



Do You “Know Your 5”?



STRAWBERRY 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 strawberry pollination and some important bees for — and supported by — blossoms of these crops. 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.



Strawberry Pollination Overview

Wild strawberries are widespread in Vermont and this has resulted in a close association with a number of wild bees. Most commercially bred strawberries are self-fertile but insect pollination is important for fruit quality. Successful pollination should occur within 1 to 4 days of bloom and stamens are a deep yellow when pollen is viable. When anthers have begun to dry after a flower opens, pollen bursts under tension and scatters across stigmas. Insect pollinators assist with this pollen dispersal, benefiting yield and quality of berries. June-bearing varieties bloom in mid- to late spring, slightly after wild species, and are likely visited by many of the same pollinators. Ever-bearing strawberries bloom considerably later in the summer when a different suite of species is active. Strawberry flowers are also visited by a wide range of non-bee insects, especially beetles and flies, many of which likely contribute to pollination.

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. Be careful and conservative with any pesticide applications, especially for strawberries since tarnished plant bug control happens during bloom. Follow an integrated pest and pollinator management plan, and if spraying is necessary, choose options that are less toxic to bees.

The following five bees are important to strawberry pollination:

Bumble Bees (genus *Bombus*)

These large, charismatic bees are great pollinators of most crops. Queens emerge in early spring followed by the smaller workers, which are active from early June through late fall. 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.



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.



Strawberry Mini-Miner (*Andrena melanochroa*)

This small (approximately 6mm) species is only found on strawberries and cinquefoils and flies in May and June. This bee nests in the ground, with a preference for sandy, loose soil and is unlikely to forage more than a few 100 yards from nest sites. Where present it is likely a valuable strawberry pollinator. Protect sandy areas with sparse vegetation where you note bee activities because the nests of many species resemble ant hills. At least seven other species of Miners have been recorded visiting strawberries in Vermont.



Confusing Furrow Bee (*Halictus confusus*)

This common generalist is often found on strawberries and other crops. It is active from April through October, and can be identified by the shiny body and thick hair bands on the abdomen. It appears to thrive around human disturbance and can be found nesting in farm roads and dirt parking areas.



Nomad Cuckoo Bees (genus *Nomada*)

These brightly colored bees are brood parasites of other bees. Most species lay their eggs in the nests of mining bees (genus *Andrena*) where the nomad larvae develop in place of their hosts. Although they don't gather pollen, the adults still visit flowers, including strawberries and are potential pollinators. Their presence indicates a healthy population of their host species. They are most abundant near sandy soils in April and May. (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.