

Do You “Know Your 5”?

BRAMBLE POLLINATION



With more than 350 species of bees in Vermont, it can be daunting to understand them all. This factsheet presents a brief overview of bramble pollination and some important bees for – and supported by – raspberry and blackberry blossoms. By identifying and understanding the natural history of these bees, you can provide the specific habitat that will help to ensure resilient and abundant pollination services and the tasty treats that result from the bee/plant relationship.

The domesticated western honey bee (*Apis mellifera*) gets credit for most of the agricultural pollination in North America. However, in many cases, wild bee species are more effective pollinators. And unlike honey bees in the Northeast, wild bees do not need human assistance to survive. They just need a safe place to nest and plenty of flowers to eat from.



Bramble Pollination Overview

Most brambles are moderately self-fertile and insect mediated pollination is important for uniform berry shape and for large, marketable fruit. Bramble flowers have numerous pistils and stamens, with anthers of the stamens releasing pollen from the flower edge inward. Pistil stigmas receive this pollen, with pollen deposition greatly enhanced by bees helping to evenly distribute pollen among stigmas. A single bramble plant may be in various stages of flowering for 1 to 3 weeks. There are many native brambles visited by a wide variety of bees, most of which are likely also in commercial plantings. Summer and fall bearing raspberries are grown on farms in the northeast, with fall bearing raspberries blooming much later which are likely pollinated primarily by long-season generalist bees.

General Recommendations For Supporting Diverse Pollinators

Provide flowers, especially native blooms, for as much of the growing season as possible. Also leave a messy area with leaf litter and dead plant stalks, which provides important nesting and overwintering habitat for many bees. Crop management can have significant implications for nesting habitat of several important pollinators that nest and overwinter in bramble stems where the pith was exposed, either by pruning or raspberry cane borers. Be careful and conservative with any pesticide applications. Avoid spraying during bloom when possible, and follow an integrated pest and pollinator management plan.

The following five bees are important to bramble pollination:

Bumble Bees (genus *Bombus*)

These large, charismatic bees are great pollinators of most crops. Queens emerge in early spring, with the colony size growing through June and July. Workers and males are active through September and are likely important pollinators of fall raspberries. Early blooming flowers (willows, maples, etc.) and nesting habitat (hedgerows, woodlots) are important to maximize local populations. There are 13 species in Vermont and with practice many can be identified in the field. Having multiple species on a farm adds resilience and increases pollination in inclement weather. (Photo courtesy of Laura Johnson.)



Small Carpenter Bees (genus *Ceratina*)

There are four species of this ubiquitous genus found in Vermont. They nest and overwinter in pithy plant stems (raspberries, goldenrod, mint varieties, sumac, etc.), and are active from early April through October, with peak abundance in May and June. They can be recognized by their slate blue color, swollen abdomen, and usually a small white mark on the face. This bee visits a number of crops, and is particularly fond of strawberries and raspberries.



Masked Bees (genus *Hylaeus*)

These tiny wasp-like bees are easy to overlook but can be abundant on brambles and other summer flowers. Most are less than a 1/4-inch long with yellow marks on the face and legs. They nest in pre-existing cavities, especially hollow plant stems (including in brambles).



Milwaukee Miner (*Andrena milwaukeeensis*)

33 species of mining bees have been recorded on bramble flowers in Vermont, with the Milwaukee miner being one of the most common and distinctive. This species, like many other mining bees, benefits from some forest cover, especially with a flowering understory. Hawthorns, mountain maple and dogwoods all provide resources for the late spring species likely to visit brambles.



Western Honey Bee (*Apis mellifera*)

In most landscapes, honey bees are likely less important in summer bramble pollination, though may be more important for fall raspberries. Furthermore, fall raspberries may be a valuable late season food source for honey bees and generalist native bees. (Photo courtesy of Laura Johnson.)



All photos courtesy of Spencer Hardy unless otherwise noted. "Do You Know Your 5?" is a project of the Vermont Pollinator Working Group, with funding from the Gund Institute's Apis Fund (<https://www.uvm.edu/gund/apis-fund>). For more information about bees, email shardy@vtecosudies.org. For questions about pollinator support practices on farms, email laura.o.johnson@uvm.edu.