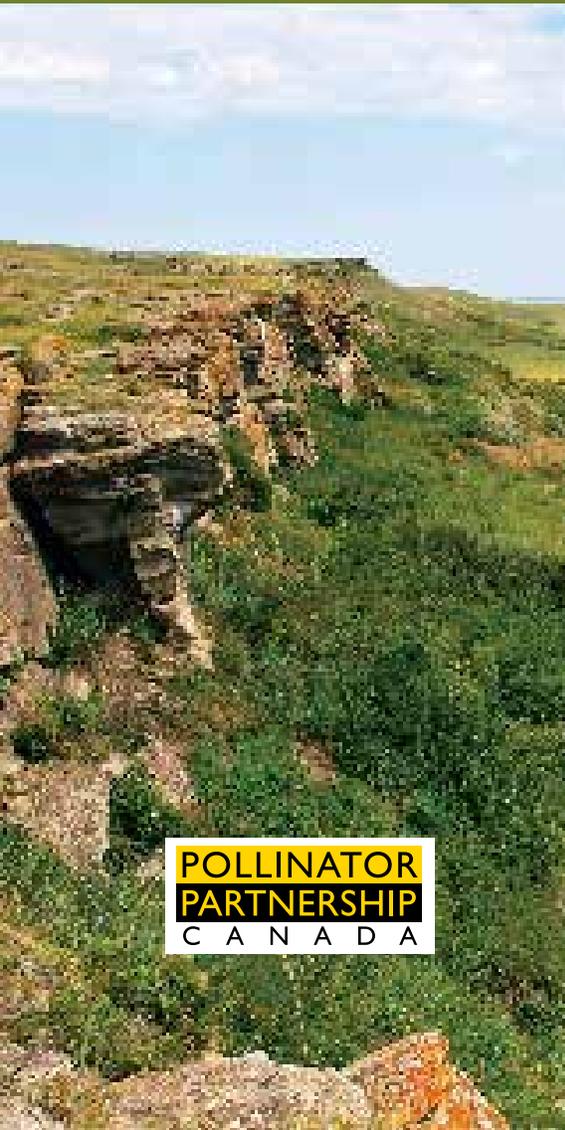




SELECTING PLANTS FOR POLLINATORS



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



MOIST MIXED GRASSLAND ECOREGION

FORT MACLEOD, LETHBRIDGE,
DRUMHELLER, ROSETOWN,
UNITY, BIGGAR, SASKATOON,
MOOSE JAW, REGINA,
ESTEVAN, AND WEYBURN.

**POLLINATOR
PARTNERSHIP**
C A N A D A



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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



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 Moist Mixed Grassland ecoregion has been converted to agriculture including cereal and forage crops, oilseeds, and pasture land. Some of the crops rely on native bees 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 and 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 Moist Mixed Grassland 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 Moist Mixed Grassland 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.

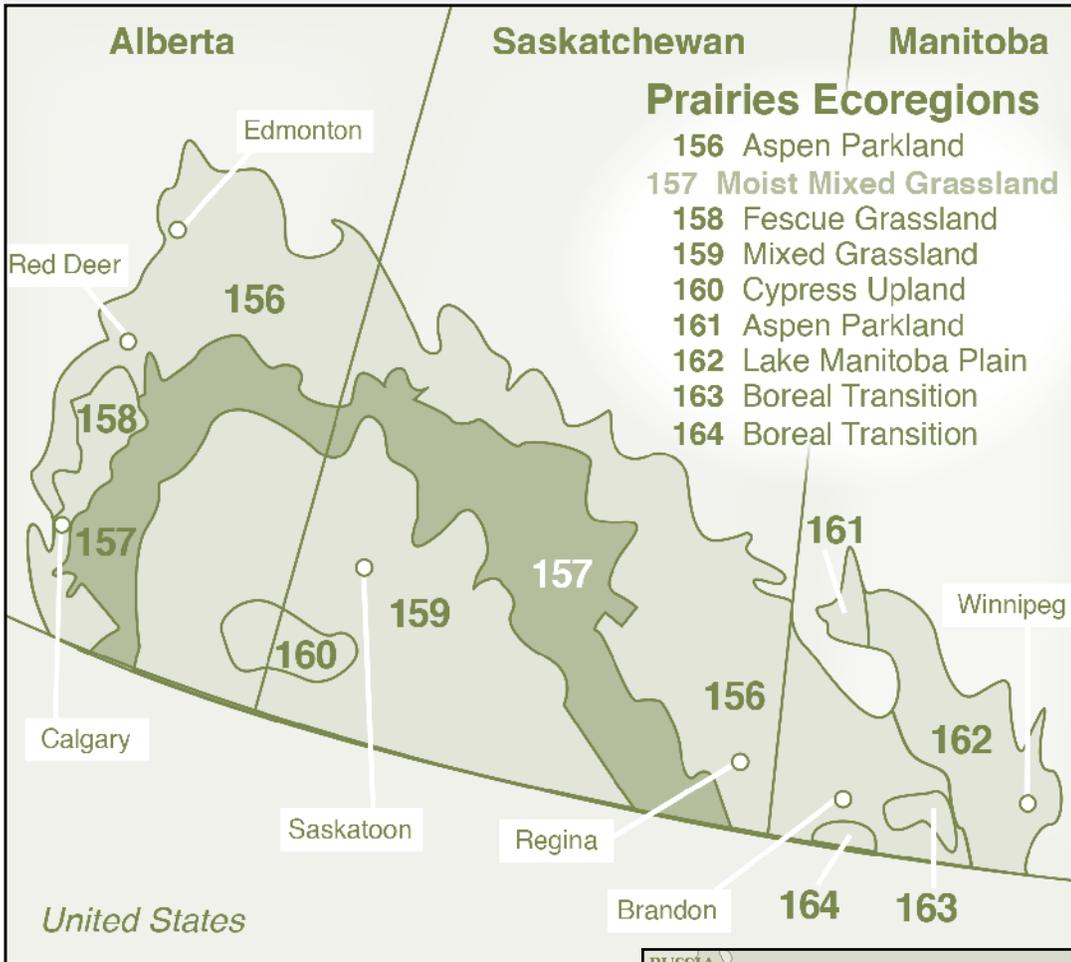
UNDERSTANDING THE MOIST MIXED GRASSLAND



- ✿ The Moist Mixed Grassland ecoregion ranges from Alberta to Saskatchewan. The ecoregion forms an arc extending from the southwestern interior of Alberta northward from the Montana Border, curving into Saskatchewan, back to the border with the United States, west of the Saskatchewan–Manitoba border. Most of the Moist Mixed Grassland ecoregion is a broad plane interrupted by deep valleys and subdued hilly uplands. It is the northern most band of the open grasslands in the Canadian interior. Most of the ecoregion is now crop and pasture land, with some remnant native habitat, urban and recreational areas.
- ✿ Not sure about which region you live or work in? Go to www.pollinator.org/guides and click on **Ecoregion Locator** for help.
- ✿ Located in Saskatchewan and Alberta.
- ✿ Semi arid conditions with glacial till and a rolling landscape.
- ✿ Elevations range from sea level to 730 metres.
- ✿ Mean annual temperature is 5 °C, with a mean summer temperature of about 15.5 °C, and mean winter temperature of -11 °C.
- ✿ Mean annual precipitation ranges from 350 to 450 mm.
- ✿ Hardiness Zones: 2A, 2B, 3A, 3B, 4A. Approximately 80% of this ecoregion is under cultivation.

CHARACTERISTICS

- ✿ The ecoregion is dominated by agricultural land with few areas of native vegetation.
- ✿ Native vegetation is primarily spear and wheat grass with a variety of deciduous shrubs.
- ✿ In addition to farmland there are some large urban areas in this ecoregion as well as conservation and recreation land.



The Moist Mixed Grassland Ecoregion includes:

- Fort Macleod,
- Lethbridge,
- Drumheller,
- Rosetown,
- Unity, Biggar,
- Saskatoon,
- Moose Jaw,
- Regina,
- Estevan,
- and Weyburn



MEET THE POLLINATORS

WHO ARE THE POLLINATORS?

BEES

Bees are the best documented pollinators in the natural and agricultural landscapes of the 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 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. In the The Prairies Ecozone has over 2,200 species of butterflies and moths. In the Moist Mixed Grassland ecoregion it is common to see the Grey Copper (*Lycaena dione*), the Gorgone Checkerspot (*Chlosyne gorgone*), the Alberta Arctic (*Oeneis alberta*), and the Plains Skipper (*Hesperia assinihoia*).



Photo courtesy of Tim Dunne

Ruby-throated Hummingbird, a summer species in the Moist Mixed Grassland ecoregion.

Plains Branded Skipper



Photo © Bryan E. Reynolds



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 American pawpaw (*Asimina triloba*), skunk cabbage (*Symplocarpus foetidus*), goldenrod (*Solidago* spp.), and members of the carrot.

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 Prairie Ecozone. 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 ridingsi*), 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 its 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).

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. 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
- Consider using Integrated Pest Management (IPM) strategies to control pests. Use insecticides that cause the least harm to non-target organisms and only use when pests reach economic thresholds.
- 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 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 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 MOIST MIXED GRASSLAND

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								
<i>Acer spicatum</i> *	mountain maple, dwarf maple	up to 5m	yellow, green, brown	May - June	partial shade to shade	moist	bees	
<i>Amelanchier alnifolia</i>	Saskatoon serviceberry	up to 5m	white	April - July	sun to partial shade	moist to dry	bees, flies	X
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	less than 1m	pink	April - June	sun to shade	dry to moist	bees, hummingbirds	X
<i>Cornus sericea</i> [<i>C. stolonifera</i>]	red-osier dogwood	up to 4m	white	May - June	partial shade	moist	butterflies	X
<i>Crataegus chrysoarpa</i>	round leaved hawthorn	up to 5m	white	May - June	sun to partial shade	normal to moist	flies	X
<i>Dasiphora fruticosa</i> var. <i>floribunda</i>	shrubby cinquefoil	up to 1.2m	yellow, white to cream	June - September	sun	dry to normal	bees, butterflies	X
<i>Elaeagnus commutata</i>	silverberry	up to 5m	yellow	Jun - July	sun to partial shade	dry	bees	
<i>Populus tremuloides</i>	trembling aspen	up to 25m	green to brown	March - April	sun to partial shade	dry to wet	butterflies	X
<i>Prunus pensylvanica</i>	pin cherry	up to 15m	white	April - May	sun	dry to moist	bees	
<i>Prunus virginiana</i>	chokecherry	up to 10m	white	May - July	sun to shade	normal to moist	bees, butterflies, moths	X
<i>Quercus macrocarpa</i>	bur oak	up to 18m	yellow, green, brown	April - May	sun to partial shade	dry to wet	butterflies	X
<i>Ribes aurem</i> var. <i>aurem</i>	golden currant	up to 3m	yellow, red	April - June	sun to partial shade	dry to moist	bees, butterflies, hummingbirds	X
<i>Rosa acicularis</i>	prickly rose	up to 1.5m	pink	June - July	sun to partial shade	dry to wet	bees	
<i>Rosa arkansana</i>	prairie rose	less than 1m	pink	May - September	sun	dry to moist	bees, butterflies	
<i>Rosa blanda</i> *	meadow rose	up to 1.5m	white to cream, pink	June - July	sun	dry	bees, butterflies	
<i>Rosa woodsii</i>	Wood's rose	up to 1.5m	pink	May - July	sun to shade	dry to moist	bees	
<i>Rubus idaeus strigosus</i>	American red raspberry	up to 2m	white to cream	June - July	sun to partial shade	dry to moist	bees, butterflies	
<i>Salix amygdaloides</i>	peachleaf willow	up to 20m	yellow	April - May	sun to partial shade	moist	butterflies	X
<i>Salix lucida</i> *	shining willow	up to 6m	white to yellow	March - May	sun to shade	moist to wet	bees, butterflies	X
<i>Salix bebbiana</i>	beaked willow	up to 5m	white to cream, green to brown	April - May	sun to partial shade	moist to wet	butterflies	X
<i>Shepherdia argentea</i>	buffaloberry	up to 4m	white	May	sun	dry to moist	bees	
<i>Spiraea alba</i>	narrow-leaved meadowsweet	up to 1.5m	white	June - August	sun to partial shade	normal to wet	bees, butterflies	
<i>Symphoricarpos albus</i>	common snowberry	up to 1.2m	white to cream, pink	May - July	sun to partial shade	dry to moist	bees	



Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
<i>Symphoricarpos occidentalis</i>	western snowberry	up to 1m	white to pink	June - August	sun	dry to normal	bees	
<i>Ulmus americana*</i>	American elm	up to 24m	red, green to brown	February - April	sun to partial shade	moist	butterflies	X
<i>Viburnum edule</i>	highbush cranberry	up to 2m	white	May - June	sun to shade	moist	bees, butterflies	
<i>Viburnum lentago*</i>	nannyberry, sweet viburnum	up to 7m	white to cream	May - June	sun to partial shade	dry to moist	bees, butterflies	X
Forbs								
<i>Achillea millefolium</i>	common yarrow	less than 1m	white to pink	April - October	sun to partial shade	dry	bees	X
<i>Agastache foeniculum</i>	lavender hyssop	up to 1.2m	blue, purple	July - August	sun to partial shade	dry to normal	bees, butterflies, hummingbirds	
<i>Allium cernuum</i>		less than 1m	white to cream, pink	July - August	sun	dry to moist	bees, butterflies	
<i>Allium stellatum*</i>	autumn onion, prairie onion	less than 1m	white to cream, pink	July - September	partial shade	dry to moist	butterflies	
<i>Allium textile</i>	prairie onion	less than 1m	white to cream	May - June	sun	dry	bees, butterflies	
<i>Anaphalis margaritacea</i>	pearly everlasting	less than 1m	white to cream	July - September	sun	dry	bees, butterflies	X
<i>Anemone canadensis</i>	Canada anemone	less than 1m	white to cream	April - August	sun to shade	normal to moist	bees	
<i>Anemone multifida</i>	cut-leaved anemone	less than 1m	blue, yellow, red, purple, white to cream, pink	April - July	sun to shade	normal to moist	bees, flies	
<i>Aquilegia canadensis*</i>	wild columbine	less than 1m	yellow, red	April - July	sun to partial shade	dry to moist	bees, butterflies, hummingbirds	X
<i>Asclepias speciosa</i>	showy milkweed	up to 1m	white to pink	June - August	sun	moist	bees, butterflies	X
<i>Asclepias ovalifolia</i>	oval leaf milkweed	less than 1m	white to cream	May - June	sun to partial shade	dry to normal	butterflies	X
<i>Asclepias syriaca*</i>	common milkweed	up to 1.5m	purple, pink	June - August	sun	normal to moist	butterflies	X
<i>Asclepias verticillata*</i>	whorled white milkweed	less than 1m	white to cream, green to brown	May - June	sun to partial shade	dry to normal	butterflies	X
<i>Asclepias viridiflora</i>	green milkweed	less than 1m	green to brown	June - August	sun	dry	bees, butterflies	X
<i>Astragalus agrestis</i>	purple milkvetch	up to 1m	purple	May - August	sun	dry	bees, butterflies	
<i>Astragalus crassicaarpus</i>	ground plum	less than 1m	blue, purple	April - May	sun to partial shade	dry	bees, butterflies	X
<i>Campanula rotundifolia</i>	harebell, bluebell	less than 1m	blue, purple	June - September	sun to partial shade	dry to normal	hummingbirds	
<i>Chamerion augustifolium</i>	fireweed	up to 1.8m	purple, pink	July - September	sun	dry to moist	bees, butterflies, hummingbirds	X
<i>Comandra umbellata</i>	bastard toadflax	less than 1m	white to cream	April - June	sun	dry	butterflies	X

CONTINUED ON PAGE 18

PLANTS THAT ATTRACT POLLINATORS IN THE MOIST MIXED GRASSLAND

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
<i>Dalea candida</i>	white prairie clover	less than 1m	white to cream	July - August	sun	dry to normal	bees, butterflies	
<i>Dalea purpurea</i>	purple prairie clover	less than 1m	purple, pink	June - September	sun	dry	butterflies	
<i>Delphinium bicolor</i>	little larkspur	less than 1m	blue to purple	May - July	sun	dry	bees	
<i>Delphinium glaucum</i>	Sierra larkspur	up to 2m	purple	July - August	partial shade	moist to wet	bees, butterflies, hummingbirds	
<i>Echinacea angustifolia</i> *	narrow leaved purple coneflower	less than 1m	purple	June - July	sun	dry to normal	butterflies	
<i>Erigeron glabellus</i>	smooth fleabane	less than 1m	blue, purple, pink	July - August	sun to partial shade	dry to normal	bees, butterflies	
<i>Erigeron strigosus</i>	prairie fleabane	less than 1m	white to pink	April - May	sun	dry to normal	bees, butterflies	
<i>Eupatorium maculatum</i>	Joe pye-weed	up to 1.8m	purple, pink	July - September	sun to partial shade	normal to wet	bees, butterflies, hummingbirds	
<i>Euthamia graminifolia</i>	flat-top goldentop	up to 1m	yellow	July - October	sun	normal to moist	bees, butterflies	
<i>Fragaria virginiana</i>	Virginia strawberry	less than 1m	white	May - August	sun to partial shade	dry	bees, butterflies	X
<i>Gaillardia aristata</i>	blanket flower	less than 1m	yellow, red	July - August	sun	dry to normal	butterflies	
<i>Galium boreale</i>	northern bedstraw	less than 1m	white to cream	May - August	sun to partial shade	normal to moist	flies, beetles	
<i>Gentianella amarella</i>	autumn dwarf gentian	less than 1m	blue, purple, pink, yellow	July - September	sun to partial shade	moist	bees	
<i>Geranium viscosissimum</i>	sticky purple geranium	less than 1m	purple, pink	May - August	sun to partial shade	moist	bees, butterflies, flies	
<i>Geum triflorum</i>	prairie smoke	less than 1m	purple, pink	May - June	sun to partial shade	dry	bees, butterflies	
<i>Glycyrrhiza lepidota</i>	wild licorice	up to 1m	yellow, white	May - June	partial shade to shade	moist	bees, butterflies	X
<i>Grindelia squarrosa</i>	curlycup gumweed	less than 1m	yellow	June - September	sun	dry to normal	bees	
<i>Gutierrezia sarothrae</i>	common broomweed	less than 1m	yellow	July - September	sun	dry	bees, flies	
<i>Hedysarum boreale</i>	northern sweetvetch	less than 1m	red, purple	April - August	sun to partial shade	normal to moist	bees, butterflies	X
<i>Helenium autumnale</i>	sneezeweed	up to 1.5m	yellow	August - October	sun	moist	bees, butterflies	X
<i>Helianthus annuus</i>	common sunflower	up to 1.2m	yellow	July - October	sun	dry	butterflies	X
<i>Helianthus maximiliani</i> *	Maximilian sunflower	up to 3m	yellow	August - September	sun	dry to moist	bees	
<i>Helianthus nuttallii</i>	Nuttall's sunflower	up to 1.8m	yellow	August - September	sun	normal to moist	bees, flies	
<i>Helianthus pauciflorus</i>	stiff sunflower	up to 2m	yellow	July - September	sun	dry	bees, flies	



Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
<i>Heterotheca villosa</i>	hairy golden aster	less than 1m	yellow	July - October	sun	dry	bees, flies, butterflies	
<i>Heuchera richardsonii</i>	alumroot	less than 1m	purple, white to cream, green to brown	June - July	sun to partial shade	dry to moist	bees, flies, hummingbirds, butterflies	
<i>Lilium philadelphicum</i>	wood lily	less than 1m	red, orange	June - August	sun to partial shade	dry	hummingbirds	
<i>Lobelia spicata</i>	palespike lobelia	up to 1m	blue, purple, white to cream	June - August	sun to partial shade	dry to normal	hummingbirds	
<i>Liatris ligulistylis</i>	meadow blazingstar	less than 1m	purple, pink	July - August	sun	dry to normal	butterflies, hummingbirds	
<i>Liatris punctata</i>	dotted blazingstar	less than 1m	purple, pink	August - October	sun	dry to normal	bees, butterflies	X
<i>Linum lewisii</i>	wild blue flax	less than 1m	blue, purple	March - September	sun	dry to normal	bees, butterflies	
<i>Monarda fistulosa</i>	wild bergamot	less than 2m	pink-purple	May - August	sun to partial shade	dry to moist	bees, butterflies, hummingbirds	
<i>Oenothera biennis</i>	yellow evening-primrose	up to 2m	yellow	July - October	sun to partial shade	dry to moist	bees, butterflies, hummingbirds, moths	
<i>Pediomelum argophyllum</i>	silver scurfpea	less than 1m	blue, purple	June - August	sun	normal to moist	bees, butterflies	
<i>Pediomelum esculentum</i>	breadroot	less than 1m	white, purple, blue	June - August	sun	dry to normal	bees, butterflies	
<i>Penstemon albidus</i>	white beardtongue	less than 1m	white	April - June	sun	dry	bees	
<i>Penstemon gracilis</i>	lilac-flowered beardtongue	less than 1m	purple	May - June	partial shade	moist	bees, hummingbirds	
<i>Phlox hoodii</i>	moss phlox	less than 1m	white, pink, blue	April - June	sun	dry	bees, butterflies	
<i>Polygala senega</i>	seneca snakeroot	less than 1m	white to cream	May - July	sun to partial shade	dry to moist	moths	X
<i>Potentilla arguta</i>	white cinquefoil	less than 1m	white to cream	June - September	sun	dry to normal	bees, flies	
<i>Ranunculus rhomboideus</i>	prairie buttercup	less than 1m	yellow	April - May	sun	dry	bees	
<i>Ratibida columnifera</i>	prairie coneflower	less than 1m	yellow, brown	July - August	sun	dry	bees, butterflies, flies	
<i>Rudbeckia hirta</i>	blackeyed Susan	less than 1m	yellow	June - September	sun to partial shade	dry to moist	bees, butterflies	X
<i>Sisyrinchium montanum</i>	blue-eyed grass	less than 1m	blue, purple	May - July	sun to shade	dry to wet	bees, flies, butterflies	
<i>Solidago canadensis</i>	Canada goldenrod	up to 2m	yellow	September - October	sun to partial shade	dry to moist	bees, butterflies	
<i>Solidago missouriensis</i>	Missouri goldenrod	up to 1m	yellow	July - September	sun	dry to normal	bees, butterflies	
<i>Solidago nemoralis</i>	grey goldenrod	up to 1m	yellow	August - October	sun to partial shade	dry	bees, butterflies	

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PLANTS THAT ATTRACT POLLINATORS IN THE MOIST MIXED GRASSLAND

Botanical Name	Common Name	Height	Flower Colour	Flower Season	Sun	Soil	Pollinators	Also a host
<i>Solidago ptarmicoides</i> [<i>Oligoneuron ptarmicoides</i>]*	prairie goldenrod	less than 1m	white, yellow	August - October	sun	dry to normal	butterflies	
<i>Solidago rigida</i> [<i>Oligoneuron rigidum</i>]*	stiff goldenrod	up to 2m	yellow	August - September	sun	normal	bees, flies, butterflies	
<i>Symphotrichum ciliolatum</i>	Lindley's aster	up to 1m	blue, purple	July - October	sun	dry to normal	butterflies	X
<i>Symphotrichum ericoides</i>	heath aster	less than 1m	white to cream	August - October	sun	dry to moist	bees, butterflies	X
<i>Symphotrichum falcatum</i>	creeping white prairie aster	less than 1m	white to cream	August - September	sun	dry	bees, butterflies	
<i>Symphotrichum laeve</i>	smooth blue aster	up to 1m	purple	August - September	sun to partial shade	dry	bees	
<i>Symphotrichum novae angliae</i> *	New England aster	up to 2m	blue, purple, pink	August - October	sun to partial shade	dry to moist	bees, butterflies	X
<i>Thermopsis rhombifolia</i>	goldenbean	less than 1m	yellow	May - June	sun	dry	bees, butterflies	
<i>Verbena hastata</i> *	blue vervain	up to 2m	blue, purple	June - September	sun to partial shade	normal to wet	bees, butterflies	X
<i>Vicia americana</i>	American vetch	less than 1m	purple	May - July	sun to partial shade	dry to moist	bees, butterflies	
<i>Viola adunca</i>	hookspur violet	less than 1m	blue, purple	April - July	partial shade to shade	dry to moist	bees	
<i>Viola canadensis</i>	Canada violet	less than 1m	orange, white to cream	April - June	shade	moist	bees	
<i>Zizia aptera</i>	heart leaved alexander	less than 1m	yellow	May - June	sun to partial shade	normal	bees	
Vines								
<i>Lonicera dioica</i>	glaucous honeysuckle	up to 3m	yellow, red, orange, purple	May - July	sun to partial shade	dry to moist	bees, butterflies, hummingbirds	
Shelter Plants								
<i>Andropogon gerardii</i> *	big bluestem	up to 2.5m	blue, red, green to brown	July - September	sun to partial shade	normal to moist		X
<i>Bouteloua gracilis</i>	blue gramma	less than 1m	yellow	July - September	sun to partial shade	dry to normal		X
<i>Carex duriuscula</i>	needleleaf sedge	less than 1m	n/a	June - August	sun	dry		
<i>Elymus canadensis</i>	Canada wildrye	up to 1m	yellow, green, brown	March - June	sun	moist		X
<i>Festuca halli</i>	rough fescue	up to 1.3m	n/a	June - August	sun	dry		
<i>Koeleria macrantha</i>	June grass	less than 1m	yellow	June - July	sun to partial shade	dry to normal		
<i>Schizachyrium scoparium</i>	little bluestem	less than 1m	yellow, green, brown	June - December	sun	dry		X

*Found in Saskatchewan but not Alberta.



NOTES

NOTES





NOTES



HABITAT HINTS

FOR THE MOIST MIXED GRASSLAND

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. 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.

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—Moist Mixed Grassland
<http://ecozones.ca/english/region/157.html>

Saskatchewan Conservation Data Centre—Moist Mixed Grassland
http://www.biodiversity.sk.ca/ecoregions/Moist_Mixed_Grassland.htm

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

Devonian Botanic Garden
<https://devonian.ualberta.ca/>

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

Saskatchewan Conservation Data Centre
<http://www.biodiversity.sk.ca/index.htm>

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

Alberta Agriculture and Forestry
<http://www1.agric.gov.ab.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!**



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