

Bat-Friendly Gardening

Foraging Habitat



Photo by Cory Olson

Moths are critical for supporting British Columbia's bat community. Plants that support either the caterpillar or adult stage of moths are likely to benefit our bats.



Photo by Mandy Kellner

Volunteers plant trees and shrubs as part of a restoration project.

See [Appendix B](#) for a list of plant species beneficial to bats

What can landowners and the public do to ensure bats have access to high quality foraging habitat?

People can do many things to protect and enhance bat foraging habitat and support native insect populations, including:

- Reduce or eliminate the use of pesticides on your property.
- Re-vegetate degraded riparian areas with a diversity of native trees, shrubs, and forbs. Cottonwood or Balsam Poplar are particularly important in many regions.
- Provide a pond with clean and open water for bats to drink from. Ponds should have some areas clear of vegetation to allow for straight flight-paths of bats skimming the water to drink.
- Protect and restore wetlands and riparian areas. Use fencing to keep livestock out of sensitive riparian areas.
- Plant native shrubs and trees along fence lines or in gaps between forested areas and wet areas (such as wetlands, ponds or river areas) to provide safe cover for bats flying between day-roosting areas and foraging and drinking habitat.
- Keep your backyard dark at night to encourage use by foraging bats. See the section on [Lighting](#) for more information.
- Reduce pollution. Pollutants (such as PCBs, heavy metals, cyanide and other compounds) settle into aquatic habitats and can be taken up by larval insects that eventually emerge and become prey for flying bats. They can accumulate in the fat tissue of bats and may cross the placenta into developing bat embryos.
- When gardening or landscaping, use plants that provide food for larvae or adult insects, especially moths (see 'Gardening for Bats' below and [Appendix B](#)).
- In urban areas, consider hanging baskets, potted plants, or creating a green roof.
- Provide insects with shelter and locations to overwinter. When gardening for insects, use less hardscaping (less gravel, decking or concrete features) and try to leave more fallen plant matter (such as dead leaves, stems or debris) that gives caterpillars a place to hide from predators or places for adults to overwinter. Skip the fall clean-up in the garden and wait until spring to ensure dead plant material is available in the garden. Messy gardens are friendlier gardens for insects! If you are doing a clean-up of dead plant materials, consider piling the plant material in a back-border area for use by insects. Insects and many other types of wildlife do poorly in intensively-groomed and tidy landscapes.

Which plants are beneficial for bats?

In addition to tree species that provide roosting locations for bats, many plant species benefit bats by supporting their insect prey. These include plant species that provide forage for developing larvae, as well as flowers that provide nectar for moths and other nocturnal insects (see [Appendix B](#) for a list of bat-friendly plants).

Fragrant plants, especially those with white or pale flowers that bloom and produce nectar in the late afternoon or evening are more likely to attract night-flying moths. Nectar-producing tubular flower structures are often used by moths. Native plant species are preferred because they are more likely to be suitable host plants for moth caterpillars, are less likely to become invasive, and are already well-adapted to local growing conditions.

Plants that are attractive to night-flying insects and/or provide food for larval forms include (see [Appendix B](#) for more details):

- **Native deciduous trees and shrubs**—provide abundant forage for insect larvae (caterpillars) and sometimes nectar for adult moths and other nocturnal insects. Some examples that are particularly notable include various species of native poplar (aspen, cottonwood), birch, willow, alder, maple, dogwood, snowberry, and rose, as well as saskatoon, choke cherry, and pin cherry.
- **Native conifers**—The various native species of pine, spruce, fir, larch, hemlock and juniper, along with western redcedar, yellow-cedar, and Douglas fir, are important host plants for many moth species. Several of these grow well in urban and rural areas.
- **Nocturnal flowering plants**—some plants are especially attractive to moths and other nocturnal insects. Notable examples of native species include: evening primrose (*Oenothera* spp.), honeysuckle (*Lonicera* spp.), phlox (*Phlox* spp.), goldenrod (*Solidago* spp.) and milkweed (*Asclepias* spp.).
- **Non-invasive garden plants**—Non-native plant species are generally not recommended for restoration of natural areas. However, for gardens, there are a few non-native plants that provide particularly high levels of nectar for nocturnal pollinators. Notable examples include night-scented stock, purple coneflower, tobacco plant, moonflower, and apple. Always ensure the variety you select is non-invasive. Traditional varieties of garden flowers are preferred—some hybrid varieties (e.g., double petunias) produce low amounts of nectar and attract fewer insects.
- **Aromatic herbs**—sage, oregano, basil, marjoram and mint. These are mostly non-native but are highly attractive to pollinators.



Polyphemus Moth (*Antheraea polyphemus*) caterpillar feeding on red osier dogwood (*Cornus sericea*).



White-lined Sphinx Moth (*Hyles lineata*) on showy milkweed (*Asclepias Speciosa*).

For more information, see these resources:

Native Plant & Propagation

- [E-Flora BC](#)
- [Native Plant Network](#)

Invasive Species Information

- [PlantWise Program](#)
([Invasive Species Council of BC](#))

Gardening Guides

- [Gardening with Native Plants guide](#)
([Southern Vancouver Island](#))

Native, local plant species can be beautiful, low-maintenance AND bat-friendly planting choices. The following lists include some of the potential options in BC, but plants may not be suitable for all regions. Because BC is so diverse, always check regional information sources for lists of recommended native plants for your area, plus invasive species to avoid. [E-Flora BC](#) is a recommended resource when selecting native species suitable for your region, or check with local conservation groups. For example, Habitat Acquisition Trust has an [excellent guide for Vancouver Island](#).

Trees species suitable for bat maternity colonies

Most bats that roost in trees will opportunistically use any tree species that provides well-protected, concealed spaces for roosting. However, some species have decay characteristics that result in them being frequently used by bats (e.g., those that retain sloughing bark; remain standing after death; or frequently form large inner cavities). The following trees are native in at least some portions of BC, and may be considered for projects designed to provide bat roosting habitat.

Common Name	Scientific Name	Relative Suitability for Roosting ¹
Black cottonwood	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	Very high
Balsam poplar	<i>Populus balsamifera</i> ssp. <i>balsamifera</i>	Very high
Western white pine	<i>Pinus monticola</i>	High
Ponderosa pine	<i>Pinus ponderosa</i>	High
Trembling aspen	<i>Populus tremuloides</i>	Moderate - High
Western redcedar	<i>Thuja plicata</i>	Moderate - High
Yellow-cedar	<i>Chamaecyparis nootkatensis</i>	Moderate - High
Douglas-fir	<i>Pseudotsuga menziesii</i>	Moderate - High
Western hemlock	<i>Tsuga heterophylla</i>	Moderate - High
Mountain hemlock	<i>Tsuga mertensiana</i>	Moderate - High
Western larch	<i>Larix occidentalis</i>	Moderate - High
Grand fir	<i>Abies grandis</i>	Moderate
Lodgepole pine	<i>Pinus contorta</i>	Moderate
Paper birch	<i>Betula papyrifera</i>	Low - Moderate
Garry oak	<i>Quercus garryana</i>	Low
Sub-alpine fir	<i>Abies lasiocarpa</i>	Low
Engelman's spruce	<i>Picea engelmannii</i>	Low
White spruce	<i>Picea glauca</i>	Low
Black spruce	<i>Picea mariana</i>	Low
Big-leaf maple	<i>Acer macrophyllum</i>	Unknown
Arbutus	<i>Arbutus menziesii</i>	Unknown
Oregon ash	<i>Fraxinus latifolia</i>	Unknown
Amabilis fir	<i>Abies amabilis</i>	Unknown
Sitka spruce	<i>Picea sitchensis</i>	Unknown

[1] Relative suitability is the assumed capability of these species to support roosting bats relative to other species on the list, based on previous studies or expert opinion. Any tree species may be locally important depending on the requirements of individual bat species, local growing conditions, and the availability of alternative roosts.

Plant species beneficial to insect prey

Trees and shrubs

Various native trees and shrubs are among the most important host plants for developing moth caterpillars and other nocturnal insects. Willow (*Salix* spp.) are variable in size and form and there are many species of native willows to choose from. Generally, willows are sun-loving and prefer wet margins along lakes, rivers and other wet areas. Birches (*Betula* spp.) tend to like wet areas including riparian areas. Poplar (*Populus* spp.) are widespread in British Columbia, and these native trees are fast-growing and very important for bats not only because they support breeding moth populations which provide prey for bats, but they are also important roosting trees. In particular, balsam and black cottonwood provide excellent bat habitat. These species prefer richer, wetter sites. Alders (*Alnus* spp.) range in size from full trees to shrubs. This is a hardy group that grows in a variety of habitats and is usually fast-growing. Many of the apple and cherry species (*Malus* spp. and *Prunus* spp.) provide habitat for a variety of butterflies and moths; spring-flowering, these are also considered ornamentals. The non-native species of both apple and cherry trees found across BC also function as forage for moth species. Although native plants are preferable, there are several groups of flowering non-native shrubs that may provide nectar for adult-feeding moths that could be included in a bat-friendly garden. Hydrangea, honeysuckle, jasmine, clematis, lilac, peony, rhododendron, wisteria and magnolia are all great nectar producers and loved by gardeners.

List of recommended trees and shrubs to support insects (adult or larval forms) eaten by bats.

Group	Common Name and Scientific Name
Poplars	Trembling aspen (<i>Populus tremuloides</i>) Black cottonwood (<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>) Balsam poplar (<i>Populus balsamifera</i> ssp. <i>balsamifera</i>)
Birch	Paper birch (<i>Betula papyrifera</i>) Water birch (<i>Betula occidentalis</i>) Scrub birch (<i>Betula glandulosa</i>)
Maple	Douglas maple (<i>Acer glabrum</i>)
Conifers	Pine (<i>Pinus</i> spp.) Spruce (<i>Picea</i> spp.) Fir (<i>Abies</i> spp.) Tamarack / larch (<i>Larix</i> spp.) Juniper (shrub) (<i>Juniperus</i> spp.) Hemlock (<i>Tsuga</i> spp.) Western redcedar (<i>Thuja plicata</i>) Yellow-cedar (<i>Chamaecyparis nootkatensis</i>) Douglas fir (<i>Pseudotsuga menziesii</i>)
Mountain-ash	Western mountain-ash (<i>Sorbus scopulina</i>) Sitka mountain-ash (<i>Sorbus sitchensis</i>)
Saskatoon	Saskatoon (<i>Amelanchier alnifolia</i>)

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Bat-Friendly Plant Species

Currants	Skunk currant (<i>Ribes glandulosum</i>) Northern black currant (<i>Ribes hudsonianum</i>) Black gooseberry (<i>Ribes lacustre</i>) Waxy currant (<i>Ribes cereum</i>) Sticky currant (<i>Ribes viscosissimum</i>) Northern gooseberry (<i>Ribes oxyacan- thoides</i>) Red swamp currant (<i>Ribes triste</i>) Trailing black currant (<i>Ribes laxiflorum</i>)
Spirea	Birch-leaved spirea (<i>Spiraea betulifolia</i>) Pyramid spirea (<i>Spiraea pyramidata</i>) Pink spirea (<i>Spiraea douglasii</i>)
Hawthorn	Black hawthorn (<i>Crataegus douglasii</i>)
Prunus spp.	Choke cherry (<i>Prunus virginiana</i>) Pin cherry (<i>Prunus pensylvanica</i>)
Mallow	Mallow ninebark (<i>Physocarpus malvaceus</i>)
Raspberry	Dwarf nagoonberry (<i>Rubus arcticus</i>) Red raspberry (<i>Rubus idaeus</i>) Thimbleberry (<i>Rubus parviflorus</i>) Trailing raspberry (<i>Rubus pubescens</i>) Five-leaved bramble (<i>Rubus pedatus</i>) Cloudberry (<i>Rubus chamaemorus</i>)
Ocean spray	Ocean spray (<i>Holodiscus discolor</i>)
Rose	Prickly rose (<i>Rosa acicularis</i>) Baldhip rose (<i>Rosa gymnocarpa</i>) Nootka rose (<i>Rosa nutkana</i>) Prairie rose (<i>Rosa woodsii</i>)
Potentilla	Shrubby cinquefoil (<i>Potentilla fruticosa</i>)
Antelope-brush	Antelope-brush (<i>Purshia tridentata</i>)
Rabbit-brush	Common rabbit-brush (<i>Ericameria nauseosa</i>)
Sagebrush	Big sagebrush (<i>Artemisia tridentate</i>)
Cascara	Cascara (<i>Rhamnus purshiana</i>)
Ceanothus	Redstem ceanothus (<i>Ceanothus sanguineus</i>) Snowbrush (<i>Ceanothus velutinus</i>)
Penstemon	Shrubby penstemon (<i>Penstemon fruticosus</i>)
Sumac	Smooth sumac (<i>Rhus glabra</i>)
Silverberry	Silverberry (<i>Elaeagnus commutata</i>)
Shepherdia	Soopolallie (<i>Shepherdia canadensis</i>)
Oregon-grape	Tall Oregon-grape (<i>Berberis aquifolium</i>) Oregon-grape (<i>Berberis nervosa</i>)
Falsebox	Falsebox (<i>Paxistima myrsinites</i>)

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Bat-Friendly Plant Species

Willow	Salix spp.
Alder	Green alder (<i>Alnus viridis crispa</i>) Sitka alder (<i>Alnus viridis sinuata</i>) Mountain alder (<i>Alnus incana</i>) Red alder (<i>Alnus rubra</i>)
Hazelnut	Beaked hazelnut (<i>Corylus cornuta</i>)
Dogwood	Red-osier dogwood (<i>Cornus stolonifera</i>)
Mock orange	Mock orange (<i>Philadelphus lewisii</i>)
Ledum	Trapper's tea (<i>Rhododendron columbianum</i>) Labrador tea (<i>Rhododendron groenlandicum</i>)
Honeysuckle	Blue elderberry (<i>Sambucus caerulea</i>) Red elderberry (<i>Sambucus racemosa</i>)
	Common snowberry (<i>Symphoricarpos albus</i>)
	High-bush cranberry (<i>Viburnum edule</i>)
	Black twinberry (<i>Lonicera involucrate</i>) Utah honeysuckle (<i>Lonicera utahensis</i>) Orange honeysuckle (<i>Lonicera ciliosa</i>)
	Twinflower (<i>Linnaea borealis</i>)
False azalea	False azalea (<i>Menziesia ferruginea</i>)
Rhododendron	White-flowered rhododendron (<i>Rhododendron albiflorum</i>)
Vaccinium	Vaccinium spp.

Herbaceous Plants

The best herbaceous plants for “bat-friendly gardens” are flowering plants that bloom in the late afternoon or evening. Moths are attracted to fragrant, light-coloured, tubular flowers; they use sensory receptors to locate the flowers in the dark (by fragrance and the white/light colour in the dark). Night-blooming flowers often have little fragrance in the day, but emit a strong fragrance at sunset onwards. This list is only a start; there are many more flowers that would attract moths and other night insects.

The Primrose Family (Oenothera) has many plants which are drought-resistant, and some are pollinated by moths (which means moths are using flowers for food, either using nectar and/or pollen). Only the *strigosa* subspecies of the hairy evening-primrose (*Oenothera villosa ssp. strigosa*) is native to BC.

Common Name	Scientific Name
Hairy evening-primrose	<i>Oenothera villosa ssp. strigosa</i>

Phlox (Genus Phlox) has foliage that provides larval food to many moth species. The flowers are fragrant, and may be blue, violet, pink, red or white depending on the type.

Common Name	Scientific Name
Spreading Phlox	<i>Phlox diffusa</i>
Long-leaved Phlox	<i>Phlox longifolia</i>

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Bat-Friendly Plant Species

Campion (Genus *Silene*) has many native species in BC. One non-native species is night-flowering catchfly (*Silene noctiflora*).

Common Name	Scientific Name
Moss Campion	<i>Silene acaulis</i>
Parry's Campion	<i>Silene parryi</i>
Menzie's Campion	<i>Silene menziesii</i>
Douglas's Campion	<i>Silene douglasii</i>

Milkweeds (Genus *Asclepias*) have foliage that provides larval food for developing moths and butterflies, these plants are also important for Monarch butterflies and are a recommended plant for butterfly gardens. Be sure to ask for our local, native milkweed species.

Common Name	Scientific Name
Showy Milkweed	<i>Asclepias speciosa</i>

Goldenrod (Genus *Solidago*) is an excellent addition to a bat-friendly garden. It is tall (up to a metre) with yellow flowers that bloom in late summer. This plant spreads through seed production and rhizome growth (so planting them in a buried pot or pail with the bottom cut out might be helpful if you are trying to contain them to an area of your garden). . Pollen and nectar are used by insects, including moths; the plant foliage is used by moths and butterflies as larval food (which may cause the formation of galls that maybe subsequently pecked open by woodpeckers that eat the enclosed developing larva). Above-ground parts of the plant are all edible.

Common Name	Scientific Name
Spikelike goldenrod	<i>Solidago simplex</i>
Northern goldenrod	<i>Solidago multiradiata</i>
West coast goldenrod	<i>Solidago elongata</i>
Western Canada goldenrod	<i>Solidago lepida</i>
Missouri goldenrod	<i>Solidago missouriensis</i>
Field goldenrod	<i>Solidago nemoralis</i> ssp. <i>decemflora</i>

Non-native plants

None of the following plant groups are native to British Columbia but they are not considered invasive species, so they are still safe to plant. They can provide nectar for night-foraging moths and other insects.

Apple or crabapple (Genus *Malus*)— Flowering crabapple trees and apple trees provide habitat for a variety of butterflies and moths; spring-flowering, these are also considered ornamentals. Most apples and crabapples are not native to British Columbia but are widespread and grow well in many areas. The Pacific crabapple (*Malus fusca*) is British Columbia's only native apple and are a great option in many areas.

Purple coneflower (Genus *Echinacea*)—grows up to a metre in height. The purple flowers are used by butterflies and bees and some moths will use flower heads as food for their developing larva. Drooping flowers may be a sign of moth larva in the cone head; however, they likely will only affect a few of your flowers, so if you are a gardener please hold off with the pesticides. If you are trying to provide habitat for moths, congratulations! You have succeeded in providing moth breeding habitat.

Four o'clocks (Genus *Mirabilis*)—As the name implies, they bloom in the late afternoon and evening, providing fragrant flowers and abundant nectar to night-flying moths such as sphinx moths and hawk moths (Sphingidae) that act as pollinators for these multi-coloured flowers.

Salvia (Genus *Salvia*)—The foliage is used as food for developing larva of numerous moth and butterfly species.

Nicotiana (Genus *Nicotiana*)—late afternoon, evening the flowers are very fragrant; the foliage is used by many moth species including the families Noctuidae and Sphingidae (hawk moths and sphinx moths).

Hemerocallis/Daylilies (Genus *Hemerocallis*)—There are many fragrant nocturnal daylilies. *Hemerocallis* varieties to look for include: Island Music, Shades of Darkness, May May, Guidrid, Lady Sundance as well as *Hemerocallis altissima*, *Hemerocallis citrina* (syn: *H. Vespertina*) and *Hemerocallis flava*.

Aromatic herbs often include many non-native species, but many grow well in BC and can be grown in containers. These include: hyssop, thyme, nepeta, sage, rosemary, lavender, oregano, dill, angelica, fennel, coriander, basil and others.