

# SPECIALIST BEES & THEIR HOSTS

Connecticut is home to 91 documented specialist bee species, and the list is growing! This document contains a list of all recorded specialist bees in the state, along with information about their floral hosts.

## What is a specialist bee?

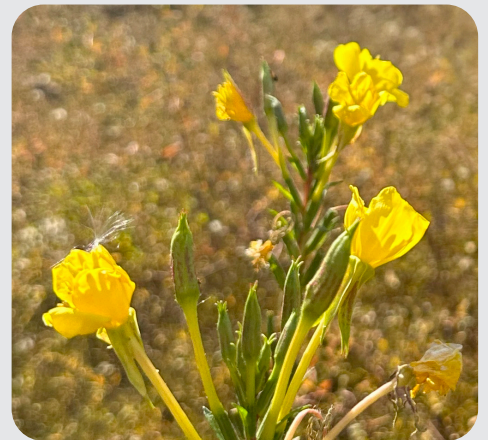
Bees rely on both floral **nectar** and **pollen**: nectar as a carbohydrate source, and pollen as a protein source. Bee **diet breadth** refers to the collection of pollen by female foragers. Bees that collect pollen from a wide array of flowering plant families are considered **generalists**. **Specialist bees typically limit their foraging to one plant family or a few related plant genera, and in some cases, a single genus or species.**

## Why does knowing their floral hosts matter?

Planting floral resources with specialist pollinators in mind is important, because they **depend on those specific resources to feed their offspring**. While nectar is mainly consumed by adults as a means to power flight, **pollen is the primary protein source** for developing bee offspring. Without adequate supply of their host pollen, specialist bee species cannot reproduce.

## Why do native plants matter?

Wild type native plants have **co-evolved with many of our native bees over thousands of years**, and sometimes have very specialized relationships. Cultivars of native plants, as well as exotic ornamental plants, can have altered floral rewards and morphology which can impact visitation and access for insects.



**From left to right:** Wild geranium (*Geranium maculatum*) supports the specialist mining bee *Andrena distans*; Foxglove beardtongue (*Penstemon digitalis*) supports the mason bee *Osmia distincta*; Evening primroses (*Oenothera* spp.), such as *Oenothera biennis*, support the specialist sweat bee *Lasioglossum oenotherae*.  
Photos: David Mantack, David Mantack, Nicole Bell.

# Notable plant families

## Asteraceae (Daisy Family)

This plant family is the **most common specialization** for bees in Connecticut: 38% of specialist bees in the state restrict their pollen foraging to members of this plant family.



**Genera of note (from left to right):** ***Solidago* spp.** This genus, commonly called goldenrod, contains 24 species native to Connecticut, and at least 18 of those are available as seed or potted plants. It's a wonderful late-season resource for generalist and specialist bees alike. ***Vernonia* spp.** *Vernonia noveboracensis*, commonly known as Ironweed, blooms from summer to early fall. Photo by David Mantack. ***Symphotrichum* spp.** Including the New England aster, *Symphotrichum novae-angliae*, plants from this genus have showy displays that bloom late in the season. They pair wonderfully with goldenrod.

## Ericaceae (Heath Family)



**Genera of note (from left to right):**

***Rhododendron* spp.** These woody shrubs are favored by the specialist bee *Andrena cornelli*, though *Rhododendron* spp. can also serve as larval hosts for butterfly and moth species. Photo by David Mantack. ***Vaccinium* spp.** include many important food crops such as blueberries and cranberries, as well as supporting six specialist bee species in the state. Photo by Tracy Zarrillo.

## Rosaceae (Rose Family)



**Genera of note (from left to right):** A sweat bee visits a ***Potentilla* spp.** Cinquefoils may not always be the showiest flowers in the rose family, but they are incredibly popular amongst Rosaceae specialists. Some strawberries, ***Fragaria* spp.**, also support rose specialists. Photos by Tracy Zarrillo.



## Salix spp. (Willows)



**Salix spp.** This genus, in the family Salicaceae, supports several specialist bees in Connecticut. Most willows bloom early in the spring to early summer in Connecticut and their associate specialists parallel their phenology. Beyond specialists, willows also provide important early-season resources for generalist bees too, including new queen bumble bees. Willows are dioecious, meaning some plants have all male flowers, while others contain all female flowers. Pollinators aid in the transfer of pollen between the male and female plants. This genus contains both woody shrubs and trees, and can serve as an early spring ornamental plant. Photo by Nicole Bell.

## Physalis spp.



These plants are in the nightshade family, Solanaceae, which includes ground cherries and tomatillos. There are two bee species in Connecticut that specialize on *Physalis*. There are four native species of *Physalis* known to occur in Connecticut, however these bees will also visit other members of the genus, including those grown in garden settings. Photo by Rodney Lee (CC-BY-NC 4.0).

## Lysimachia spp. (Loosestrifes)



Commonly called loosestrifes, this genus falls within the Primulaceae family. In place of nectar, these flowering plants produce oils that are collected by a specialized group of oil-foraging bees. These bees, in the genus *Macropis*, provision their offspring with this oil in place of nectar. Note that creeping yellow loosestrife, *Lysimachia nummularia*, is not native to Connecticut. Garden yellow loosestrife, *Lysimachia vulgaris*, is also exotic and considered a prohibited plant in Connecticut. Photo depicts fringed loosestrife, *Lysimachia ciliata*. Photo by Thurman Johnson (CC-BY-NC 4.0).

## Swida spp. (Dogwoods)



Previously called *Cornus*, the *Swida* genus belongs to the Cornaceae family, containing trees and shrubs commonly called dogwoods. There are four specialist bees in Connecticut that use dogwood pollen, and all are mining bees in the genus *Andrena*. The most frequently encountered bee associate is the Fragile Dogwood Miner, *Andrena fragilis*. Dogwoods such as gray dogwood, *Swida racemosa*, and red-osier dogwood, *Swida sericea*, tolerate a wide range of soil types and can be useful in creating natural hedges. Photo by David P. Mantack.

# Documented Specialist Bees in Connecticut by Plant Host

Bee Species	Common Name	Host Family	Host genus
<i>Andrena aliciae</i>	Alice's miner	Asteraceae	<i>Helianthus, Heliopsis, Verbesina</i>
<i>Andrena arabis</i>	Mustard miner	Brassicaceae	
<i>Andrena asteris</i>	Northern aster miner	Asteraceae	<i>Eurybia, Solidago, Symphyotrichum</i>
<i>Andrena bisalicis</i>	Pebbled miner	Salicaceae	<i>Salix</i>
<i>Andrena braccata</i>	Braccate miner	Asteraceae	<i>Euthamia, Solidago</i>
<i>Andrena bradleyi</i>	Bradley's miner	Ericaceae	
<i>Andrena canadensis</i>	Canada miner	Asteraceae	<i>Solidago, Symphyotrichum</i>
<i>Andrena carolina</i>	Carolina miner	Ericaceae	
<i>Andrena clarkella</i>	Clark's miner	Salicaceae	<i>Salix</i>
<i>Andrena cornelli</i>	Azalea miner	Ericaceae	<i>Rhododendron</i>
<i>Andrena distans</i>	Cranesbill miner	Geraniaceae	<i>Geranium</i>
<i>Andrena duplicata</i>	Duplicate miner	Asteraceae	<i>Bidens</i>
<i>Andrena erigeniae</i>	Spring beauty miner	Portulacaceae	<i>Claytonia</i>
<i>Andrena erythrogaster</i>	Red-tailed miner	Salicaceae	<i>Salix</i>
<i>Andrena erythronii</i>	Trout-lily miner	Liliaceae	<i>Erythronium</i>
<i>Andrena fragilis</i>	Fragile dogwood-miner	Cornaceae	<i>Swida</i>
<i>Andrena frigida</i>	Frigid miner	Salicaceae	<i>Salix</i>
<i>Andrena helianthi</i>	Common sunflower miner	Asteraceae	<i>Helianthus</i>
<i>Andrena hirticincta</i>	Hairy-banded miner	Asteraceae	<i>Euthamia, Solidago, Symphyotrichum</i>
<i>Andrena integra</i>	Bare dogwood-miner	Cornaceae	<i>Swida</i>
<i>Andrena kalmiae</i>	Sheep-laurel miner	Ericaceae	<i>Kalmia, Lyonia, Vaccinium</i>
<i>Andrena krigiana</i>	Dwarf dandelion miner	Asteraceae	<i>Krigia</i>
<i>Andrena melanothroa</i>	Strawberry mini-miner	Rosaceae	<i>Fragaria, Potentilla, Rubus</i>
<i>Andrena nida</i>	Sandbar willow miner	Salicaceae	<i>Salix</i>
<i>Andrena nigrae</i>	Orange-footed mini-miner	Salicaceae	<i>Salix</i>
<i>Andrena nubecula</i>	Cloudy miner	Asteraceae	<i>Euthamia, Solidago, Symphyotrichum</i>
<i>Andrena parnassiae</i>	Parnassia miner	Celastraceae	<i>Parnassia</i>
<i>Andrena persimulata</i>	Northern dogwood-miner	Cornaceae	<i>Swida</i>
<i>Andrena placata</i>	Shiny-tailed goldenrod miner	Asteraceae	<i>Eurybia, Solidago, Symphyotrichum</i>
<i>Andrena platyparia</i>	Dark-horned dogwood-miner	Cornaceae	<i>Swida</i>
<i>Andrena rehni</i>	Rehn's miner	Fagaceae	<i>Castanea</i>
<i>Andrena robervalensis</i>	Roberval miner	Asteraceae	<i>Euthamia, Solidago, Symphyotrichum</i>
<i>Andrena salictaria</i>	Willow mini-miner	Salicaceae	<i>Salix</i>
<i>Andrena sigmundi</i>	Sigmund's miner	Salicaceae	<i>Salix</i>
<i>Andrena simplex</i>	Dull-tailed goldenrod miner	Asteraceae	<i>Eurybia, Solidago, Symphyotrichum</i>
<i>Andrena uvulariae</i>	Bellwort miner	Colchicaceae	<i>Uvularia</i>
<i>Andrena vernalis</i>	Vernal mini-miner	Apiaceae	<i>Zizia</i>
<i>Andrena violae</i>	Violet miner	Violaceae	<i>Viola</i>

# Documented Specialist Bees in Connecticut by Plant Host

Bee Species	Common Name	Host Family	Host genus
<i>Andrena wellesleyana</i>	Wellesley willow miner	Salicaceae	<i>Salix</i>
<i>Andrena ziziae</i>	Golden Alexander mini-miner	Apiaceae	<i>Zizia</i>
<i>Calliopsis nebraskensis</i>	Nebraska vervain calliopsis	Verbenaceae	<i>Verbena</i>
<i>Colletes aestivalis</i>	Alumroot cellophane bee	Saxifragaceae	<i>Heuchera</i>
<i>Colletes americanus</i>	American cellophane bee	Asteraceae	<i>Solidago, Symphyotrichum</i>
<i>Colletes banksi</i>	Banks' cellophane bee	Aquifoliaceae	<i>Ilex</i>
<i>Colletes compactus</i>	Eastern aster cellophane bee	Asteraceae	<i>Bidens, Chrysopsis, Rudbeckia, Solidago</i>
<i>Colletes latitarsis</i>	Broad-footed cellophane bee	Solanaceae	<i>Physalis</i>
<i>Colletes productus</i>	Maleberry cellophane bee	Ericaceae	<i>Lyonia, Vaccinium</i>
<i>Colletes simulans</i>	Eastern spine-shouldered cellophane bee	Asteraceae	<i>Euthamia, Solidago, Symphyotrichum</i>
<i>Colletes solidaginis</i>	Goldenrod cellophane bee	Asteraceae	<i>Solidago</i>
<i>Colletes speculiferus</i>	Beach dune cellophane bee	Asteraceae	<i>Solidago, Symphyotrichum</i>
<i>Colletes validus</i>	Blueberry cellophane bee	Ericaceae	<i>Arctostaphylos, Vaccinium</i>
<i>Dianthidium simile</i>	Northeastern pebble bee	Asteraceae	<i>Solidago, Symphyotrichum</i>
<i>Dufourea monardae</i>	Bee balm shortface	Lamiaceae	<i>Monarda</i>
<i>Dufourea novaeangliae</i>	Pickernelweed shortface	Pontederiaceae	<i>Pontederia cordata</i>
<i>Habropoda laboriosa</i>	Blueberry digger	Ericaceae (mostly)	<i>Vaccinium</i>
<i>Hoplitis simplex</i>	Robertson's small-mason bee	Hydrophyllaceae	
<i>Hylaeus basalis</i>	Cinquefoil masked bee	Rosaceae	
<i>Hylaeus sparsus</i>	Broad-faced masked bee	Apiaceae	
<i>Lasioglossum nelumbonis</i>	Lotus sweat bee	Nelumbonaceae, Nymphaeaceae	
<i>Lasioglossum oenotherae</i>	Eastern evening primrose-sweat bee	Onagraceae	<i>Oenothera</i>
<i>Lasioglossum pectinatum</i>	Ground cherry sweat bee	Solanaceae	<i>Physalis</i>
<i>Macropis ciliata</i>	Ciliate yellow loosestrife bee	Primulaceae	<i>Lysimachia</i>
<i>Macropis nuda</i>	Dark-footed loosestrife bee	Primulaceae	<i>Lysimachia</i>
<i>Macropis patellata</i>	Patellate yellow loosestrife bee	Primulaceae	<i>Lysimachia</i>
<i>Megachile inimica</i>	Hostile leafcutter	Asteraceae	<i>Helianthus, Vernonia, Heliopsis, Erigeron</i>
<i>Megachile pugnata</i>	Pugnacious leafcutter	Asteraceae	<i>Helianthus, Heliopsis, Erigeron</i>
<i>Megachile melanophaea</i>	Black-and-gray leafcutter	Fabaceae	<i>Astragalus, Hedysarum, Lotus, Lupinus</i>
<i>Melissodes agilis</i>	Agile sunflower longhorn	Asteraceae	<i>Bidens, Symphyotrichum, Verbesina</i>
<i>Melissodes apicatus</i>	Pickernelweed longhorn	Pontederiaceae	<i>Pontederia cordata</i>
<i>Melissodes denticulatus</i>	Eastern ironweed longhorn	Asteraceae	<i>Helianthus, Vernonia</i>
<i>Melissodes dentriventris</i>	Tooth-vented longhorn	Asteraceae	<i>Chrysopsis, Pityopsis</i>
<i>Melissodes desponsus</i>	Thistle longhorn	Asteraceae	<i>Cirsium</i>



Bee Species	Common Name	Host Family	Host genus
<i>Melissodes druriellus</i>	Drury's longhorn	Asteraceae	<i>Solidago</i> , <i>Symphyotrichum</i>
<i>Melissodes illatus</i>	New England longhorn	Asteraceae	<i>Helianthus</i> , <i>Rudbeckia</i> , <i>Solidago</i>
<i>Melissodes subillatus</i>	Echinacea longhorn	Asteraceae	<i>Coreopsis</i> , <i>Cirsium</i> , <i>Rudbeckia</i>
<i>Melissodes trinodis</i>	Dark-veined longhorn	Asteraceae	<i>Bidens</i> , <i>Helianthus</i>
<i>Melitta americana</i>	Cranberry blunt-horn	Ericaceae	<i>Vaccinium</i> , <i>Vaccinium macrocarpon</i>
<i>Melitta eickworti</i>	Deerberry blunt-horn	Ericaceae	<i>Vaccinium stamineum</i>
<i>Melitta melittoides</i>	Lyonia blunt-horn	Ericaceae	<i>Lyonia</i>
<i>Osmia distincta</i>	Beardtongue mason	Plantaginaceae	<i>Penstemon</i>
<i>Osmia virga</i>	Blueberry mason	Ericaceae	<i>Vaccinium</i>
<i>Panurginus potentillae</i>	Cinquefoil bare-miner	Rosaceae	<i>Potentilla</i>
<i>Peponapis pruinosa</i>	Pruinose squash bee	Curcubitaceae	<i>Curcubita</i>
<i>Perdita novaeangliae</i>	New England fairy bee	Ericaceae	<i>Lyonia</i>
<i>Perdita octomaculata</i>	Eight-spotted fairy bee	Asteraceae	<i>Pityopsis</i> , <i>Solidago</i> , <i>Symphyotrichum</i>
<i>Protandrena aestivalis</i>	Aestival bare-miner	Asteraceae	<i>Eurybia</i> , <i>Rudbeckia</i> , <i>Solidago</i>
<i>Protandrena andreoides</i>	Eastern bare-miner	Asteraceae	<i>Eurybia</i> , <i>Rudbeckia</i> , <i>Symphyotrichum</i>
<i>Protandrena compositarum</i>	Composite bare-miner	Asteraceae	<i>Symphyotrichum</i>
<i>Protandrena labrosus</i>	Margined bare-miner	Asteraceae	<i>Helianthus</i>
<i>Protandrena pauper</i>	Ceanothus bare-miner	Rhamnaceae	<i>Ceanothus</i>
<i>Ptilothrix bombiformis</i>	Hibiscus turret bee	Malvaceae	<i>Hibiscus</i>

## ADDITIONAL RESOURCES

Fowler, J., and Droege, S., 2020. Pollen Specialist Bees of the Eastern United States.

[https://jarrodfozler.com/specialist\\_bees.html](https://jarrodfozler.com/specialist_bees.html)

Zarrillo, T.A., Stoner, K.A., Ascher, J.S., 2025. Biodiversity of Bees (Hymenoptera: Apoidea: Anthophila) in Connecticut (USA).

Zootaxa 5586, 1-138. <https://doi.org/10.11646/zootaxa.5586.1.1>

## LEARN MORE

Visit <https://portal.ct.gov/pollinatorinfo> to learn more about the work happening at the Connecticut Agricultural Experiment Station.

Visit our website [ag.umass.edu/pollinators](https://ag.umass.edu/pollinators) for educational content, upcoming events, & more!

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