

Promoting wild bees in your orchard.

1. Use caution when applying insecticides and fungicides.

Read labels and choose less harmful options when possible. Avoid spraying insecticides and fungicides when pollinators are flying. Spray before or after bloom or before or after the bees are active during the day.

2. Plant flowers that bloom before apple blossom.

These plants provide food to the most important apple pollinators when resources are especially scarce. Planting flowers that bloom after apples is also important for longer-flying species like bumble bees.

3. Provide nesting habitat for wild bees near the apples.

- Sunny, well-drained, sparsely vegetated soil is best. A south-facing slope of sandy soil provides good nesting habitat.
- Piling brush and plant debris provides good bumble bee nesting habitat.

It is important that these resources are not in areas of pesticide drift. At the same time, many wild bees are only able to fly a short distance (less than 500 yards) from their nest to forage so it can't be too far from the orchard trees.

By becoming familiar with and caring for the wild bees found in your orchard, you can decrease your dependence on honey bees and increase apple pollination and fruit set.

Trees and shrubs that bloom *before* apple



Chokecherry
Prunus virginiana



Serviceberry
Amelanchier sp.



Pussy willow
Salix discolor



Plum, cherry
Prunus spp.



Blueberry
Vaccinium corymbosum

Additional information on good bee plants can be found online at:
xerces.org/pollinator-resource-center/

Flower photo credit:
Lady Bird Johnson Wildflower Center

Additional resources

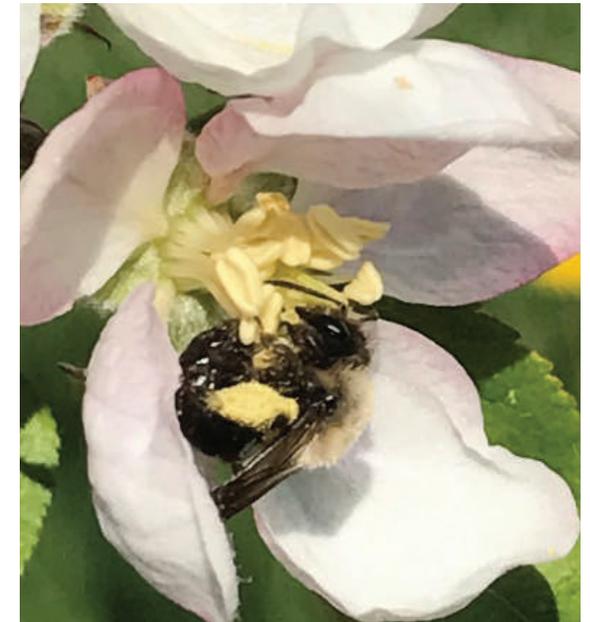
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- The Xerces Society, www.xerces.org
- Wisconsin Wild Bee Guide, <https://energy.wisc.edu/bee-guide/>

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Wild pollinators in Wisconsin apple orchards



An introduction to wild orchard pollinators and how to conserve them.



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Pollination is essential to apple production.

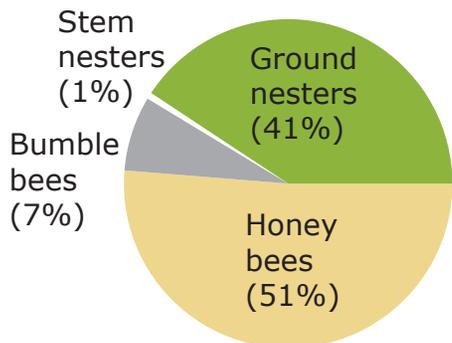
Apples require cross-pollination to produce fruit. For this to happen, pollen needs to be transferred from the flower of one variety to the flower of another variety.

Wild bees are important apple pollinators.

Bees are the most important pollinators of apple. In Wisconsin, many apple growers use managed European honey bees, but there are also ~80 species of wild, native bees found in Wisconsin apple orchards. Wild bees account for about half of all bee visits to apple blossoms.

Unlike honey bees, the majority of wild bees are solitary, meaning that there is no queen or hive. Solitary bees take a full year to complete their life cycle and are only active as adults for a few weeks in the year.

Bee visitation to apple by different groups of bees



Wild bee pollinators found in Wisconsin apple orchards.

Ground nesting bees

Mining bees (*Andrena spp.*)

- Solitary
- Nest underground
- Size: < 0.5 inch
- Flight range: ~500 yards - 1 mile



Dark sweat bees (*Lasioglossum spp.* and *Halicus spp.*)

- Solitary
- Nests underground
- Size: 0.25-0.5 inch
- Flight range: < 500 yards to 1 mile



Bumble bees

(*Bombus spp.*)

- Social
- Nest underground in rodent burrows or within piles of plant debris or brush piles
- Size: 0.75 - 1 inch
- Flight range: > 1 mile



Most bumble bees seen visiting apple blossoms are queens since apple blooms early in the spring when the queens are just emerging from hibernation.

Stem nesting bees

Mason bees (*Osmia spp.*)

Small carpenter bees (*Ceratina spp.*)

- Solitary
- Nest in hollow stems and twigs
- Size: 0.25 - 0.5 inch
- Flight range: < 500 yards

