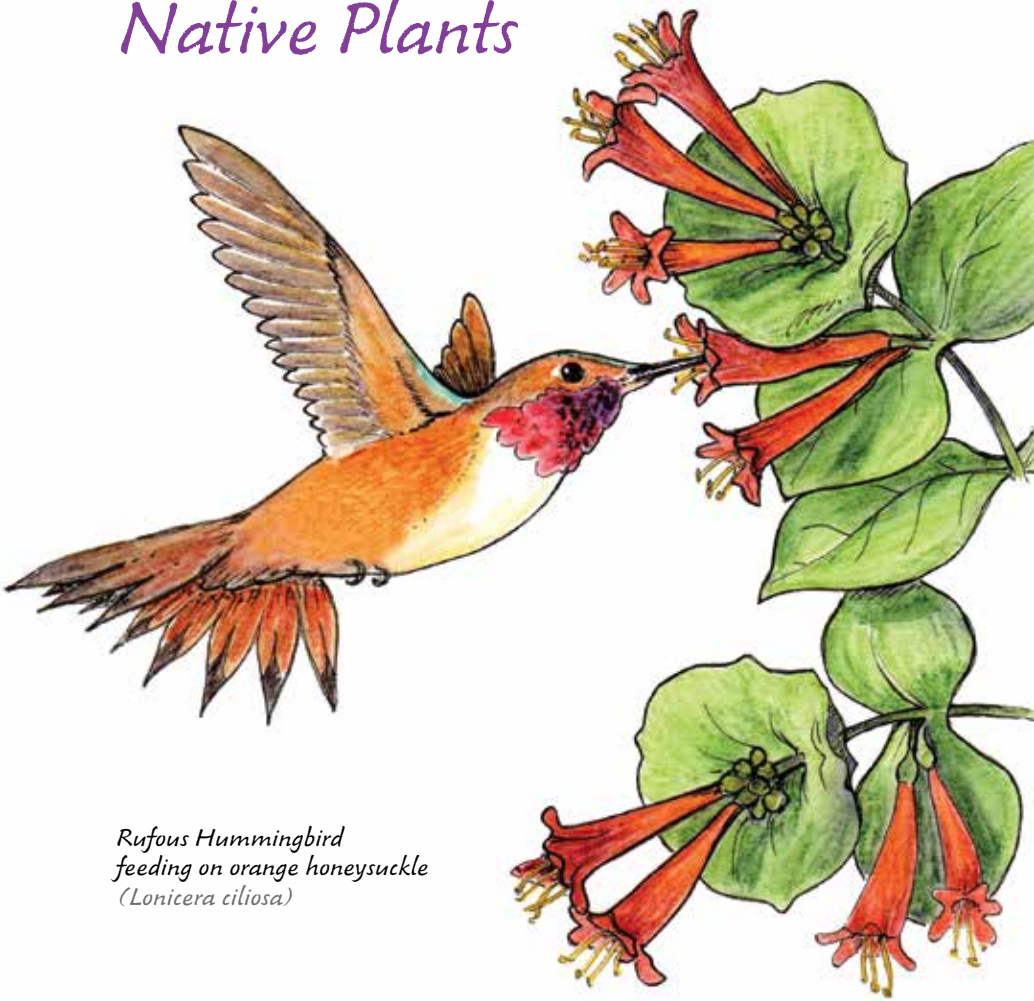
Attracting Pollinators to Your Garden Using Native Plants



Rufous Hummingbird feeding on orange honeysuckle (Lonicera ciliosa)

Native Plant and Pollinator Gardening Guide

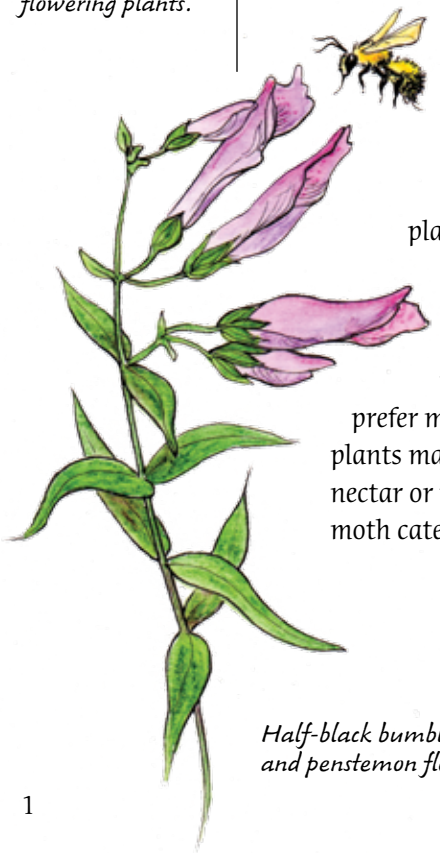
Many of us enjoy the beauty of flowers in our backyard and community gardens. Growing native plants adds beauty and important habitats for wildlife, especially for pollinators. Even a small backyard garden can make a big difference. Gardening connects us to nature and helps us better understand how nature works. This guide will help you create a pollinator-friendly garden.

What do hummingbirds, butterflies and bees have in common?

They all pollinate flowering plants.

What is pollination?

Pollination is the process of moving pollen from one flower to another of the same species, which produces fertile seeds. Almost all flowering plants need to be pollinated. Some plants are pollinated by wind or water, and some are even self-pollinating. However, most flowering plants depend on bees, butterflies, and other animals for pollination.



Half-black bumble bee and penstemon flower

Why use native plants in your garden?

Pollinators have evolved with native plants, which are best adapted to the local growing season, climate, and soils. Most pollinators feed on specific plant species – hummingbirds sip nectar from long, tubular flowers, while green sweat bees prefer more open-faced flowers. Non-native plants may not provide pollinators with enough nectar or pollen, or may be inedible to butterfly or moth caterpillars.

Why Should We Care?

Keystone Species

When a bumble bee feeds on the nectar and pollen of huckleberry flowers, it pollinates the flowers, which will produce fruit eaten by songbirds, grizzly bears, and dozens of other animals, including humans. We call the bumble bee and other pollinators *keystone species* because they are species upon which others depend.

Pollinators are vital to maintaining healthy ecosystems. They are essential for plant reproduction, and produce genetic diversity in the plants they pollinate. The more diverse plants are, the better they can adapt to changes in the environment.

Best of all, pollinators such as hummingbirds, bees, and butterflies are beautiful and fascinating.

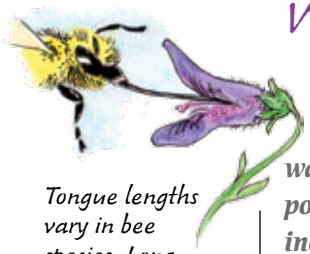
Insects and other animals pollinate one-third of the food we eat – all kinds of fruits, vegetables, grains, nuts, and beans. Even coffee and chocolate! The economic value of insect pollination worldwide has been estimated at $217 billion.

Pollinators need our help.

Biologists fear several butterfly and bumble bee species have disappeared from parts of their range, including the once common western bumble bee. Why are pollinators in trouble? It appears that habitat loss, introduced diseases, pollution and pesticide poisoning account for much of the population declines. We can do our part to support pollinators by creating pollinator-friendly gardens and protecting wildlife habitat.

Western bumble bee on Maximilian sunflower (Helianthus maximiliani)

Who Are Our Pollinators?



Tongue lengths vary in bee species. Long tongues fit long, tubular flowers like penstemons and short tongues fit short-tubed flowers like sunflowers.

Bees, butterflies, moths, hummingbirds, beetles, wasps and even flies pollinate flowers, but bee species pollinate flowers more often than any other group, including birds and butterflies.

Busy as a Bee

Bees are by far the most effective pollinators because they feed only on flowers. Flowers attract and reward bees for their pollination service. Bees gather two kinds of foods from flowers: sugar-rich nectar to fuel their flight and protein-rich pollen, or *bee bread*, to feed their young brood. Bees use their tongues to lap or lick up nectar from flowers.

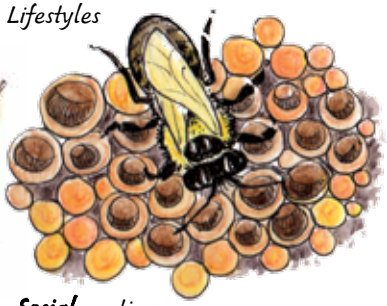
Bees are a diverse group of insects that include four thousand species native to North America. They can be organized into two groups based on their nesting lifestyle: solitary or social. About three-quarters of native bees in North America are solitary nest builders.

The European honeybee (Apis mellifera) is a social bee.

Tomatoes, peppers, and cranberries require a special bee behavior called "buzz pollination", in which the bumble bee grabs the flower in her jaws and vibrates her wings to dislodge pollen trapped in the flower's anthers.

Nesting Lifestyles

***Solitary** leaf-cutter bee (Megachile) nest*



***Social** nesting bumble bee (Bombus)*

GARDENING *Bees prefer blue, purple, white, orange and yellow flowers, and sweet fragrances. They see ultraviolet colors – found on the flowers of buttercup and black-eyed Susan.*

Social Bees

Bumble Bee *(Bombus)*

There are forty-seven species of bumble bees in North America. Bumble bees are the B-1 bombers of bees. Because of their chunky size, they can fly in cooler temperatures and at lower light levels than many other bees including the honeybee. Thus, queen bumble bees are the earliest to emerge in spring in search of the first flowers of the season.

Lifestyle: An individual queen starts a colony in the spring after she wakes from hibernation. She produces wax from glands in her body to make pot-like cells in which to lay her eggs and to store nectar and pollen for her brood. The young emerge in a few weeks as female worker bees. As fall arrives, most bees die and only newly mated queens overwinter to establish new colonies.

Bumble bees groom pollen from their body hairs into "pollen baskets," or corbicula, for transport to the nest.

GARDENING *Golden currant, serviceberry, and chokecherry flower early in spring and attract bumble bees and mason bees.*

Half-black bumble bee (Bombus vagans) on Rocky Mountain bee plant (Cleome serrulata)

Solitary Bees

Green sweat bee (Agapostemon)

Leaf-cutter bee (Megachile)

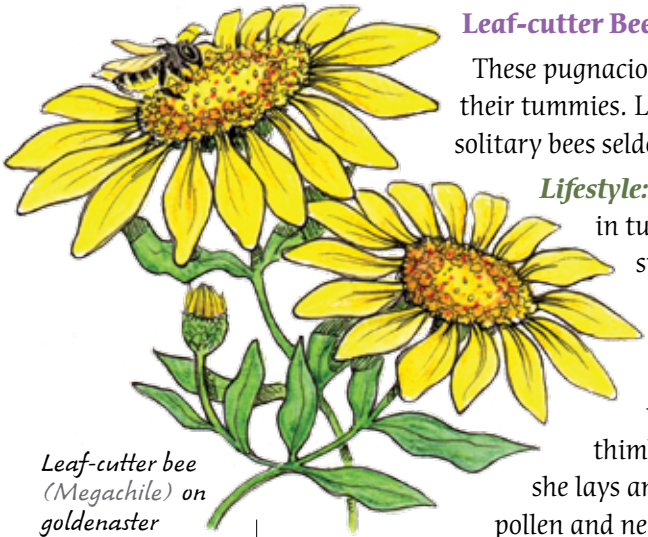
A female leaf-cutter bee will cut circular leaf pieces to line her nesting chambers.

Green Sweat Bee *(Agapostemon)*

These small, brilliantly colored, metallic green bees are hard to miss in a garden. They're commonly called sweat bees because they occasionally land on people to lick up salty human sweat.

Green sweat bee (Agapostemon) on blanketflower (Gaillardia aristata)

Lifestyle: Some sweat bees nest socially, but most are solitary ground-nesters. Much of what we know about the evolution of social behavior among insects has been learned from sweat bees because they show different degrees of sociality. In some species, females build and nest alone; in others, females nest communally and share a common nest entrance but construct individual nest cells (like apartment buildings.)



Leaf-cutter bee (Megachile) on goldenaster (Heterotheca villosa)

Leaf-cutter Bee *(Megachile)*

These pugnacious bees carry pollen on their tummies. Leaf-cutter bees and other solitary bees seldom sting.

Lifestyle: They construct their nests in tunnels in the ground, under stones, or in existing holes in dead wood. A female bee cuts circular leaf pieces to line her nest chambers, which are shaped like thimbles end to end. In each, she lays an egg and provisions it with pollen and nectar for her eggs.

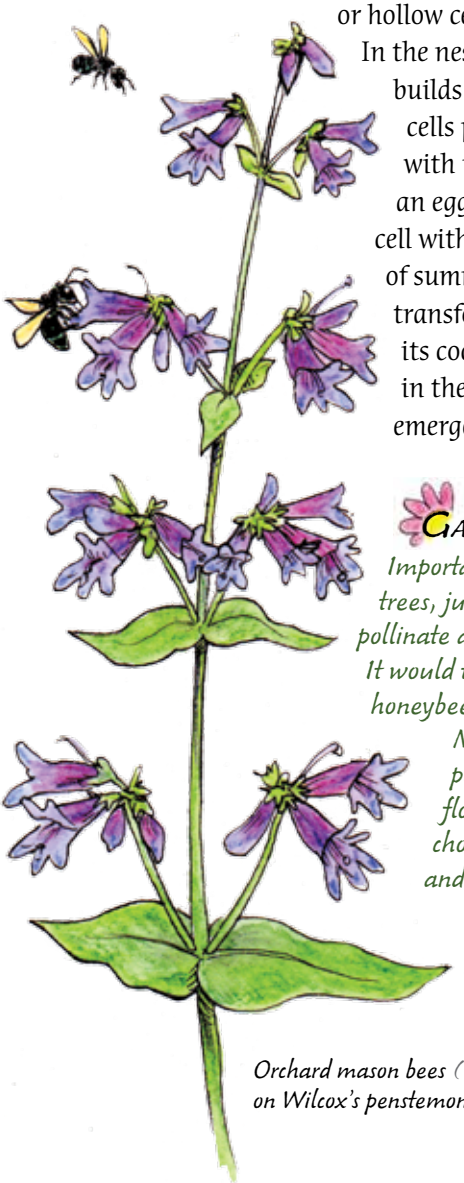
GARDENING *Green sweat bees and leaf-cutter bees like composites – blanketflower, sunflower, and aster.*

Solitary Bees

Orchard Mason Bee *(Osmia lignaria)*

These robust, metallic blue bees most commonly appear early in spring when trees and shrubs flower. Females carry pollen on the undersides of their abdomens.

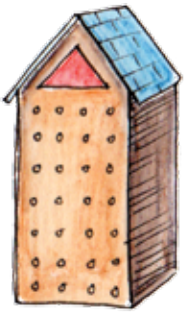
Lifestyle: Orchard Mason bees build nest cells in pre-existing narrow tunnels such as beetle burrows in trees or hollow centers of plant stems. In the nest tunnel, the female builds a series of horizontal cells provisioning each with pollen, nectar, and an egg and then seals the cell with mud. By the end of summer, the bee will transform into an adult in its cocoon and overwinter in the chamber until it emerges in spring.



Orchard mason bees (Osmia lignaria) on Wilcox's penstemon (Penstemon wilcoxii)

Gardening

Important pollinators of fruit trees, just 250 mason bees can pollinate an acre of apple trees. It would take 10,000-250,000 honeybees to do the same work. Mason bees like penstemon, and native flowering trees such as chokecherry, hawthorn, and serviceberry.



Mason bee houses provide nest sites for these important pollinators.

Orchard mason bee (Osmia lignaria)

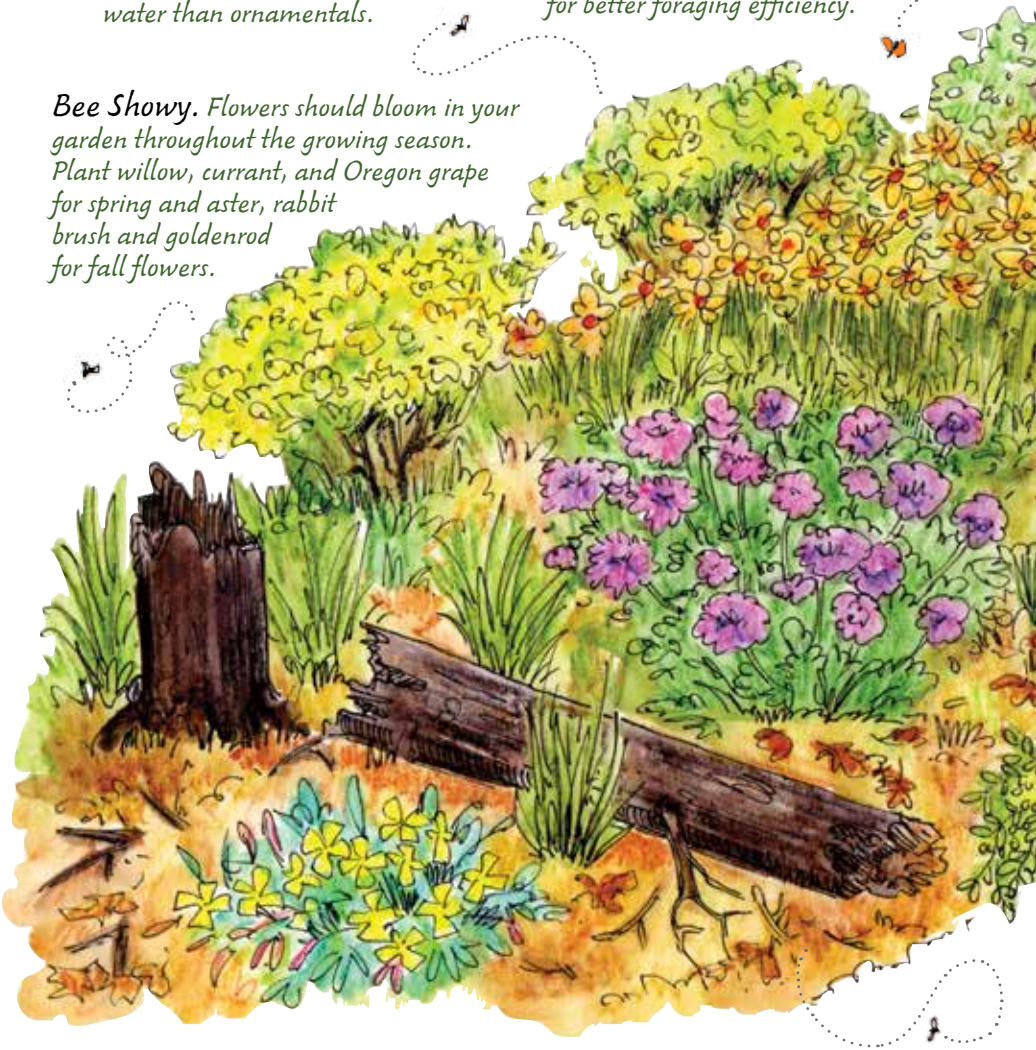
If you see a bee carrying pollen on its belly or hind legs, it's a female bee.

Planning your garden – think like a pollinator.

Go Native. *Pollinators are "best" adapted to local, native plants, which often need less water than ornamentals.*

Bee Bountiful. *Plant big patches of each plant species for better foraging efficiency.*

Bee Showy. *Flowers should bloom in your garden throughout the growing season. Plant willow, currant, and Oregon grape for spring and aster, rabbit brush and goldenrod for fall flowers.*

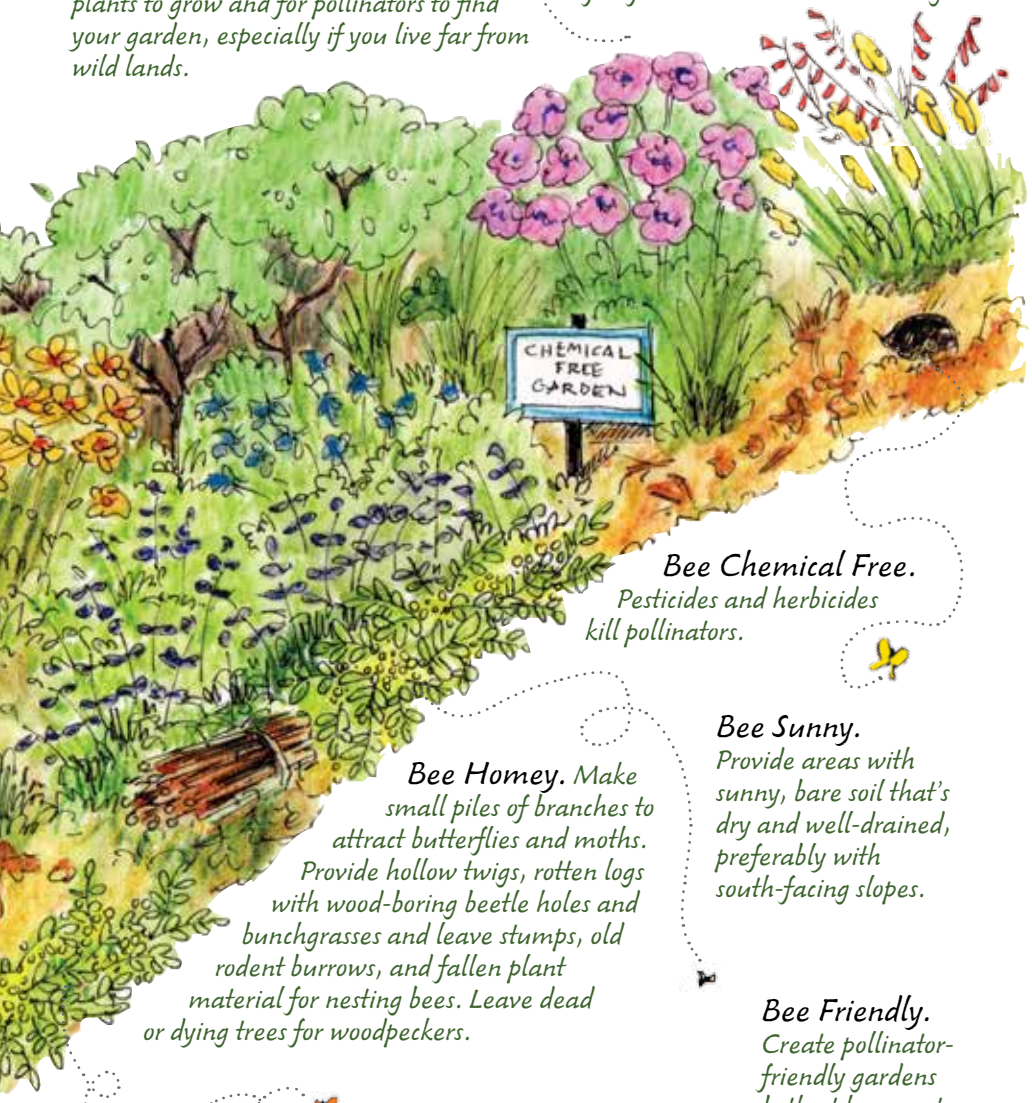


Think safe harbor. *Domestic cats can kill hummingbirds. Please keep them indoors.*

Bee Diverse. *Plant a diversity of flowering species with abundant pollen and nectar and specific plants for feeding butterfly and moth caterpillars.*

Bee Patient. *It takes time for native plants to grow and for pollinators to find your garden, especially if you live far from wild lands.*

Bee Gentle. *Most bees will avoid stinging and use that behavior only in self-defense. Male bees do not sting.*



Bee Chemical Free. *Pesticides and herbicides kill pollinators.*

Bee Sunny. *Provide areas with sunny, bare soil that's dry and well-drained, preferably with south-facing slopes.*

Bee Homey. *Make small piles of branches to attract butterflies and moths. Provide hollow twigs, rotten logs with wood-boring beetle holes and bunchgrasses and leave stumps, old rodent burrows, and fallen plant material for nesting bees. Leave dead or dying trees for woodpeckers.*

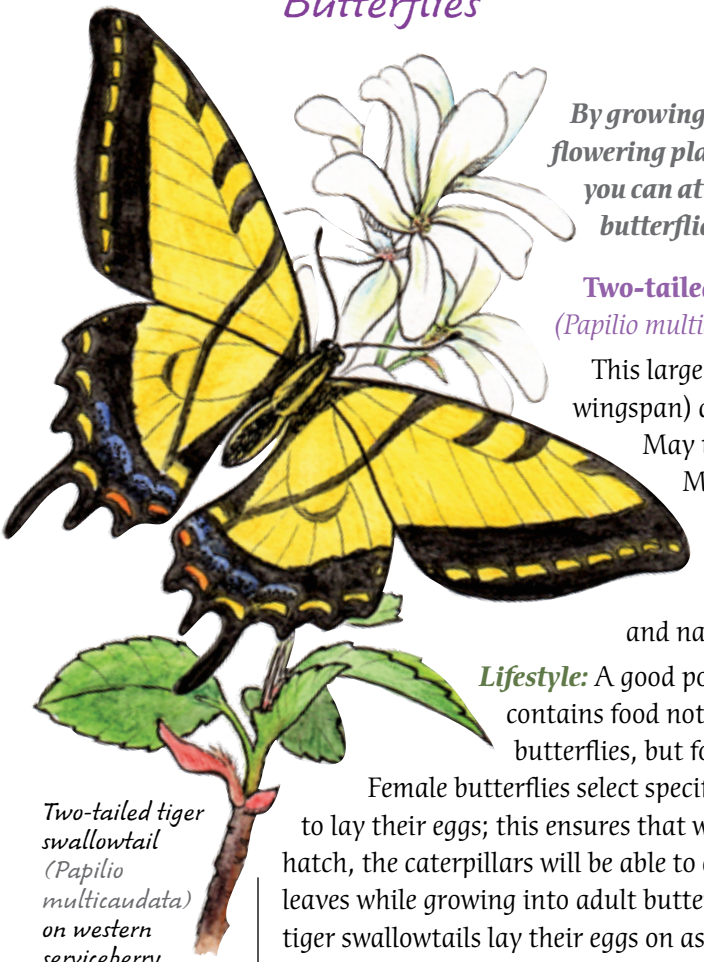
Bee Friendly. *Create pollinator-friendly gardens both at home, at schools and in public parks. Help people learn more about pollinators and native plants.*

Bee Aware. *Observe pollinators when you walk outside in nature. Notice which flowers attract bumble bees or solitary bees, and which attract butterflies.*

Bee a little messy. *Most of our native bee species (70%) nest underground so avoid using weed cloth or heavy mulch.*

Butterflies

By growing a bounty of native flowering plants in your garden, you can attract a variety of butterflies.



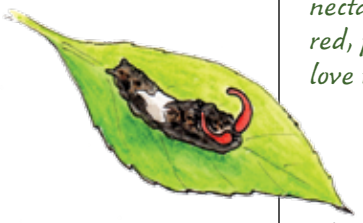
Two-tailed tiger swallowtail (Papilio multicaudata) on western serviceberry (Amelanchier alnifolia), one of its larval plants.

Two-tailed Tiger Swallowtail
(Papilio multicaudata)

This large butterfly (up to 6" wingspan) can be found from May through August. Males can often be seen patrolling for females along streams, canyons and narrow roadways.

Lifestyle: A good pollinator garden contains food not just for adult butterflies, but for their caterpillars. Female butterflies select specific plants on which to lay their eggs; this ensures that when their eggs hatch, the caterpillars will be able to eat the plant's leaves while growing into adult butterflies. Two-tailed tiger swallowtails lay their eggs on ash, chokecherry and other leaves.

GARDENING *Butterflies favor platform-shaped sunflower and aster, but will feed on a diversity of nectar-rich flowers from violet to serviceberry. They prefer red, purple, or yellow flowers with sweet scents. Butterflies love warm, sunny, and windless weather.*



When disturbed, a swallowtail caterpillar rears up and extends two red horns (osmeteria) from its head to frighten off potential predators.

Butterflies

Silvery Blue Butterfly *(Glaucopsyche lygdamus)*

Adult silvery blue butterflies appear from the end of April to September. Male butterflies can often be seen *puddling*, which is sipping up soil salts and minerals in mud puddles.

Lifestyle: Female blue butterflies lay eggs only on lupine and once they hatch, the caterpillars eat the leaves, flowers, and seedpods. They produce a sugary secretion, or *honeydew*, which is eaten by ants.

Ants tend and protect silvery blue caterpillars, which reward them with honeydew.

Silvery blue butterflies (Glaucopsyche lygdamus) and larva feeding on silvery lupine (Lupinus argenteus)

GARDENING

Silvery blue butterflies feed on nectar from red-osier dogwood, chokecherry and other flowers. The larvae feed on lupine.

Moths

Can you tell a butterfly from a moth?

Butterflies are brightly colored and moths are more often colored in muted grays and browns.

A butterfly antenna (top) is a single filament with a club at the tip, while a moth antenna (bottom) can be broad and feathery or tapered to a point.

These night-flying pollinators often evade detection, but there's one that flies by day to sip nectar from flowers – the sphinx moth.

White-lined Sphinx Moth *(Hyles lineata)*

Although many moth species pollinate flowers, the sphinx or hawk moth is probably the one most familiar because it's active by day.

Lifestyle: They're great flyers and some have tongues longer than their bodies. These large moths fly upwind, tracking the airborne fragrance trail to a cluster of flowers. Their caterpillars, called tobacco and tomato hornworms, are well known to gardeners.

White-lined sphinx moth (Hyles lineata) feeding on yellow evening primrose (Oenothera flava)

GARDENING

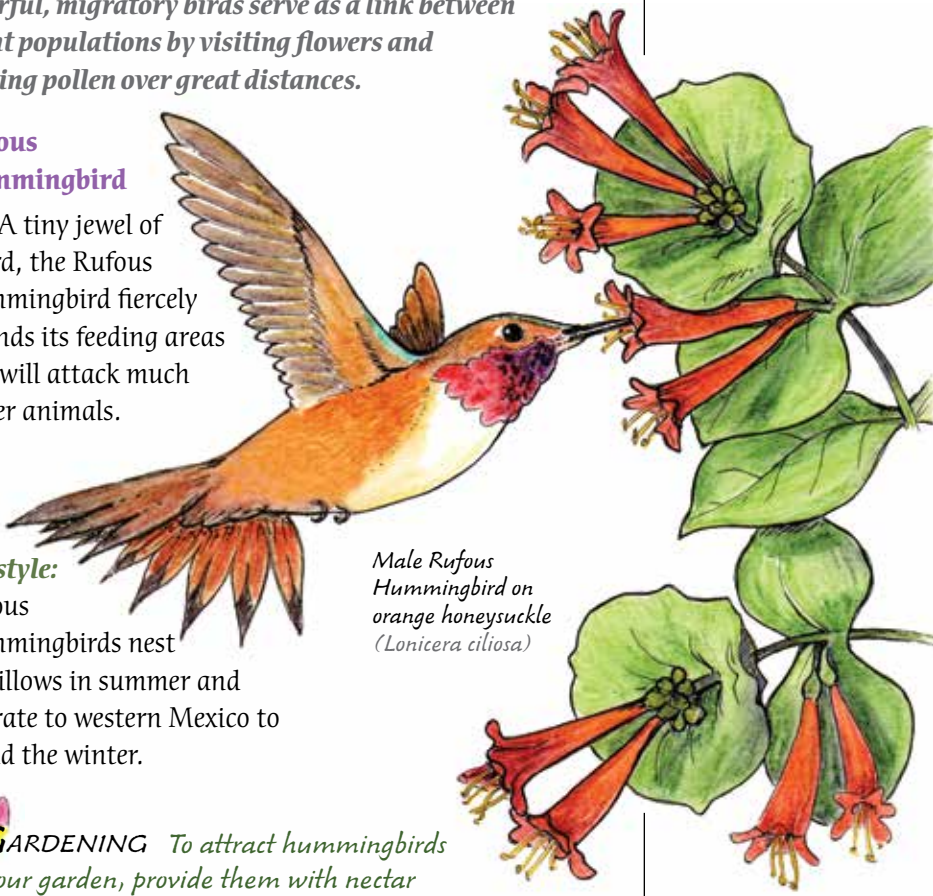
Sphinx moths, also called "hummingbird" moths, prefer pale or white flowers that open in the evening and that have a strong, sweet smell. They pick up pollen on their legs and wings. Adults nectar on columbine and honeysuckle. Caterpillars feed on evening primrose.

Hummingbirds

Because hummingbirds specialize on nectar feeding, they play an important role in pollination. These colorful, migratory birds serve as a link between plant populations by visiting flowers and moving pollen over great distances.

Rufous Hummingbird

A tiny jewel of a bird, the Rufous Hummingbird fiercely defends its feeding areas and will attack much larger animals.



Male Rufous Hummingbird on orange honeysuckle (*Lonicera ciliosa*)

Lifestyle: Rufous Hummingbirds nest in willows in summer and migrate to western Mexico to spend the winter.

GARDENING *To attract hummingbirds to your garden, provide them with nectar starting in early spring. It's thought that hummingbirds prefer red-colored flowers; however, they will feed on any flower that produces abundant nectar.*

Sap wells created by Red-naped Sapsuckers supply many animals with a quick energy boost. Hummingbirds need lots of insects (protein) in their diet, and will nab insects stuck in sap wells.

Rufous, Calliope, and Black-chinned hummingbirds breed in Montana.

Beetles, Flies and Wasps

Flower beetle
(Typocerus)

Flower Beetle *(Typocerus)*

Beetles present the greatest diversity of insects and pollinators. Regular flower visitors include soldier beetles and flower beetles. They feed on pollen and even chew on flowers, but in this *"mess and soil"* pollination process they pick up pollen and carry it to other flowers.

GARDENING *These beetles are commonly seen on yarrow and sunflower.*

Hover fly
(Syrphid)

Hover Fly *(Syrphid)*

Because they're so abundant, flies are important pollinators even though they transport less pollen than bees. Hover flies mimic bees and wasps in coloration and behavior to avoid predators.

GARDENING *Hover flies feed on the same flowers preferred by bees, such as golden currant, rabbitbrush, and sunflower.*

Pollen wasp
(Pseudomasaris)

Pollen Wasp *(Pseudomasaris)*

Don't be frightened if you see this wasp, it doesn't eat insects or sting humans, but seeks out flowers for pollen. A yellow jacket look-a-like, pollen wasps can be identified from other wasps by their clubbed antennae. They're solitary nesters and you might find their hard mud nests attached to rocks or twigs.

GARDENING *Pollen wasps pollinate penstemon and phacelia.*

For more information on pollinators and native plants, check out The Xerces Society website: www.xerces.org.

Attract Pollinators with these Native Plants

Here's a sample of the garden-hardy native plants in our region that attract pollinators.

	Common Name	Scientific Name
	Common chokecherry	*Prunus virginiana*
	Golden currant	*Ribes aureum*
	Red osier dogwood	*Cornus sericea*
	Blue elderberry	*Sambucus nigra*
	Lewis' mock orange	*Philadelphus lewisii*
	Rubber rabbitbrush	*Chrysothamnus nauseosus*
	Western serviceberry	*Amelanchier alnifolia*
	Oregon grape	*Mahonia repens*
	Orange honeysuckle	*Lonicera ciliosa*
	Beebalm	*Monarda fistulosa*
	Blanketflower	*Gaillardia aristata*
	Blue buckwheat	*Erigonum flavum*
	Clarkia	*Clarkia pulchella*
	Yellow columbine	*Aquilegia flavescens*
	Coneflower	*Echinacea angustifolia*
	Showy fleabane	*Erigeron speciosus*
	Missouri goldenrod	*Solidago missouriensis*
	Scarlet globemallow	*Sphaeralcea coccinea*
	Goldenaster	*Heterotheca villosa*
	Dotted blazing star	*Liatris punctata*
	Threadleaf phacelia	*Phacelia linearis*
	Scarlet gilia	*Ipomopsis aggregata*
	Maximilian sunflower	*Helianthus maximiliani*
	Wilcox's penstemon	*Penstemon wilcoxii*
	Common yarrow	*Achillea millefolium*

Mourning cloak
(Nymphalis antiopa)

How do butterflies survive the winter?

Mourning cloak, Milbert's tortoiseshell, and anglewing spend the winter as adults, but most butterflies overwinter as eggs, caterpillars or pupae. In your garden, tree cavities, leaf litter and branch piles shelter over-wintering butterflies from predators and cold weather.

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