



Flower Flies

Flower flies (family Syrphidae), also known as syrphid flies or hover flies, are an important but underappreciated insect pollinator group. There are over 6,000 species of flower fly worldwide and 850 species in North America. These include the 413 known species found in Northeastern North America, which come in a wide array of shapes, colors, and sizes. Though they might look a bit like an insect that could bite or sting you, these flies are harmless to humans. Not only that, but flower flies also provide us with the incredibly important services of pollination, pest control, and decomposition. Given the mounting evidence of insect decline worldwide, it is more essential than ever that we celebrate and conserve these beautiful critters!

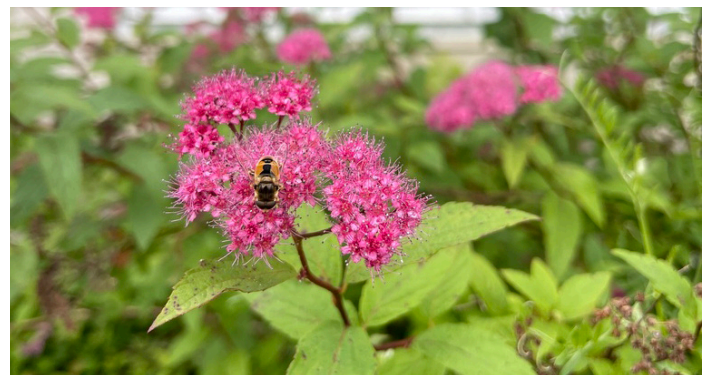
LIFE HISTORY

Description: Flower flies belong to an order of insects called Diptera, which includes groups such as mosquitoes, horseflies, crane flies, and robber flies. Diptera are two-winged insects that also have clubbed, modified wings called halteres that make them excellent, agile fliers. Flower flies are particularly good fliers and can beat their wings several hundred times a second, which allows them to remain stationary in the air (hence, their common name of “hover fly”). Many flower flies are quite beautiful, with brightly colored spots and stripes that often mimic the patterns found on bees and wasps. This type of mimicry is called Batesian Mimicry, in which the flies mimic protective coloration in order to trick potential predators into thinking that they have a stinger (even though they do not). However, there are several features to look for when distinguishing these flies from the bees and wasps they mimic (see: “Is it a Fly?”). The males and females of most flower fly species look relatively the same, however the males tend to have larger eyes. In many cases, the eyes of the males are so large that they touch above the antennae. Sometimes males are also visibly longer than the females since they have an extra abdominal segment.

Range and Habitat: Flower flies can be found in almost any terrestrial environment, especially those that are dominated by native flowers which are an important food source for the adults. They are particularly attracted to meadows, forest edges, and riparian areas, especially with nearby water sources. Flower

flies are not able to retain water, so it’s important that they have access to water on hot days or in times of drought. Additionally, some flower fly larvae are aquatic and therefore the adults need access to water sources to lay their eggs. Unlike bees, flies do not live in nests and instead sleep on the undersides of leaves and in tall grasses, which makes them more adaptable to changes in habitat composition.

Food Habits: Unlike some other fly species, flower flies do not bite humans or other animals. As adults, the flies feed on nectar and pollen from a wide variety of flowers, though they seem to prefer small white and yellow flowers. However, as larvae, flower fly diets vary quite a bit between species. Some flower fly larvae are predators, feeding on soft-bodied insects such as aphids, scales, and thrips, or the eggs and larvae of other species, such as bees and ants. Other flower fly larvae specialize on fungi or plant material (including roots, stems, and pollen). There are also saprotroph larvae who feed on decaying plant and animal material.



Behavior: Flower flies regularly visit flowers to either forage for nectar and pollen, to rest, or to look for mates. When they visit these flowers, pollen gets stuck to their hairs which allows them to carry out the ecosystem service of pollination. Not only do they aid in the reproduction of wild plants, which is important for supporting healthy food webs, they also support our food security by being good pollinators of several food crop species, such as sweet peppers, melon, and strawberries. Next to bees, flower flies are considered one of the most important pollinator groups and contribute to the pollination of many wild and cultivated plants.

Due to the feeding habits of flower fly larvae, these species also provide the services of decomposition and pest control. By eating aphids and other garden pest species, many flower flies protect wild and cultivated plants from defoliation and the spread of disease. By eating decaying plant and animal material, other flower fly species are able to aid in decomposition and the recycling of nutrients back into the environment.

IS IT A FLY?	
Flies	<ul style="list-style-type: none"> • Two wings • Short antennae • Eyes on front of head • Can be hairy or hairless • No distinct “waist”
Wasps	<ul style="list-style-type: none"> • Four wings • Long antennae • Eyes on sides of head • Mostly hairless or with a few bristles • Slender bodies with a defined “waist”
Bees	<ul style="list-style-type: none"> • Four wings • Long antennae • Eyes on side of head • Hairy with branched hair • Chunky bodies with a short “waist”

Reproduction: Adult flower flies are most active between late spring and early fall. Each species produces 3-7 generations per year, depending on climatic conditions and food availability. In the course of their lifecycle, flower flies go through a complete metamorphosis, which is a process that takes about 2-4 weeks.

To find a mate, some species of flower fly males will use a technique called “hilltopping.” Males aggregate on hilltops, which they use as landmark mating sites to wait for females. After mating, female flower flies lay their eggs near their larvae’s preferred food source, depending on the species. This includes the stems of plants that host aphids, the nests of social insects (e.g., ants or bees), decaying plant or animal matter, and stagnant water. After hatching, a larva will molt three times before making puparium (i.e., a cocoon made from the hardened skin of the last larval stage) and pupating within it. Unless it’s too late in the season, an adult will emerge from the puparium in 1-2 weeks. If it’s later in the season, most flower flies will overwinter as larvae or pupae in the soil and leaf litter.

THREATS

Population Decline: Little is known about the population statuses of North American flower fly species, as this is a largely under-surveyed and underappreciated insect group. However, our limited North American records, as well as data from Europe, suggest that flower flies may be facing population declines due to habitat loss, pesticide use, climate change, and introduced species. These are the same threats faced by other insect pollinators, such as bees and butterflies, which means that protecting and conserving flower flies also benefits these species.

CONSERVATION ACTIONS

- Talk to friends, family, and fellow community members about the importance of flower flies and encourage them to consider the needs of flower flies and other pollinating insects needs in their landscaping choices.
- Join a local Community Supported Agriculture (CSA) initiative or try to purchase local, seasonal, organic produce.
- Support organizations and initiatives that are helping to conserve flower flies and other pollinators.
- Leave the leaves in the fall to protect overwintering flower fly larvae and pupae.
- Avoid using weedkillers and insect sprays in your garden and on your lawn, as these can limit the availability of flowers available for flower flies to feed on and/or can poison the nectar and pollen that they eat, which may kill or impair the flies.
- Remove invasive plants like bittersweet, garlic mustard, and dog-strangling vine, which can outcompete and choke out native plants that are beneficial for flower flies.
- Plant an herb garden by filling a window box or raised bed with flower fly-friendly, small-flowered herbs like dill, mustard, chamomile, and coriander.
- Plant or encourage native yellow and white flowers such as native yarrows, goldenrods, and asters.
- Maintain or plant a native, flowering hedgerow to act as a windbreak to help flower flies fly and forage in windier conditions.

Common Native Rhode Island Flower Flies



Rachael Bonoan

MARGINED CALLIGRAPHER (*Toxomerus marginatus*)

Habitat: This flower fly can survive in many habitats.

Identifying marks: This fly can be identified from other small, black and yellow flower flies by the small black spot near the tip of the abdomen and a completely yellow “margin” around the abdomen.

Larval food: The larvae of this fly feed on aphids, mealybugs, thrips, and caterpillars.



Spencer Hardy

EASTERN CALLIGRAPHER (*Toxomerus geminatus*)

Habitat: This flower fly can survive in many habitats.

Identifying marks: This fly can be identified from other small, black and yellow flower flies by the black, goblet-shaped markings on the abdomen. They also have a black scutellum (the half-moon shaped spot separating the thorax from the abdomen) that is ringed with yellow.

Larval food: The larvae of this fly feed on aphids and mites.



Katherine Burns

NARROW-HEADED MARSH FLY (*Helophilus fasciatus*)

Habitat: This fly is commonly found near water, particularly ponds and agricultural silage areas.

Identifying marks: The thorax of this fly has black and white lengthwise stripes. The abdomen has transverse black bands and narrow, lemon-yellow stripes. The first yellow stripe is always incomplete, and the others are often complete (though not always). These flies have dark red eyes and their eyes never meet in the middle, even in males.

Larval food: The larvae of this fly are aquatic filter feeders and feed on decaying vegetation and other organic material.



Rachael Bonoan

TRANSVERSE-BANDED FLOWER FLY (*Eristalis transversa*)

Habitat: This flower fly can survive in many habitats.

Identifying marks: The thorax of this fly is grey and black. This species has a bright yellow scutellum (the half-moon shaped spot separating the thorax from the abdomen) and large yellow triangular spots on the abdomen. Both males and females have yellow and black stripes on the abdomen, however the male has a black spot in the middle of the abdomen.

Larval food: The larvae of this species feeds on aphids and other soft-bodied insects, decaying organic matter, and occasionally beetle eggs.



Spencer Hardy

BLACK-SHOULDERED DRONE FLY
(*Eristalis dimidiata*)

Habitat: This flower fly is commonly found in forests.

Identifying marks: The thorax of this fly is dark, blackish brown and fringed with white hairs. The abdomen is dark in appearance with pale, yellowish triangular spots and white stripes extending down the abdomen. Sometimes females do not have spots and just have white stripes.

Larval food: The larvae of this flower fly are aquatic and feed on small, aquatic organisms.



Max McCarthy

OBLIQUE STREAKTAIL
(*Allograpta obliqua*)

Habitat: This flower fly can survive in many habitats.

Identifying marks: This fly can be identified from other small, black and yellow flower flies by the slanted, yellow dashes on the end of the abdomen.

Larval food: The larvae of this flower fly eat aphids, mites, caterpillars, psyllids, mealybugs, and whiteflies.



Max McCarthy

TUFTED GLOBETAIL
(*Sphaerophoria contigua*)

Habitat: This flower fly can survive in many habitats.

Identifying marks: This flower fly has a long, slender abdomen. Females have unbroken black and yellow stripes down the abdomen, while males have black and yellow stripes at the top of the abdomen with a pale orange lobe at the end of the abdomen.

Larval food: The larvae of this flower fly eat aphids, thrips, and caterpillars.



Max McCarthy

BARE-EYED MIMIC FLY
(*Mallota bautias*)

Habitat: This fly is commonly found in hardwood forests.

Identifying marks: This species is very hairy and resembles a bumblebee. The thorax is yellow and the abdomen is entirely black.

Larval food: : The larvae of this species are aquatic and are filter feeders found in water-filled tree holes.