

A Place for Pollinators

Pollinators are a diverse group of animals such as bees, flies, butterflies and moths that pollinate many of our food crops and help maintain a healthy ecosystem. They are unfortunately facing many threats including climate change and habitat loss. One of the best ways we can help them is by providing healthy, native habitat so they have an abundance of pollen and nectar to feed on, places to nest and overwinter, and clean water sources free from pesticides. Connectivity among habitats is also important for pollinators that access different resources and for migration with changing climate. These habitat guides provide examples of pollinators across five habitat types and details about what to look for and how to help them.

Backyard				
★ denotes a “gold star species” i.e., rare or threatened				
What makes backyard pollinator habitat? A backyard can include lawns, decks, patios and gardens as well as natural landscapes and forest edges. Even small balcony gardens can be essential to pollinators. Tips for maintaining backyard habitat for pollinators? Keep an area of undisturbed leaves and soil for overwintering and nesting during the active season; plant a variety of native flowering plants that bloom at different times and do not use pesticides. To help us learn more about pollinators in backyards you can use iNaturalist and share observations with the Pollinator Interactions on Plants (PIP) of the NE US project.				
Common Eastern Bumble Bee <i>Bombus impatiens</i>  @stevestevens https://www.inaturalist.org/observations/325808707 	Calligrapher Fly <i>Toxomerus</i> species  @erikschiiff https://www.inaturalist.org/observations/128462450 	Monarch Butterfly ★ <i>Danaus plexippus</i>  @norrlan https://www.inaturalist.org/observations/328097373 	Eastern Carpenter Bee <i>Xylocopa virginica</i>  @smacdonn https://www.inaturalist.org/observations/306878306 	Small Carpenter Bee <i>Ceratina</i> species  @meaningful_name https://www.inaturalist.org/observations/320523553 
Description: Medium-sized bee with a pale yellow thorax, a few black hairs intermixed between the wings, and abdomen that is usually black. They have a long or square cheek or head, and a round, angled midleg. Nesting habitat: They are social bees that live in colonies and make their nests underground, often in old rodent holes	Description: The common name comes from the presence of etched patterns on the abdomen. These flies are difficult to identify to the species level, but because of their unique patterning, can be identified as <i>Toxomerus</i>. They are small, typically only 5 to 6 mm. Habitat: Found in	Description: Large wingspan (3.5–4.0") with bright orange forewings and black veins, a black margin with two rows of pale spots on the upper side of its wings. The hindwings are a lighter orange. Habitat: Various open spaces, including old fields, gardens, riparian meadows, and	Description: Large with round, black bodies and yellow hairs. Males have a white spot on their face while females have an all-black face. Nesting habitat: This species nests in long tunnels that they create in dry coniferous woods, stumps, logs, and dead trees.	Description: Small bees measuring less than 3/8" long that appear black with bluish green, or blue highlights. Their face, thorax and legs will sometimes have yellowish-white markings. Nesting habitat: This species builds long, solitary tunnels for nesting. They bore into broken stems of weeds

or burrows. Native plants, leaves, stumps, and undisturbed soil help provide overwintering habitat. Flowers: Commonly found on thistles (<i>Cirsium</i>), daisies (<i>Asteraceae</i>), clovers (<i>Trifolium</i>), asters, goldenrods (<i>Solidago</i>), boneset (<i>Eupatorium</i>), crab apples (<i>Malus</i>), brambles (<i>Rubus</i>) and pickerel weeds (<i>Pontederia</i>), <i>Rhododendron</i>, mountain laurel, rose, purple vetch, buttonbush, burdock, and <i>Impatiens</i> from which the bee's name may come. Remarks: Most common bumble bee in the northeast with the longest flight duration of up to one hour and foraging up to two miles away from their nest.	diverse habitats, including very disturbed areas. Flowers: Adults eat nectar and can be found on a variety of flowers. Remarks: Many farmers grow 'insectary plants' like yarrow (<i>Achillea millefolium</i>), dill (<i>Anethum graveolens</i>), fennel (<i>Foeniculum vulgare</i>), and Queen Anne's Lace (<i>Daucus carota</i>) on the edges of their fields to attract and sustain beneficial insects such as calligrapher flies for biological pest control.	roadsides with milkweed plants. Flowers: Caterpillars feed on milkweed (<i>Asclepias spp.</i>), while adults nectar on a variety of native and cultivated plants. Remarks: North American monarchs begin their southern migration in September and October, traveling from southern Canada and the northeastern United States up to 3,000 miles to overwintering sites in central Mexico. Threats to this species include degradation of milkweed habitat across its breeding range.	Flowers: These bees are important pollinators for gardens with blueberries and vegetables that rely on sonication or "buzz pollination". Remarks: Eastern carpenter bees reuse the same nesting spots year after year.	or into the freshly cut stems of roses. Flowers: They forage for nectar and pollen from a wide variety of flowers including rose (<i>Rosa spp.</i>), blackberries (<i>Rubus spp.</i>), and daisies (<i>Asteraceae spp.</i>). Remarks: Small carpenter bees lack the jaw strength to bore through wood, so they nest in the dead stems of plants like roses and sunflowers.
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Mountain

★ denotes a “gold star species” i.e., rare or threatened

What makes mountain pollinator habitat? A region with elevated landscapes that often span different forest habitats of hardwoods to conifer and even alpine areas in the Northeast.

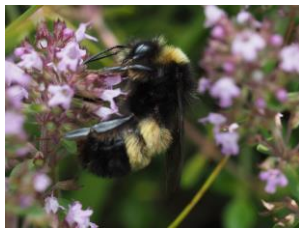
What are important resources for pollinators in mountains? Access to clean water for hydration; diverse flowering plants that bloom at different times for continuous food sources; sheltered areas, like shrubs or trees, for nesting and protection from harsh weather; and in alpine areas, minimizing impacts from recreation and climate change to fragile alpine plants.

To help us learn more about pollinators in mountains you can use iNaturalist and share observations with the [Pollinator Interactions on Plants \(PIP\) of the NE US project](#).

yellow-banded bumble bee ★

Bombus terricola

📷 @meaningful_name
<https://www.inaturalist.org/observations/303455849>



tricolored bumble bee

Bombus ternarius

📷 @meaningful_name
<https://www.inaturalist.org/observations/303455863>



blinded sphinx moth

Paonias excaecata

📷 @benkeen
<https://www.inaturalist.org/observations/290297991>



sedgesitter flies

Platycheirus spp.

📷 @treegrow
<https://www.inaturalist.org/observations/151261477>



white mountain fritillary butterfly ★

Boloria chariclea montinus

📷 @kpmcfarland
<https://www.inaturalist.org/observations/346842>



Description: Fluffy with a rounded appearance. They have some yellow hairs intermixed near the tip of the abdomen. This is an early spring species.

Nesting habitat: Found in undisturbed woodlands, wetlands and meadows. They make colony nest sites underground in tunnels and in pre-existing burrows and abandoned rodent nests.

Flowers: Queens depend on flowers that bloom early in spring. Workers are readily found on wild bergamot/bee balm (*Monarda fistulosa*), *Verbena spp.*, and other July blooming species.

Description: Medium body size. Hair is short and uniform. The face and top of the head has black hair with some yellow. Abdomen alternates yellow stripes with black and orange (hence, their common name, “tricolored bumblebee”).

Nesting habitat: This common species nests underground.

Flowers: Often found foraging milkweeds (*Asclepias*), brambles (*Rubus*), and goldenrods (*Solidago*).

Remarks: Tri-colored bumblebees are able

Description: Forewings have strong scalloping on the edges and a white fringe on the concave part of the scollops. The upper side of the forewings is pale gray to dark reddish brown, while the hindwings are pale to dark brown with broad pink patch at the base and a single blue eye spot. The underside of the wings is pink near the base.

Habitat: Fields, woodlands, and forests. Larvae pupate in shallow

Description: Small and slender in appearance. They are most often black or metallic green and may have whitish, red, or yellow spots on their abdomens. Their heads are rounded.

Habitat: Larvae feed on aphids. As larvae, most species are found in leaf litter. As adults, many species remain active in rainy and cold weather.

Flowers: These flies are a type of hoverfly and tend to “sit” amongst

Description: Small to medium-sized with a wingspan of 2 to 2 ¾ ". The upper side of the wings is orange with black markings. Females have a white and black checkered fringed border around their wings while males have a pale yellow and black border.

Habitat: These butterflies are found above in the alpine zone (above 1,200 meters) of the Presidential Range of the White Mountain National Forest in wet alpine meadows, snowbank communities and heath-shrub-rush areas.

Flowers: Caterpillars of the *Boloria chariclea* family are known to feed

Remarks: Climate change is a stressor for this declining species with warming temperatures and precipitation patterns disrupting both bee biology and the floral resources on which bees depend.	to thermoregulate by “shivering” their thoracic muscles to produce heat.	underground chambers or in leaf litter. Avoid disturbing soil and leaf litter to protect overwintering nesting habitat. Flowers: Caterpillars eat foliage from a variety of woody plants, including beech, birch, cherry, oak, and willow. Adults are not known to feed. Remarks: A common species visiting porch or moth lights in July.	plants belonging to the grass, sedge, and rush families. This is the source of their common name, “sedgesitter” flies. Remarks: Despite being flies with only one pair of wings, many resemble bees or wasps. They are beneficial insects that help gardeners manage pest populations.	on violets (<i>Viola</i>), willows (<i>Salix</i>), and bilberries (<i>Vaccinium</i>), along with others. Adults have been seen nectaring on alpine goldenrod (<i>Solidago</i>), aster (<i>Symphyotrichum</i>), meadowsweet (<i>Spirea</i>), and other species. Remarks: Threats to this species include climate change and recreational disturbance from hikers and backcountry skiers venturing off trail.
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Wetland/Lakeside

★ denotes a “gold star species” i.e., rare or threatened

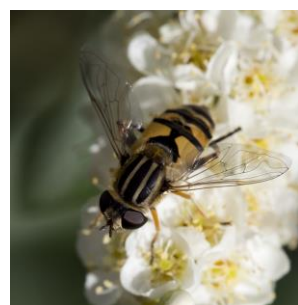
What makes wetland/lakeside pollinator habitat? Areas where the water table is near the or at the land surface defining the plants and animals that live there, including swamps, marshes or bogs and areas adjacent to rivers, streams and lakes.

What are important resources for pollinators in wetlands/lakesides? Clean water sources for hydration and breeding; intact riparian areas with native trees, shrubs and plants that provide nectar and pollen; undisturbed areas for nesting and shelter and no pesticides.

To help us learn more about pollinators in wetlands you can use iNaturalist and share observations with the [Pollinator Interactions on Plants \(PIP\) of the NE US project](#).

water-loving hoverflies *Helophilus spp.*

📷 @hannawacker
<https://www.inaturalist.org/observations/12310039>



furrow bees *Halictus spp.*

📷 @swells
<https://www.inaturalist.org/observations/13252521>



Baltimore checkerspot butterfly ★ *Euphydryas phaeton*

📷 @meaningful_name
<https://www.inaturalist.org/observations/289665988>



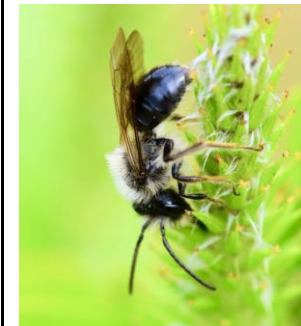
silver-bordered fritillary butterfly *Boloria myrina*

📷 @allan7
<https://www.inaturalist.org/observations/32287384>



mining bees *Andrena spp.*

📷 @bugeyedbernie
<https://www.inaturalist.org/observations/159269566>



Description: Medium to large with lengthwise-striped thorax and transverse-stripes on abdomen. They appear bee-like, but their antennae are shorter than the length of their face.

Nesting habitat: Larvae feed on micro-organisms found in ponds and ditches. Adults lay eggs in water rich with nutrient-dense organic matter.

Flowers: Adults feed on pollen and nectar, and most species in this genus are not specialized.

Remarks: Individuals are

Description: The most encountered *Halictus* sp., the ligated furrow bee, can be identified by a distinctive point in the bottom corner of the face (female). A defining feature is that the abdominal hair bands are located on the edge of each abdominal segment, which helps distinguish them from similar bees.

Nesting habitat: Most members of this genus are social and nest underground. The ligated furrow bee is most common in the mid-summer and can be found in disturbed

Description: Medium-sized with a wingspan between 1 1/2 and 2 3/4 " with black wings and bold white and orange spots on its upper side. The underside of its wings are similar to the upper side but with more orange basally.

Nesting habitat: Found in a variety of wetland areas. Larvae overwinter in communal tents in leaf litter surrounding the base of host plants, like white turtlehead (*Chelone glabra*).

Description: Small to medium-sized with a wingspan between 1 3/8 - 2 1/8 ", with orange and black marks and a submarginal row of black spots on the upper side of its wings. The underside hindwing is brick orange with yellow patches, bold white spots with a silvery reflection, a single, white-rimmed black spot near the base, and a submarginal row of black spots.

Habitat: Wet meadows, bogs, marshes.

Description: Medium in size from 3/10-7/10 ". Males are smaller and slenderer than females. The bodies are black with white or tan hairs. They have a broad, velvety area in between their eyes.

Nest Habitat: All members of this genus are solitary and ground nesting, preferring sandy soils.

Flowers: Important pollinators for early-blooming fruit trees and berries. Many species are specialists, feeding on the pollen of specific native wildflowers. Some plant taxa, such as the evening primroses, (*Oenothera*), are highly

short-lived, only surviving a few days to a few weeks.	habitats. Flowers: Furrow bees are generalist pollinators, meaning that they visit a wide variety of flowers and are among the few bees that use buzz pollination. Remarks: Also called ‘sweat bees’ (along with many other bee species in the family Halictidae) as they are known for being attracted to human perspiration for salts:	Flowers: Young caterpillars feed on white turtlehead and older caterpillars feed on a variety of plants like plantains, ashes, and viburnums. Adults nectar on a variety of flowers including oxeye daisy, clovers, and spreading dogbane. Remarks: Threats to this species include loss of habitat from the filling in and degradation of wetland habitats.	Caterpillars overwinter in leaf litter near host plants. Flowers: Caterpillars feed on wetland violets, while adults nectar on a variety of flowers like goldenrod, hawkweeds, black-eyed Susans and asters. Remarks: Habitat loss is a threat to this species, especially small, localized populations.	dependent on <i>Andrena</i> for pollination. Remarks: Mining bees are short-tongued bees and have to feed on plants with nectar that is easily accessible.
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Mixed forest

★ denotes a “gold star species” i.e., rare or threatened

What makes mixed forest pollinator habitat? Areas where both hardwoods and conifers are present, usually at transition zones, with diverse plant and animal species.

What are important resources in mixed forests? Diverse flowering plants that bloom at different times throughout the year; access to clean water sources for hydration and breeding; nesting sites such as dead wood, leaf litter, or bare soil; shelter from extreme weather and predators, like dense vegetation; and no pesticide use.

To help us learn more about pollinators in mixed forest you can use iNaturalist and share observations with the [Pollinator Interactions on Plants \(PIP\) of the NE US project at iNaturalist.org](https://www.inaturalist.org/observations/136724718).

half-black bumble bee

Bombus vagans

📷 @bradenjudson
<https://www.inaturalist.org/observations/136724718>



blinded sphinx moth

Paonias excaecata

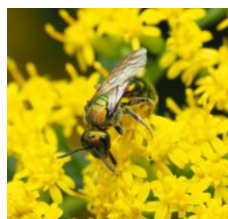
📷 @benkeen
<https://www.inaturalist.org/observations/290297991>



pure golden green sweat bee

Augochlora pura

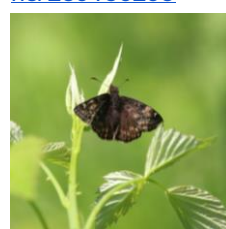
📷 @meaningful_name
<https://www.inaturalist.org/observations/314002032>



Juvenal's duskywing butterfly

Erynnis juvenalis

📷 @windsweptguy
<https://www.inaturalist.org/observations/289156298>



red spotted purple butterfly

Limenitis arthemis astyanax

📷 @hannah_walton
<https://www.inaturalist.org/observations/311365854>



Description: Similar in size to a honey bee, they have a dark head, long, yellow hairs on the thorax with a black spot in the center. The thorax is yellow and the abdomen is black with light yellow sides.

Nesting habitat: Found in hardwood forests and woodlands where they nest underground in abandoned rodent burrows or cavities in grass thatches or hay piles. They are eusocial and live in a cooperative group.

Flowers: Forages on a wide variety of flowers found near woodland edges and wetland forests. They are known to forage on

Description: Strong scalloping on outer margins of forewings with a white fringe on the concave part of the scallops. The upper side of the forewings is pale gray to dark reddish brown, while the hindwings are pale to dark brown with broad pink patch at the base and a single blue eye spot. The underside of the wing is pink near the base.

Habitat: Fields, woodlands, and forests. Larvae pupate in shallow underground chambers or in leaf litter. Avoiding soil and leaf litter disturbance helps to protect

Description: Shiny, bright green bees around 8 mm in length. This bee's active season is February through September.

Nesting habitat: Build nests in rotting wood in forests and may even nest in suburban woodpiles. Cells are made from dead wood and debris.

Flowers: Visits a wide range of flowers, including those in the daisy family (i.e., asters (*Symphyotrichum*) and goldenrods (*Asteraceae*)).

Description: Medium in size, with dark brown (male) to mottled light and dark brown (female); forewings with a row of small, glassy spots on the upper side of its wings. The undersides of its wings have a brown forewing, with a row of small glassy spots, a darker brown hindwing that usually has two small white spots near the leading edge.

Habitat: Open areas like forest clearings, edges, trails, and barrens. Caterpillars

Description: Large in size, on the upper side they have black wings with extensive iridescent blue. The underside of the wings are red-orange spots in a submarginal band and at the base of the wings. Their wings lack tails.

Habitat: Moist woodlands are preferred but can be found in other places like suburban areas. Caterpillars overwinter in leaves spun together in a tube shape in leaf litter.

Flowers: Caterpillars often feed on the foliage of deciduous trees like poplar (*Populus*) and willows (*Salix*). Adults nectar on a variety of flowers but are

breadtongues (<i>Penstemon</i>), milkweeds (<i>Asclepias</i>), asters (<i>Symphotrichum</i>), thistles (<i>Cirsium</i>), bonesets (<i>Eupatorium</i>), and meadowsweet (<i>Spirea</i>). Remarks: Closely reassembles <i>Bombus sandersoni</i>. These two species can be difficult to tell apart, but <i>B. vagans</i> is more abundant than <i>B. sandersoni</i>, which tends to be found farther north.	overwintering nesting habitat. Flowers: Caterpillars eat foliage from a variety of woody plants, including beech (<i>Fagaceae</i>), birch (<i>Betula</i>), cherry (<i>Prunus</i>), oak (<i>Quercus</i>), and willow (<i>Salix</i>). Adults are not known to feed. Remarks: A common species visiting porch or moth lights in July.	Remarks: Both males and females will “lick” sweat from human skin, seeking salt.	overwinter in silk-lined leaf shelters in leaf litter on the ground. Flowers: Caterpillars feed on oaks (<i>Quercus</i>). Adults visit damp soils and flowers such as blueberries (<i>Vaccinium</i>), blackberries (<i>Rubus</i>), and common dandelions (<i>Taraxacum</i>) for nectar and other resources. Remarks: Adults fly from late April to late June (rarely July).	commonly found visiting damp ground areas for resources. Remarks: Adults can be found from May to October.
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Meadow

★ denotes a “gold star species” i.e., rare or threatened

What makes meadow pollinator habitat? Areas that lack trees and are dominated by grasses or herbaceous plants that typically feature a diverse array of flowering plants, providing essential habitat for wildlife including pollinators.

What are important resources for pollinators in meadows? Diverse array of native flowering plants that bloom at different times; undisturbed areas for nesting sites, such as bare soil or dead wood; access to clean water sources like shallow puddles or small ponds for hydration; shelter with dense vegetation or brush piles to offer protection from predators; and no pesticides.

To help us learn more about pollinators in meadows you can use iNaturalist and share observations with the [Pollinator Interactions on Plants \(PIP\) of the NE US project at iNaturalist.org](#).

Yellow bumble bee



Bombus fervidus

📷 @glennberry
<https://www.inaturalist.org/observations/124761937>



calligrapher flies

Toxomerus species

📷 @erikschiiff
<https://www.inaturalist.org/observations/128462450>



two-spotted bumble bee

Bombus bimaculatus

📷 @daveozric
<https://www.inaturalist.org/observations/299860678>



common ringlet butterfly

Coenonympha tullia

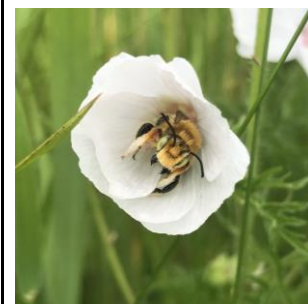
📷 @bradenjudson
<https://www.inaturalist.org/observations/55431671>



leafcutter bees

Megachile species

📷 @toknowtheland
<https://www.inaturalist.org/observations/223219356>



Description: Black face with a mostly yellow thorax with a black spot. Its sides and body are usually yellow with a black abdomen.

Nesting habitat: They nest above and below ground, but most commonly above ground in open, grassy areas including forest clearings and roadsides. They tend to nest at least 50 meters from their food source.

Flowers: Forage on honeysuckles (*Lonicera*), thistles (*Cirsium*), clovers (*Trifolium*), beardtongues (*Penstemon* spp.), loosestrifes (*Lythrum*), vetches (*Vicia*), and bee balms (*Monarda*).

Description: The common name comes from the presence of etched patterns on the abdomen. These flies are difficult to identify to the species level, but because of their unique patterning, they can be identified as *Toxomerus*. They are small, typically only 5 to 6 mm.

Habitat: Found in diverse habitats, including very disturbed areas.

Flowers: Adults eat nectar and can be found on a variety of flowers.

Remarks: Many farmers grow

Description: Medium body size with hairs that are long and uneven. Thorax is mostly yellow and has a two-spotted yellow patch of hair on the abdomen.

Nesting habitat: Nests are primarily underground but may sometimes be found aboveground or in cavities.

Flowers: Queens are early-emerging pollinators critical for pollinating spring ephemerals (particularly Dutchman's breeches *Dicentra cucullaria*),

Description: Medium in size, underside of wings is pale orange and gray. Forewings have more orange with a small eye spot on the leading edge, (sometimes lacking), and hindwings are gray.

Habitat: This species can be found in a variety of open grassy areas, fields, meadows, and roadsides.

Flowers: Adult butterflies visit a wide variety of flowering plants. Caterpillars feed on a variety of grasses found

Description: Large range in size, from 5 to 21 mm. The body and head are typically black. Often described as “hairy belly bees” with pollen-collecting hairs (scopa) on their abdomens.

Nesting habitat: Leafcutter bees line their nests with leaf material cut from the margins of leaves. Most bees in this family are cavity nesters, and repurpose already existing cavities in stems, wood, or in the ground for their nests. For example, some leafcutter bees use hollow stems or holes made by beetles.

Flowers: They pollinate a wide range of plants, including alfalfa

Remarks: Queens live for a year, but workers for only a month on average.	‘insectary plants’ on the edges of their fields to attract beneficial insects such as calligrapher flies.	blooming trees, and shrubs, with their emergence often coinciding with these plants. They frequent early nectar and pollen sources, including dandelions, clover, and early wildflowers. Remarks: Males of this species patrol in uniform paths in search of mates.	across their range. Remarks: There are up to 20 subspecies of common ringlets found across North America, with <i>C.t. inornata</i> being the most common in the east.	(Fabaceae), sunflower (Asteraceae), blueberries (<i>Vaccinium</i>), carrots (<i>Apiaceae</i>), onions (<i>allium</i>), and various garden vegetables. Remarks: Leafcutter bees may nest in bee hotels or other human-made cavities. They are used commercially in agriculture and greenhouses because they thrive in warm, humid conditions and efficiently pollinate specialized crops.
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