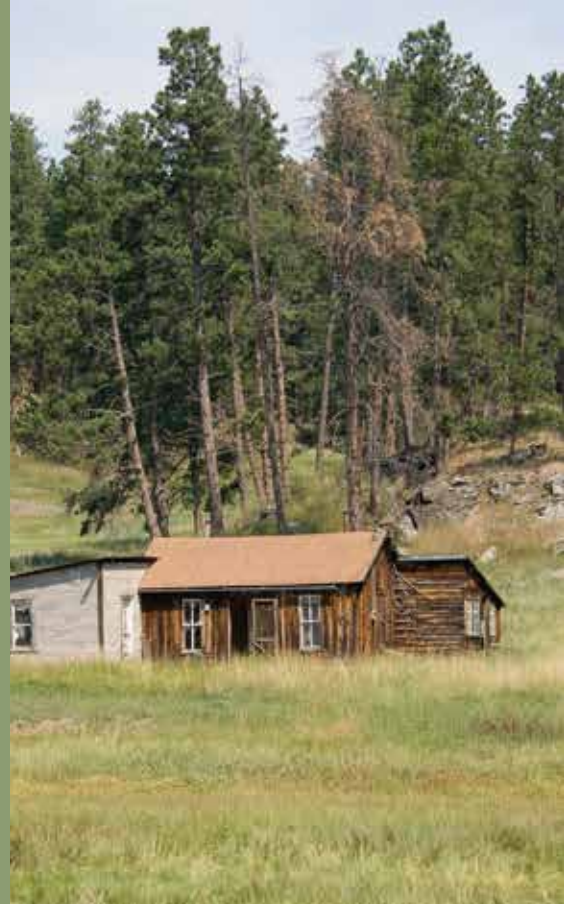




SELECTING PLANTS FOR POLLINATORS

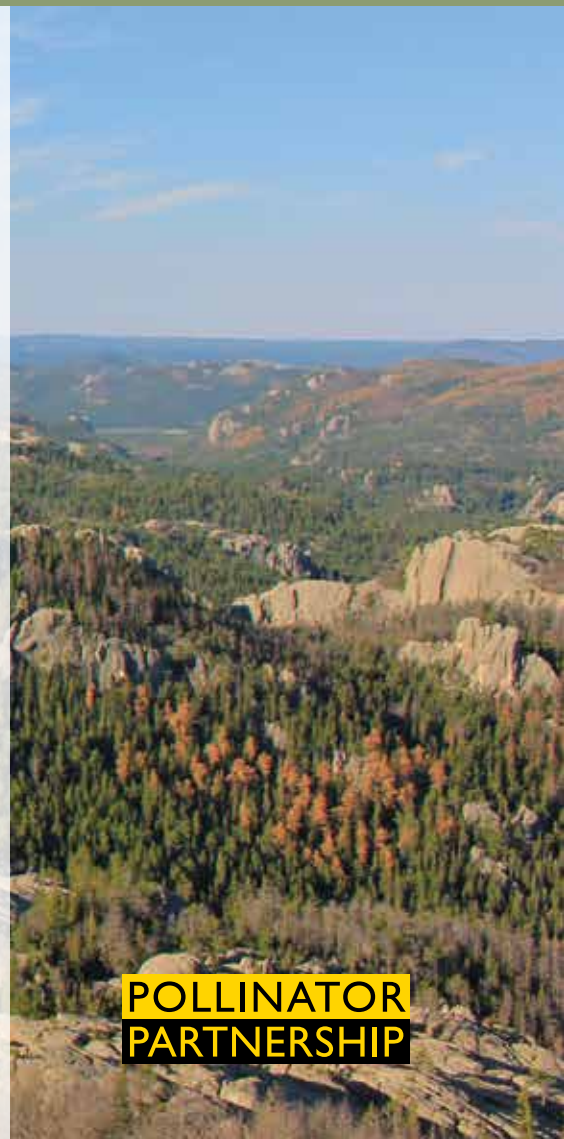


A GUIDE FOR GARDENERS, FARMERS, AND LAND MANAGERS IN THE



BLACK HILLS CONIFEROUS FOREST ECOREGION

INCLUDING PARTS OF
SOUTH DAKOTA
AND
NORTHEASTERN WYOMING



**POLLINATOR
PARTNERSHIP**

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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

SELECTING PLANTS FOR POLLINATORS

**A GUIDE FOR
GARDENERS, FARMERS,
AND LAND MANAGERS**

**IN THE
BLACK HILLS CONIFEROUS FOREST
PROVINCE**

INCLUDING PARTS OF
SOUTH DAKOTA AND
NORTHEASTERN WYOMING



A NAPPC AND POLLINATOR PARTNERSHIP PUBLICATION

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in support of the North American Pollinator Protection Campaign (NAPPC-www.nappc.org).



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. Sunflower, alfalfa, soybeans, and melons are some of the crop types grown in the Black Forest Coniferous Forest ecoregion that rely on honey bees and native bees for pollination. Honey bees pollinate more than \$1 billion worth of crops in the United States 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.

“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



Laurie Davies Adams
President and CEO
Pollinator Partnership



GETTING STARTED



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

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

The United States ecoregions are based on the highest resolution level

of Bailey's ecosystem classification. The Bailey's ecosystem classification at the province level is a description of vegetation or other natural land covers within domains with similar climates. This guide addresses pollinator-friendly land management practices in what is known as the Black Hills Coniferous Forest 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 Black Hills Coniferous Forest 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 neighbor'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 BLACK HILLS CONIFEROUS FOREST



Photo courtesy of Willard

✿ The Black Hills Coniferous Forest ecoregion falls in the middle of the Great Plains - Palouse Dry Steppe Province. It is considered to be part of the Temperate Steppe Division of the Mountain Provinces along with the Rocky Mountain range. Due to its unique placement, it is a area where both the western and eastern forests and wildlife meet.

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

✿ 3,700 square miles within South Dakota and Northeastern Wyoming.

✿ The topography includes plains, hogbacks, strike valleys, and low mountains.

✿ Elevation ranges from 3,000 ft. in the surrounding plains to 7,242 ft. at Harvey Peak.

✿ The average annual temperature ranges from 37°F to 48°F.

✿ Annual year round precipitation is between 15 to 26 inches.

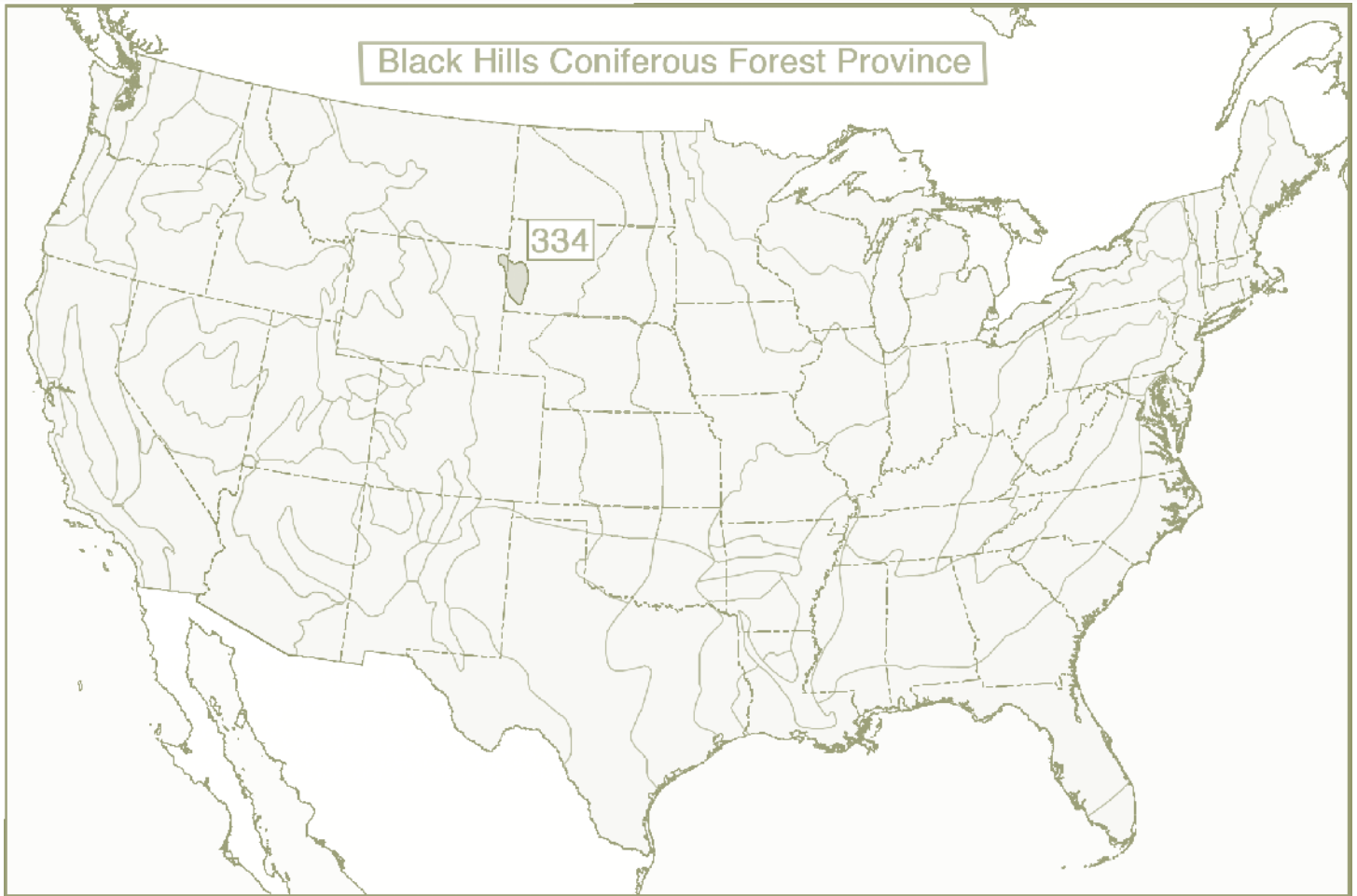
✿ Due to the uniqueness of the area the majority of the ecoregion province falls within National Parks lands.

CHARACTERISTICS

✿ The Black Hills supports an evergreen forest consisting of western, eastern, and northern forest species.

✿ Open stands of ponderosa pine and savannas dominate lower elevations.

✿ Many fauna are only found within the this region due to its unique precipitation and more temperate climate.



Black Hills Coniferous Forest
Province includes:

South Dakota,
Northeastern Wyoming

**“ADDING NATIVE PLANTINGS IN RIPARIAN AREAS TO
IMPROVE POLLINATOR HABITAT MAKES SENSE IN
ADVANCING OUR FAMILY FARM’S CONSERVATION
AND ECONOMIC OBJECTIVES, ENHANCING
BENEFICIAL WILDLIFE AND IMPROVING
POLLINATION IN OUR ORCHARD AND GARDEN.”**

— LEE MCDANIEL,
FARMER AND PRESIDENT,
NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS

MEET THE POLLINATORS



Photo courtesy of Tim Dunne

Ruby-throated Hummingbird, a species that migrates through the Black Hills Coniferous Forest.

Milbert's Tortoiseshell



Photo courtesy of Alan Schmierer

WHO ARE THE POLLINATORS?

BEES

Bees are the best documented pollinators in the natural and agricultural landscapes of the Black Hills Coniferous Forest 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 United States. They were imported from Europe almost 400 years ago and continue to be managed for honey production and pollination services. There are over 300 species of bees found in the Black Hills Coniferous Forest province. 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 endeavors if their needs for nesting habitat are met and if suitable sources of nectar, pollen, and water are provided. Bees come in a variety of body shapes and sizes, and even have tongues of different lengths. Native bees visit the widest range of flowers and crops of any pollinator group.

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

tomatoes and blueberries.

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

BUTTERFLIES

Butterflies prefer open and sunny areas such as meadows and along woodland edges that provide bright flowers, water sources, and specific host plants for their caterpillars. Gardeners have been attracting butterflies to their gardens for some time. To encourage butterflies place flowering plants where they have full sun and are protected from the wind. They usually look for flowers that provide a good landing platform. Butterflies need open areas (e.g., bare earth, large stones) where they can bask, and moist soil from which they wick needed minerals. Butterflies eat rotten fruit and even dung, so don't clean up all the messes in your garden! By providing a safe place to eat and nest, gardeners can also support the pollination role that butterflies play in the landscape. In the Black Hills Coniferous Forest it is common to see the Oberfoell's Admiral (*Limenitis weidemeyerii oberfoelli*), the Milbert's Tortoiseshell (*Aglais milberti milberti*), and the Canadian Tiger Swallowtail (*Pterourus canadensis canadensis*).



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 colored.

BEETLES

There are more than 30,000 beetle species of beetles in the United States 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 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*) migrates through the Black Hills Coniferous Forest. Hummingbirds can see the color red; bees cannot. Many annual flowers and native woodland edge plants of the Black Hills Coniferous Forest attract hummingbirds.

BATS

Though bat species in the northern United States 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, as well as threatened species such as the Yellow Bumblebee.

Because habitat loss is one of the largest threats facing many pollinators, the very best thing you can do is plant for them.

Yellow Bumblebee

- Bumblebees are well known for their “buzz pollination” in which they sonicate the flowers and vibrate the pollen loose.
- Colonies are annual. The new queens overwinter, and in early spring forage for pollen nectar and start a new nest. They most often nest above ground, but can also nest underground.
- The Yellow Bumblebee abundance has decline by 70% since the 1930s. It is predicted within the next 70-80 years their abundance may decline to zero.
- Threats to the Yellow Bumblebee include urbanization, agriculture, disease, and pesticide use.

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 United States. 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	
Color	Bright white, yellow, blue, or UV	Dull white or green	Scarlet, orange, red or white	
Nectar Guides	Present	Absent	Absent	
Odor	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

Plant Trait	Butterflies	Flies	Moths	Wind
Color	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 colorless; petals absent or reduced
Nectar Guides	Present	Absent	Absent	Absent
Odor	Faint but fresh	Putrid	Strong sweet; emitted at night	None
Nectar	Ample; deeply hidden	Usually absent	Ample; deeply hidden	None
Pollen	Limited	Modest in amount	Limited	Abundant; small, smooth, and not sticky
Flower Shape	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 acres, 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 color, 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 pesticides are largely toxic to pollinators. Extreme caution is warranted if you choose to use any pesticide. Strategically apply pesticides only for problematic target species.



FARMS

Sunflower, alfalfa, soybeans, and melons are a few of the food crops in the Black Hills Coniferous Forest Province that will benefit from strong native bee populations that boost pollination efficiency. Incorporate different plants throughout the farm that provide food for native populations when targeted crops are not in flower.

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

- Minimize the use of pesticides to reduce the impact on native pollinators. Spray when bees aren't active (just before dawn) and choose targeted ingredients.
- 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.
- Be conscientious of the fact that different bees forage at different times of day. *Peponapis pruinosa*, the squash bee, is active from dawn until noon. In the case of squash production, the best time to spray is in the evening rather than the early morning.
- Carefully consider the use of herbicides. Some weeds can provide needed food for pollinators.
- Minimize tillage to protect ground nesting pollinators.
- Consider creating designated permanently untilled areas for ground nesting bees along internal farm laneways.
- Ensure water sources are scattered throughout the landscape.
- Choose a variety of native plants to act as windbreaks, riparian buffers, and field borders throughout the farm.
- Plant unused areas of the farm with temporary cover crops that can provide food or with a variety of trees, shrubs, and flowers that provide both food and shelter for pollinators.
- Check with your local Natural Resources Conservation Service (NRCS) office 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 Black Hills Coniferous Forest Province forest and grassland have been altered and converted to allow for roads, energy infrastructure, buildings, open lawn areas, 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, county extension agent, or native plant society. 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 neighbor'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 color 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 BLACK HILLS CONIFEROUS FOREST PROVINCE

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 Color	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
Trees and Shrubs								
<i>Acer negundo</i>	boxelder	35'	yellow, green, brown	Mar-Apr	sun	moist	bees	X
<i>Amelanchier alnifolia</i>	Saskatoon service-berry	4-15'	white	Apr-Jul	sun to partial sun	moist to dry	bees, butterflies, flies	X
<i>Amorpha canescens</i>	leadplant	1-4'	purple, blue	Jun-Aug	sun to partial sun	dry	bees, flies	X
<i>Artemisia tridentata</i> spp. <i>Wyomingensis</i>	Wyoming big sagebrush	1-4'	yellow	Aug-Sept	sun	dry	bees, moths	X
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	6"	pink, white	May-Jun	sun to shade	dry to moist	bees, hummingbirds	X
<i>Betula papyrifera</i>	paper birch	25-50'	yellow, green, brown	Apr	sun to shade	moist	butterflies, moths	X
<i>Cercocarpus montanus</i>	alderleaf mountain mahogany	6-10'	green	Jun-Jul	partial sun	dry, well drained	butterflies, moths	X
<i>Cornus sericea</i>	red-osier dogwood	6-10'	white	May-Aug	partial shade	moist	butterflies	X
<i>Ericameria nauseosa</i>	rubber rabbitbrush	1-8'	yellow	Aug-Oct	sun	dry	butterflies, bees	
<i>Fraxinus pennsylvanica</i>	green ash	36-72'	green, purple, blue	Apr-Jun	sun to shade	dry to wet	butterflies	X
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	15-35'	yellow	Apr-May	sun to partial sun	dry	butterflies	X
<i>Mahonia repens</i>	Oregon grape	1'	yellow	May-Jul	sun to shade	dry to moist	butterflies, bees	X
<i>Physocarpus monogynus</i>	mountain ninebark	5'	white	early summer	partial sun	moist	bees, beetles	X
<i>Picea glauca</i>	white spruce	50-70'	red, yellow	Apr-May	sun to shade	moist	butterflies, moths	X
<i>Populus deltoides</i> ssp. <i>monilifera</i>	plains cottonwood	130'	yellow	Apr-May	sun to shade	moist	butterflies	X
<i>Populus tremuloides</i>	quaking aspen	35-50'	yellow, green, brown	May	sun to shade	dry to wet	butterflies	X
<i>Prunus pensylvanica</i>	pin cherry	20'	white	May-Jun	sun	moist	bees	
<i>Prunus virginiana</i>	chokecherry	5-20'	white	May-Jun	sun to shade	dry to moist	bees, butterflies, moths	X
<i>Quercus macrocarpa</i>	bur oak	75'	yellow, green, brown	Apr-May	sun to shade	dry to wet	butterflies	X
<i>Rhus trilobata</i>	skunkbrush	2-8'	yellow, green	May	sun to partial sun	dry	bees	
<i>Ribes aureum</i>	golden currant	3-6'	yellow, red	May	sun to partial sun	dry to moist	hummingbirds, butterflies, bees	X
<i>Rosa acicularis</i>	prickly rose	3'	pink	May-Jul	sun to partial shade	dry to wet	bees	
<i>Rosa arkansana</i>	prairie rose	1-2'	pink	May-Jul	sun	dry to moist	bees, butterflies	
<i>Rosa blanda</i>	meadow rose	1-5'	white to cream, pink	May-Jul	sun to partial shade	dry	bees, butterflies	
<i>Rosa woodsii</i>	Wood's rose	4-5'	pink	May-Jul	sun to shade	dry to moist	hummingbirds, bees, beetles	X



Botanical Name	Common Name	Height	Flower Color	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Rubus idaeus</i> ssp. <i>Sachalinensis</i>	red raspberry	1-5'	white to cream	Jun-Jul	sun to partial shade	dry to moist	bees, butterflies	
<i>Rubus parviflorus</i>	thimbleberry	1-5'	white	May-Aug	sun to shade	dry to moist	native bees, honey bees, butterflies, moths	X
<i>Rubus pubescens</i>	dwarf red blackberry	5-18"	white to cream, pink	May-Jul	sun to shade	moist to wet	bees, butterflies	
<i>Salix amygdaloides</i>	peachleaf willow	10-40'	yellow	May	sun to partial shade	moist	butterflies	X
<i>Salix bebbiana</i>	beaked willow	3-14'	white to cream, green to brown	Apr-Jun	sun to partial shade	moist to wet	butterflies	X
<i>Sambucus racemosa</i>	red elderberry	6'	white	May-Jun	shaded	moist	bees, moths, beetles	X
<i>Spiraea betulifolia</i>	white spirea	2'	white	Jun-Aug	partial sun	moist	bees	
<i>Symphoricarpos occidentalis</i>	western snowberry	4'	white to pink	Jun-Aug	sun	dry, well drained	bees	
<i>Viburnum lentago</i>	nannyberry, sweet viburnum	15'	white/cream	May-Jul	sun to partial shade	dry to moist	bees, butterflies	X
<i>Yucca glauca</i>	plains yucca	4-5'	white	Jun-Jul	sun	dry, well drained	butterflies, moths	X
Forbs								
<i>Achillea millefolium</i>	western (common) yarrow	1-3'	white, pink	Jun-Aug	sun to partial sun	moist to dry	beetles, butterflies, flies	X
<i>Agastache foeniculum</i>	lavender hyssop	1-3'	blue, purple	Jul-Aug	sun to partial shade	moist	bees, butterflies, hummingbirds	
<i>Allium cernuum</i>	nodding onion	1-2'	white to cream, pink	Jul-Aug	sun	dry, normal, moist	bees, butterflies, hummingbirds	X
<i>Allium textile</i>	textile onion	4-10"	white	May-Jun	sun	dry	butterflies, hummingbirds	
<i>Anaphalis margaritacea</i>	western pearly everlasting	1-2'	white, yellow	Jul-Aug	sun to partial sun	moist	bees, butterflies	X
<i>Anemone multifida</i>	cut-leaved anemone	1-2'	blue, yellow, red, purple, white to cream, pink	Apr-Jul	sun to shade	normal to moist	bees, flies	
<i>Anemone patens</i>	pasque flower	6-12"	blue, purple, white to cream	Mar-Jun	sun to partial shade	dry to normal	bees	
<i>Antennaria parvifolia</i>	small-leaf pusseytoes	0-1'	white, red, pink, green, brown	May-Jun	sun to shade	dry	butterflies	X
<i>Aquilegia canadensis</i>	wild columbine	1-3'	yellow, red	May-Jul	sun to partial shade	moist	bees, butterflies, hummingbirds	X
<i>Argemone polyanthemus</i>	crested prickly poppy	1-3'	white	Jun-Aug	sun	dry to medium	bees, butterflies, beetles	
<i>Artemisia frigida</i>	prairie sagebrush	1-3'	yellow	Aug-Oct	sun	dry	bees	
<i>Artemisia ludoviciana</i>	white (prairie) sage	10-30"	yellow	Aug-Sept	sun	dry	bees	
<i>Asclepias incarnata</i>	swamp milkweed	2-5'	pink	Jun-Aug	sun to partial sun	moist to wet	hummingbirds, butterflies, native bees, bumble bees, honey bees	X

CONTINUED ON PAGE 18

PLANTS THAT ATTRACT POLLINATORS

IN THE BLACK HILLS CONIFEROUS FOREST PROVINCE

Botanical Name	Common Name	Height	Flower Color	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Asclepias ovalifolia</i>	oval leaf milkweed	1-2'	white to cream	May-Jul	sun to partial shade	dry to moist	butterflies	X
<i>Asclepias pumila</i>	plains milkweed	6-12"	white, green	Jun-Jul	sun to partial sun	dry to moist	monarch butterfly, other butterflies	X
<i>Asclepias speciosa</i>	showy milkweed	1.5-3'	pink, purple, white	Jun-Jul	sun	normal to moist	hummingbirds, butterflies, native bees, bumble bees, honey bees	X
<i>Asclepias viridiflora</i>	green milkweed	12-32"	green	Jun-Aug	sun	dry	monarchs, bumble bees, native bees, honey bees, butterflies	X
<i>Astragalus agrestis</i>	purple milkvetch	1'	purple, white	May-Jul	sun	dry	bees, butterflies	
<i>Astragalus crassicaupus</i>	ground plum	6-18"	white, pink, purple	Apr-Jun	sun to partial shade	dry to moist	bees, butterflies	X
<i>Astragalus missouriensis</i>	Missouri milkvetch	6-8"	pinkish-purple	Apr-Jun	sun	sandy, silty	bees, bumblebees	
<i>Calochortus gunnisonii</i>	Gunnison's mariposa lily	2'	white	mid summer	sun	dry to moist	bees, moths	X
<i>Campanula rotundifolia</i>	bluebell bellflower	1-2'	purple, blue	Jun-Sept	sun to shade	dry to moist	bees, hummingbirds	X
<i>Cerastium arvense</i>	field chickweed	1'	white to cream	May-Jun	sun	dry to moist	bees, flies	
<i>Cirsium drummondii</i>	dwarf thistle	3'	purple, pink	Jun-Aug	sun to partial shade	dry to moist	bees	
<i>Cirsium flodmanii</i>	Flodman's thistle	3'	purple	Jul-Aug	sun	normal to moist	bees	
<i>Cirsium undulatum</i>	wavy-leaf thistle	1-4'	pink	May-Jul	sun	dry	bees	
<i>Comandra umbellata</i> ssp. <i>pallida</i>	bastard toadflax	1'	white to cream	Apr-Jun	sun	dry	butterflies	X
<i>Cornus canadensis</i>	bunchberry	1'	white	Jun-Aug	sun to shade	normal to moist	bees, flies	
<i>Dalea candida</i>	slender white prairie clover	18-24"	white	Jun-Aug	sun	dry to normal	native bees, bumble bees, honey bees, butterflies	X
<i>Dalea purpurea</i>	purple prairie clover	6-24"	purple, pink	Jun-Aug	sun	dry	native bees, bumble bees, honey bees, butterflies	
<i>Dasiphora fruticosa</i>	shrubby cinquefoil	1-3'	yellow, white to cream	Jun-Sept	sun	dry to wet	bees, butterflies	X
<i>Delphinium bicolor</i>	little larkspur	1-2'	blue to purple	Apr-Jul	sun	dry	bees	
<i>Delphinium nuttallianum</i>	twolobe larkspur	2'	blue/purple	early summer	sun	dry	bees, hummingbirds	X
<i>Echinacea angustifolia</i>	purple coneflower	8-24"	pink, purple	Jun-Jul	sun to partial sun	dry to normal	bees, flies, butterflies	
<i>Erigeron glabellus</i>	smooth fleabane	12-18"	blue, purple, pink	Jul-Aug	sun to partial shade	dry to normal	bees, butterflies	
<i>Erigeron speciosus</i>	aspen fleabane	2.5'	blue/yellow	Jun-Aug	sun	dry to moist	bees, butterflies	X
<i>Erigeron strigosus</i>	prairie fleabane	1-2.5'	white to pink	Jun-Aug	sun	well drained	bees, butterflies	
<i>Eurybia conspicua</i>	showy aster	1-2'	yellow, blue, purple	Aug-Sept	sun to partial shade	dry to moist	bees, butterflies	



Botanical Name	Common Name	Height	Flower Color	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Euthamia graminifolia</i>	flat-top goldentop	1-3'	yellow	Jul-Sept	sun	moist	bees, butterflies	
<i>Eutrochium maculatum</i>	Joe-pyeweed	1-5'	purple, pink	Jul-Sept	sun to partial shade	normal to wet	bees, butterflies, hummingbirds	
<i>Fragaria virginiana</i>	Virginia strawberry	2-10"	white	May-Jun	sun to partial shade	dry to moist	bees, butterflies	X
<i>Gaillardia aristata</i>	blanket flower	1-2'	yellow, red	Jun-Aug	sun	dry to normal	butterflies, moths, bees	X
<i>Galium boreale</i>	northern bedstraw	6-24"	white to cream	Jun-Aug	sun to partial shade	normal to moist	flies, beetles	
<i>Geranium richardsonii</i>	Richardson's geranium	8-24"	white, pink	Jun-Jul	partial sun	moist	bees, beetles	X
<i>Geum triflorum</i>	prairie smoke	0-1'	red, pink, purple	May-Jul	sun to partial shade	dry	butterflies	
<i>Glycyrrhiza lepidota</i>	wild licorice	1-3'	white	Jul-Aug	sun to shade	moist	butterflies, bees	X
<i>Hedysarum alpinum</i>	alpine sweetvetch	1-2.5'	pink, purple	Jun-Aug	sun to partial shade	moist	bees, butterflies	X
<i>Helianthus annuus</i>	common sunflower	1-6'	yellow	Jul-Oct	sun	dry	butterflies	X
<i>Helianthus maximiliani</i>	Maximilian sunflower	4-6'	yellow	Aug-Oct	sun	moist	native bees, honey bees, butterflies	
<i>Helianthus pauciflorus</i>	stiff sunflower	1-3'	yellow	Jul-Aug	sun	dry	bees, flies	
<i>Heterotheca villosa</i>	hairy golden aster	6-18"	yellow	Jun-Oct	sun	dry	flies, butterflies, wasps, bumble bees, native bees, honeybees	X
<i>Heuchera richardsonii</i>	alumroot	1-2.5'	purple, white to cream, green to brown	Jun-Jul	sun to partial shade	dry to moist	bees, flies, hummingbirds, butterflies	
<i>Iris missouriensis</i>	Rocky Mountain iris	1-2'	purple	May-Jun	sun	moist to wet	hummingbirds	
<i>Liatis ligulistylis</i>	meadow blazingstar	1-2.5'	purple, pink	Jul-Aug	sun	moist	butterflies, hummingbirds	
<i>Liatis punctata</i>	dotted blazingstar	1-2'	purple, pink	Jul-Sept	sun	dry to normal	bees, bumblebees, flies, butterflies	X
<i>Lilium philadelphicum</i>	wood lily	1-2'	red, orange	Jun-Jul	sun to partial shade	dry to normal	hummingbirds	
<i>Linum lewisii</i>	prairie flax	16-20"	purple, blue	Jun-Jul	sun	dry to normal	bees, flies, butterflies	X
<i>Lobelia spicata</i>	palespike lobelia	1-3'	blue, purple, white to cream	Jun-Aug	sun to partial shade	dry to normal	hummingbirds	
<i>Lupinus argenteus</i>	silvery lupine	1-2'	blue/white	Jun-Jul	sun	dry to normal	bees	X
<i>Mertensia lanceolata</i>	prairie bluebells	6-18"	blue	May-Jun	sun to partial shade	normal to moist	bees	X
<i>Monarda fistulosa</i>	wild bergamot	12-36"	pink, purple, white	Jul-Aug	sun to partial sun	normal to moist	hummingbirds, butterflies, bumble bees, and native bees	
<i>Oenothera caespitosa</i>	tufted evening-primrose	4-12"	white	May-Aug	sun	dry	butterflies, moths, bees	

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PLANTS THAT ATTRACT POLLINATORS

IN THE BLACK HILLS CONIFEROUS FOREST PROVINCE

Botanical Name	Common Name	Height	Flower Color	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Oxytropis lambertii</i>	purple locoweed	6-15"	purple	May-Jul	sun	dry	bees	X
<i>Pedimelum argophyllum</i>	silver scurfpea	10-18"	blue, purple	Jun-Aug	sun	normal to moist	bees, butterflies	
<i>Penstemon albidus</i>	white beardtongue	6-15"	white	May-Jun	sun	dry, well-drained	bees	
<i>Penstemon angustifolius</i>	broadbeard beardtongue	6-15"	blue	May-Jun	sun	dry	bees	
<i>Penstemon grandiflorus</i>	large penstemon	1-2.5'	pink	May-Jul	sun	dry to normal	native bees, bumble bees	
<i>Penstemon gracilis</i>	lilac-flowered beardtongue	6-18"	pink, purple	May-Jul	partial shade	moist	bees	
<i>Phlox hoodii</i>	spiny phlox	2-6"	white, pink, blue	Apr-Jun	sun	dry	bees, flies, butterflies	
<i>Polygala senega</i>	seneca snakeroot	6-12"	white to cream	May-Jul	sun to partial shade	dry to moist	moths	X
<i>Potentilla arguta</i>	white cinquefoil	1-2.5'	white to cream	Jun-Aug	sun	dry to normal	bees, flies	
<i>Psoraleidum tenuiflorum</i>	slimflower scurfpea	1-2'	purple	Jun-Aug	sun	dry to normal	bees, moths	
<i>Ratibida columnifera</i>	prairie coneflower	18-24"	orange, yellow	Jun-Sept	sun	dry to moist	bees, butterflies	
<i>Rudbeckia hirta</i>	black-eyed Susan	1-2.5'	yellow	Jun-Aug	sun	moist	bees, butterflies	X
<i>Rudbeckia laciniata</i>	cutleaf coneflower	3-7'	yellow	Jul-Sept	sun to partial shade	moist	bees, flies, butterflies, wasps	
<i>Sisyrinchium montanum</i>	blue-eyed grass	6-12"	blue, purple	May-Jun	sun to shade	dry to wet	bees, flies, butterflies	
<i>Solidago missouriensis</i>	prairie goldenrod	6-24"	yellow	Jul-Aug	sun	dry	honey bees, bumble bees, flies, butterflies	
<i>Solidago mollis</i>	velvety goldenrod	6-18"	yellow	Aug-Oct	sun	dry to normal	honey bees, native bees, butterflies	
<i>Solidago nemoralis</i>	grey goldenrod	6-18"	yellow	Aug-Oct	sun to partial shade	dry	bees, butterflies	
<i>Solidago ptarmicoides</i>	prairie goldenrod	4-24"	white	Jul-Sept	sun	dry to normal	butterflies	
<i>Solidago rigida</i>	stiff goldenrod	1-3'	yellow	Jul-Sept	sun	normal	butterflies	
<i>Sphaeralcea coccinea</i>	scarlet globemallow	6-12"	red/orange	spring	sun	dry	bees	
<i>Symphyotrichum ciliolatum</i>	Lindley's aster	1-2.5'	blue, purple	Jul-Sept	sun to partial shade	moist	butterflies	X
<i>Symphyotrichum ericoides</i>	heath aster	12-20"	white to cream	Aug-Oct	sun	dry to moist	bees, butterflies	X
<i>Symphyotrichum falcatum</i>	creeping white prairie aster	10-24"	white to cream	Aug-Sept	sun	dry to moist	bees, butterflies	
<i>Symphyotrichum laeve</i>	smooth blue aster	1-3'	purple, blue	Aug-Oct	sun to partial sun	dry to moist	bees, butterflies	X
<i>Tradescantia occidentalis</i>	prairie spiderwort	0-1'	purple	May-Jul	sun to partial sun	dry	bees	



Botanical Name	Common Name	Height	Flower Color	Flower Season	Sun	Soil Moisture	Pollinators	Also a host
<i>Verbena hastata</i>	blue vervain	1-3'	blue, purple	Jun-Sept	sun to partial shade	moist to wet	bees, butterflies	X
<i>Verbena stricta</i>	hoary verbena	1-3'	purple	Jun-Sept	sun	dry	butterflies, bees	X
<i>Vicia americana</i>	American vetch	1-2'	purple	May-Jul	sun to partial sun	dry to moist	bees, butterflies	X
<i>Viola adunca</i>	hookespur violet	2-6'	blue, purple	May-Jun	partial shade to shade	dry to moist	bees	
<i>Viola canadensis</i>	Canada violet	4-15"	white	Apr-Jun	shade	moist	bees	
<i>Viola nuttallii</i>	Nuttall's violet	4-6"	yellow	Apr-May	sun	dry to medium	butterflies, moths	X
<i>Viola pedatifida</i>	prairie violet	4-8"	purple	May-Jun	sun to partial sun	dry to moist	butterflies	X
<i>Viola pubescens</i>	downy yellow violet	4-12"	yellow	May-Jun	partial shade	moist	bees, butterflies	X
<i>Zizia aptera</i>	heart leaved Alexander	12-30"	yellow	May-Jul	sun to partial shade	moist	bees	
Vines								
<i>Lonicera dioica</i>	limber honeysuckle	3-9'	yellow, orange	May-Jun	partial shade to shade	moist	bees, hummingbirds	
<i>Clematis ligusticifolia</i>	western virgin's bower	32'	white to cream	Jul-Aug	sun to partial shade	dry to moist	bees, hummingbirds	
<i>Vitis riparia</i>	river grape	82'	yellow - green	May-Jun	sun to partial shade	moist	moths	
Shelter Plants								
<i>Andropogon gerardii</i>	big bluestem	4-8'	blue, red, green, brown	Jul-Aug	sun to partial shade	dry to moist	butterflies, bees	X
<i>Bouteloua curtipendula</i>	sideoats grama	1-2'	yellow, orange, red	Jun-Sept	sun to partial shade	dry to moist	butterflies, bees	X
<i>Bouteloua gracilis</i>	blue grama	1-2'	yellow	Jun-Aug	sun	dry to normal	butterflies	X
<i>Danthonia spicata</i>	poverty oatgrass	1-2'	green	Jun-Aug	sun to shade	dry	butterflies	X
<i>Elymus canadensis</i>	Canada wildrye	1.5-4'	yellow, green, brown	May-Jul	sun	dry to moist	skippers	X
<i>Koeleria macrantha</i>	June grass	8-18"	yellow	Jun-Jul	sun to partial shade	dry to normal, well-drained	bees	
<i>Schizachyrium scoparium</i>	little bluestem	2-3'	yellow, white, green, brown	Jul-Sept	sun to partial shade	dry	butterflies, bees	X
<i>Pascopyrum smithii</i>	western wheatgrass	1-3'	yellow, green	Jun-Jul	sun to shade	dry to normal	bees	
<i>Hesperostipa comata</i>	needle and thread	1-3'	green	Jun-Jul	sun to shade	dry to normal	bees	
<i>Nassella viridula</i>	green needlegrass	1-3'	green	Jun-Jul	sun to shade	dry to normal	bees	

HABITAT HINTS

FOR THE BLACK HILLS CONIFEROUS FOREST PROVINCE

BEE-POLLINATED GARDEN FLOWERS AND CROPS

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



HABITAT AND NESTING REQUIREMENTS:

Honey Bees:

Honey bees are colonial cavity nesters. Occasionally in the spring and summer you might encounter a swarm of honey bees on the move to a new home. The majority of honey bees are managed by beekeepers in hives. Beekeepers with commercial operations can have bee yards with tens to hundreds of hives commonly in agricultural, rural and some natural habitats. In urban and garden settings it is common to see a single or a handful of honey bee hives – usually wooden boxes painted white or other light colors. 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.

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

USDA Forest Service

<https://www.fs.fed.us/land/ecosysmgmt/colorimagemap/images/m334.html>

Forest* A *Syst

<https://www.forestasyst.org/ecoregions/m334.cfm>

U.S. Fish and Wildlife Service - Endangered Species

<https://www.fws.gov/endangered/>

POLLINATION/POLLINATORS

Pollinator Partnership

www.pollinator.org

North American Pollinator Protection Campaign

www.nappc.org

Natural Resources Conservation Service

<https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/>

USDA Forest Service

<https://www.fs.fed.us/wildflowers/pollinators/>

Wild Farm Alliance

<https://www.wildfarmalliance.org/>

North American Butterfly Association

www.naba.org

Xerces Society Pollinator Program

<http://www.xerces.org/>

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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

Plant Conservation Alliance

<https://www.blm.gov/programs/natural-resources/native-plantcommunities/national-seed-strategy/pca>

Seeds of Success

<https://www.blm.gov/programs/natural-resources/native-plantcommunities/native-plant-and-seedmaterial-development/collection>

South Dakota State University Agricultural Experiment Station

https://openprairie.sdstate.edu/cgi/viewcontent.cgi?article=1568&context=agexperimentsta_bulletins

Lady Bird Johnson Wildflower Center

<https://www.wildflower.org/>

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!**

NOTES



NOTES





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