist	bees	
Rubus idaeus	wild red raspberry	1.5-2.5m	white	June - July	sun, partial shade to shade	dry to moist	bees, butterflies	

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
Salix lucida	shining willow	3.5-6m	white to yellow	March - May	sun, partial shade to shade	moist to wet	bees	
Salix bebbiana	beaked willow	1-5m	white to cream, green to brown	April - May	sun to partial shade	moist to wet	butterflies	X
Sambucus racemosa	red elderberry	2.5-6m	white	March - June	sun, partial shade to shade	moist to wet	bees, hummingbirds	
Symphoricarpos occidentalis	western snowberry	1+m	white to pink	June - August	sun	dry to well drained	bees	
Viburnum edule	highbush cranberry	0.5-2+m	white	May - June	sun to shade	moist	bees, butterflies	
Viburnum opulus var. americanum/ Viburnum trilobum var. americanum	American cranberry bush	2-4m	white	May - July	partial shade	well drained to wet	bees, butterflies	X
Forbs								
Achillea millefolium	common yarrow	less than 1m	white to pink	April - October	sun to partial shade	dry	bees	X
Agastache foeniculum	lavender hyssop	0.6-1.2m	blue, purple	July - August	sun to partial shade	dry to normal	bees, butterflies, hummingbirds	
Agoseris glauca	pale false dandelion	less than 1m	yellow	May - September	sun to partial shade	normal to wet	bees, butterflies	
Allium stellatum	autumn onion, prairie onion	less than 1m	white to cream, pink	July - September	partial shade	dry to moist	butterflies	
Anaphalis margaritacea	pearly everlasting	less than 1m	white to cream	July - September	sun	dry	bees, butterflies	X
Anemone canadensis	Canada anemone	less than 1m	white to cream	April - August	sun, partial shade to shade	normal to moist	bees	
Anemone patens	pasque flower	less than 1m	blue, purple, white to cream	April - June	sun	dry to normal	bees	
Anemone multifida	cut-leaved anemone	less than 1m	blue, yellow, red, purple, white to cream, pink	April - July	sun, partial shade to shade	normal to moist	small bees, flies	

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PLANTS THAT ATTRACT POLLINATORS IN THE ASPEN PARKLAND

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
Aquilegia canadensis	wild columbine	less than 1m	yellow, red	april - July	sun to partial shade	dry to moist	bees, butterflies, hummingbirds	X
Asclepias speciosa	showy milkweed	1m	white to pink	June -August	sun	moist	bees, butterflies	X
*Asclepias incarnata**	swamp milkweed	up to 1.5m	purple, pink	June - August	sun	moist to wet	butterflies, bees, showy insects	X
Asclepias ovalifolia	oval leaf milkweed	less than 1m	white to cream	May - June	sun to partial shade	dry to normal	butterflies	X
*Asclepias syriaca**	common milkweed	up to 1.5m	purple, pink	June - August	sun	normal to moist	butterflies	X
*Asclepias viridiflora**	green milkweed	less than 1m	green to brown	June - August	sun	dry	bees, butterflies	X
Astragalus agrestis	purple milkvetch	up to 1m	purple	May - August	sun	dry	bees, butterflies	
Astragalus crassicarpus	ground plum	less than 1m	blue, purple	April - May	sun to partial shade	dry	bumblebees, butterflies	X
Campanula rotundifolia	harebell, bluebell	less than 1m	blue, purple	June - September	sun to partial shade	dry to normal	hummingbirds	
Cerastium arvense	field chickweed	less than 1m	white to cream	May - September	sun	dry	flies, small bees	
Comandra umbellata	bastard toadflax	less than 1m	white to cream	April - June	sun	dry	butterflies	X
Cornus canadensis	bunchberry	less than 1m	white to cream, green to brown	May - September	sun, partial shade to shade	normal to moist	showy insects	
Dalea purpurea	purple prairie clover	less than 1m	purple, pink	June - September	sun	dry	butterflies	
*Delphinium bicolor***	little larkspur	less than 1m	blue to purple	May - July	sun	dry	bees	
*Delphinium glaucum***	Sierra larkspur	1-2m	purple	July - August	partial shade	moist to wet	bees, butterflies, hummingbirds	
Echinacea angustifolia	narrow leaved purple coneflower	less than 1m	purple	June - July	sun	dry to normal	butterflies	
Epilobium angustifolium [Chamerion angustifolium]	fireweed	1-1.5m	pink	June - September	sun	moist	bees	
Erigeron glabellus	smooth fleabane	less than 1m	blue, purple, pink	July - August	sun to partial shade	dry to normal	bees, butterflies	
Erigeron strigosus	prairie fleabane	less than 1m	white to pink	April - May	sun	well drained	bees, butterflies	
*Eupatorium maculatum**	Joe pye-weed	0.6-1.8m	purple, pink	July - September	sun to partial shade	normal to wet	bees, butterflies, hummingbirds	

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
Eurybia conspicua	showy aster	0.6-1.2m	yellow, blue, purple	August - September	sun to partial shade	dry to moist	bees, butterflies	
Fragaria virginiana	Virginia strawberry	less than 1m	white	May - August	sun to partial shade	dry	bees, butterflies	X
Gaillardia aristata	blanket flower	less than 1m	yellow, red	July - August	sun	dry to normal	butterflies	
Galium boreale	northern bedstraw	less than 1m	white to cream	May - August	sun to partial shade	normal to moist	flies, beetles	
*Geranium richardsonii***	Richardon's geranium	up to 1m	white to cream, pink	June - August	partial shade	moist	bees, beetles	
Geum triflorum	prairie smoke	less than 1m	purple, pink	May - June	sun to partial shade	dry	bees, butterflies	
Grindelia squarrosa	curlycup gumweed	less than 1m	yellow	June - September	sun	dry to normal	bees	
Hedysarum boreale	northern hedysarum	less than 1m	red, purple	April - August	sun	dry	bumblebees, butterflies	X
Helianthus annuus	common sunflower	0.6-1.2m	yellow	July - October	sun	dry	butterflies	X
Helianthus maximiliani	Maximilian sunflower	1-3m	yellow	August - September	sun	dry to moist	bees	
Helianthus pauciflorus	stiff sunflower	1-2m	yellow	July - September	sun	dry	bees, flies	
Heterotheca villosa	hairy golden aster	less than 1m	yellow	July - October	sun	dry	small bees, flies, butterflies	
Heuchera richardsonii	alumroot	less than 1m	purple, white to cream, green to brown	June - July	sun to partial shade	dry to moist	small bees, flies, hummingbirds, butterflies	
Lilium philadelphicum	wood lily	less than 1m	red, orange	June - August	sun to partial shade	dry	hummingbirds	
Lobelia spicata	palespike lobelia	up to 1m	blue, purple, white to cream	June - August	sun to partial shade	dry to normal	hummingbirds	
Liatris ligulistylis	meadow blazingstar	less than 1m	purple, pink	July - August	sun	dry to normal	butterflies, hummingbirds	
Liatris punctata	dotted blazingstar	less than 1m	purple, pink	August - October	sun	dry to normal	bumblebees, butterflies	X
Linum lewisii	wild blue flax	less than 1m	blue, purple	March - September	sun	dry to normal	bumblebees, butterflies	
Maianthemum canadense	Canada mayflower	less than 1m	white to cream	May - June	partial shade to shade	normal to moist	bees, flies	
Maianthemum stellatum	starry false Solomon's seal	less than 1m	white to cream	May - June	partial shade to shade	dry to moist	bees, flies	

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PLANTS THAT ATTRACT POLLINATORS IN THE ASPEN PARKLAND

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
Monarda fistulosa	wild bergamot	less than 2m	pink-purple	May - August	sun to partial shade	dry to moist	bees, butterflies, hummingbirds	
Packera plattensis	prairie ragwort	less than 1m	yellow	May - July	partial shade	dry	small bees	
Penstemon albidus	white beardtongue	less than 1m	white	April - June	sun	dry to well-drained	bumblebees	
Penstemon gracilis	lilac-flowered beardtongue	less than 1m	purple	May - June	partial shade	moist	bees, hummingbirds	
Phlox hoodii	moss phlox	less than 1m	white, pink, blue	May - July	sun	dry	bees, butterflies	
Polygala senega	seneca snakeroot	less than 1m	white to cream	May - July	sun to partial shade	dry to moist	moths	X
Potentilla arguta	white cinquefoil	less than 1m	white to cream	June - September	sun	dry to normal	bees, flies	
Ranunculus rhomboideus	prairie buttercup	less than 1m	yellow	April - May	sun	dry	bumblebees	
Rubus chamaemorus	cloudberry	less than 1m	white	May - June	sun to partial shade	moist to wet	bees, butterflies	
Rudbeckia hirta	blackeyed Susan	less than 1m	yellow	June - September	sun to partial shade	dry to moist	bees, butterflies	X
Sisyrinchium montanum	blue-eyed grass	less than 1m	blue, purple	May - July	sun, partial shade to shade	dry to wet	bees, flies, butterflies	
Solidago canadensis	Canada goldenrod	1-2m	yellow	September - October	sun to partial shade	dry to moist	bees, butterflies	
Solidago missouriensis	Missouri goldenrod	1m	yellow	July - September	sun	dry to well drained	bees, butterflies	
Solidago nemoralis	grey goldenrod	1m	yellow	August - October	sun to partial shade	dry	bees, butterflies	
Solidago ptarmicoides	prairie goldenrod	less than 1m	white, yellow	August - October	sun	dry to normal	butterflies	
Solidago rigida	stiff goldenrod	1-2m	yellow	August - September	sun	normal	butterflies	
Symphyotrichum ciliolatum	Lindley's aster	up to 1m	blue, purple	July - October	sun	dry to normal	butterflies	X
Symphyotrichum ericoides	heath aster	less than 1m	white to cream	August - October	sun	dry to moist	bees, butterflies	X
Symphyotrichum falcatum	creeping white prairie aster	less than 1m	white to cream	August - September	sun	dry	bees, butterflies	
Symphyotrichum laeve	smooth blue aster	1m	purple	August - September	sun to partial shade	well drained to moist	bees	

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
Symphyotrichum novae angliae	New England aster	1-2m	blue, purple, pink	August - October	sun to partial shade	dry to moist	bees, butterflies	X
Vicia americana	American vetch	less than 1m	purple	May - July	sun to partial shade	dry to moist	bumblebees, butterflies	
Viola adunca	hookespur violet	less than 1m	blue, purple	April - July	partial shade to shade	dry to moist	bees	
Viola canadensis	Canada violet	less than 1m	orange, white to cream	April - June	shade	moist	bees	
Viola nephrophylla	northern bog violet	less than 1m	purple	May - July	partial shade to shade	wet	butterflies	X
Zizia aurea	golden Alexander	less than 1m	yellow	April - June	sun to partial shade	dry to wet	butterflies, bees, showy insects	X
Vines								
Lonicera dioica	glaucous honeysuckle	1-3m	yellow, red, orange, purple	May - July	sun to partial shade	dry to moist	hummingbirds, butterflies, bees, showy insects	
Shelter Plants								
Andropogon gerardii	big bluestem	1-2.5m	blue, red, green to brown	July - September	sun to partial shade	normal to moist		X
Bouteloua curtipendula	sideoats grama	up to 1m	yellow, orange, red	June - September	sun to partial shade	dry to moist		X
Carex stenophylla	needleleaf sedge	0.1-0.35m	n/a	June - August	sun	dry, well drained		
Elymus canadensis	Canada wildrye	up to 1m	yellow, green, brown	March - June	sun	moist		X
Fescue scabrella	rough fescue	0.3-1.3m	n/a	June - August	sun	dry		
Koeleria macrantha	June grass	less than 1m	yellow	June - July	sun to partial shade	dry to normal		
Schizachyrium scoparium	little bluestem	less than 1m	yellow, green, brown	June - December	sun	dry		X

*Rare or absent in AB

**Rare or absent in SK and MB

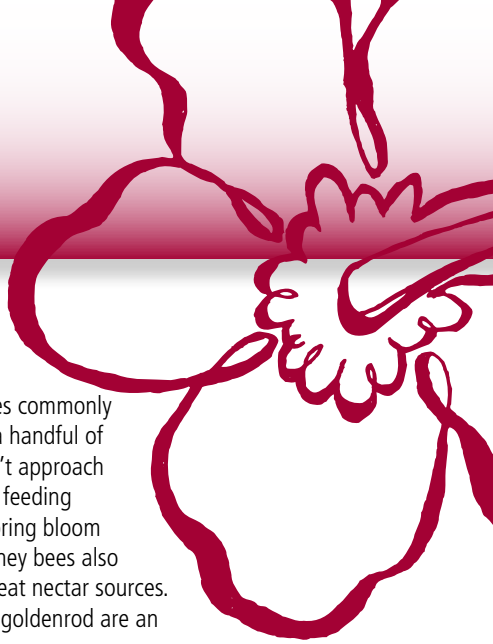
NOTES

NOTES

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. In Canada, 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 upward of 400 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 underground 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. The 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

Environment Canada Ecozones Program—Aspen Parkland
http://ecozones.ca/english/region/156.html

Alberta Agriculture and Forestry
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sag1497

World Wildlife Fund http://www.worldwildlife.org/ecoregions/na0802

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

Environment Canada
http://ecozones.ca/english/zone/Prairies/plants.html

Manitoba Museum Prairie Pollination
http://www.prairiepollination.ca/

Native Plant Society of Saskatchewan
https://www.npss.sk.ca/

Alberta Native Plant Council
http://anpc.ab.ca/

Find Native Plants Manitoba
http://findnativeplants.com/canada/manitoba-native-plants/

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!

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