



UNIVERSITY OF GEORGIA
EXTENSION

Common Hover Flies of Georgia: An Introductory Guide

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A gathering of hover flies (*Eristalis tenax*) on goldenrod (*Solidago* sp.). Image: iNaturalist user manysprings.

What is a Hover Fly and Why are They Important?

Hover flies, also known as flower flies or syrphid flies, are a highly diverse, common, and charismatic group of insects. They can be found in a wide variety of habitats, from forests and prairies to city parks, sports fields, and vacant lots. Most people are likely to have encountered these insects, but few know how to identify them, and even fewer know of the ecological services they provide.

There are over 6,200 species worldwide and 812 in the United States and Canada (Miranda et al., 2013). Most of them are pollinators, predators, and/or decomposers. Most species are also mimics of various bees and wasps, so they are commonly mistaken for stinging insects. However, to the well-trained eye, they can be easily distinguished.

The goal of this publication is to alleviate this “hover fly blindness” by highlighting the importance of these magnificent insects and providing a brief guide to genera and species found in the southeastern United States, specifically the state of Georgia. Users should note that this guide does not cover all 180–190 species known to occur in Georgia, but it does cover those which are most commonly encountered.

Pollination Services

Adult hover flies are almost always anthophilous, meaning that they seek flowers to obtain nectar and pollen for food. Just like bees, they are important in the pollination process for many flowering plants. Pollen picked up from flowers will stick to the fly body, hairs (**setae**), and legs, where it may be transported from one flower to the next. Pollen that falls off the fly and onto the stigma of a flower can then fertilize that flower and allow it to fruit. Most people do not think of flies when they think of pollinators. In fact, flies as a whole (i.e., members of the taxonomic order Diptera) are widely considered the second-most important group of pollinating insects after bees, and much of this is attributed to hover flies (Orford et al., 2015). In the eastern U.S., hover flies can be important for pollinating a variety of crops including carrots, apples, peaches, mangoes, canola, sweet peppers, onions, and strawberries, among others (Jauker and Wolters, 2008; Rader et al., 2015; Dunn et al., 2020). Many hover flies in Georgia and throughout the Southeast are especially common during spring and fall when temperatures are cooler, making them valuable early- and late-season pollinators. In addition to pollination, there are several other ecosystem services provided by hover flies.

Biological Control and Decomposition Services

Just like many other insects, hover flies exhibit what is called complete metamorphosis. This is where an insect has distinct egg, larval, pupal, and adult stages that all appear and behave completely differently from one another (see Figures 3 and 15). In the case of hover flies, larvae occupy a diverse array of ecological niches that are vastly different from adults and vary by taxonomic grouping.

The most diverse grouping of hover flies, the subfamily Eristalinae, contains species that are essential decomposers, with larvae adapted for dung feeding (**coprophagy**), fungus feeding (**mycophagy**), plant feeding (**herbivory**), and aquatic filter feeding (see Figure 16). In the genus *Eristalis*, for example, larvae known as rat-tailed maggots (named after their long tail-like breathing siphon), can live in highly putrid conditions like animal waste lagoons and cesspools where they help break down organic waste that may otherwise pollute the environment (Skevington et al., 2019).

Perhaps the best-known hover fly larvae, however, are those of the subfamily Syrphinae, which are mostly terrestrial predators. This subfamily encompasses approximately one-third of all hover fly species and contains some of the most commonly encountered adults like those of the genus *Toxomerus* (Figure 10). Larvae of these flies resemble tiny green/brown slugs (Figure 4), and are often found on plants where they feed on aphids and other soft-bodied insects, many of which are pests. Damage by aphids to vegetable, grain, and fruit crops causes billions of dollars in losses annually in the United States alone (Bugg et al., 2008; Ragsdale et al., 2011), so these larvae should be considered beneficial to farmers and gardeners. These insects tend to ravage aphid populations (Dunn et al., 2020), with some larvae consuming nearly 1,000 aphids before reaching adulthood (Schneider, 1969), so their presence can eliminate or reduce the need for

insecticides. Next time you see an aphid colony, look closely to see if you can find these larvae.

Hover Fly Classification

Taxonomists group all organisms into classifications known as taxa based on morphological, behavioral, and genetic similarities. Hover flies are true flies of the insect **order Diptera**, specifically grouped into the **family Syrphidae**. Within the family Syrphidae, the over 200 **genera** (plural for genus) and 6,200 species of hover flies are all split among four subfamilies based on similarities in morphology and life history traits: Syrphinae, Pipizinae, Eristalinae, and Microdontinae.

These four subfamilies, all of which are found in Georgia, will be discussed in detail throughout this publication.

Distinguishing Features of Hover Flies

Hover flies are perhaps best known for their tendency to mimic bees and wasps, the purpose of which is to fool predators into thinking that they are harmful or dangerous (Marshall, 2012). Indeed, popular advertisements, news articles, and even scientific publications mistake these flies for bees or wasps. However, hover flies (and other true flies) can be distinguished by having only two wings, short antennae (usually), and large eyes in proportion to the body. Bees and wasps have four wings, longer antennae, and smaller eyes. Additionally, many bees have distinctive pollen baskets that are often packed with orange/yellow pollen.

While hover flies are usually the most common bee- and wasp-mimicking flies, others may be confused with hover flies. For example, some species within the families Asilidae (robber flies), Bombyliidae (bee flies), Conopidae (thick-headed flies), Stratiomyidae (soldier flies), and Tachinidae (parasitic bristle flies) are quite good mimics and may even be spotted visiting flowers. Hover flies can be distinguished from these other groups using several features, but perhaps the clearest feature is the spurious wing vein (Figure 2). This characteristic is found in almost all hover flies except a few rare species.

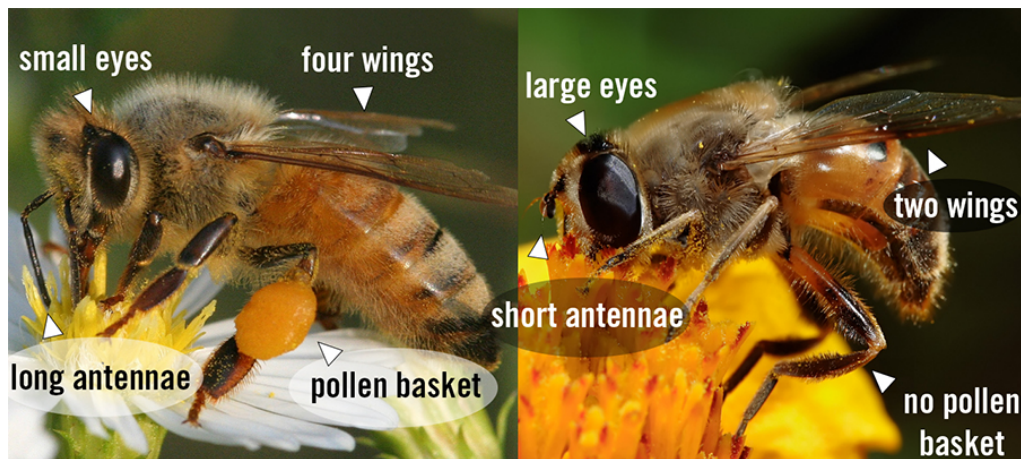


Figure 1. A Honeybee Model (*Apis mellifera*; left) Compared to the Hover Fly Mimic (*Eristalis tenax*; right). Images: David Cappaert (*A. mellifera*), Firo0002/Flagstaffotos (*E. tenax*).

How to Use This Guide

This guide is intended to assist users in identifying the most common hover flies found in Georgia and throughout much of the southeastern U.S. There are pictures of all common species or genera and arrows pointing to important characteristics. If desired, users can [download a PDF of the species group images and names](#) for quick reference.

Species are divided into three groups of photographs based on appearance, life history traits (predacious vs. nonpredacious larvae), and subfamily categorization (more information below). For guidance on technical terms related to external morphology, see Figure 2.

Hover Fly Anatomy

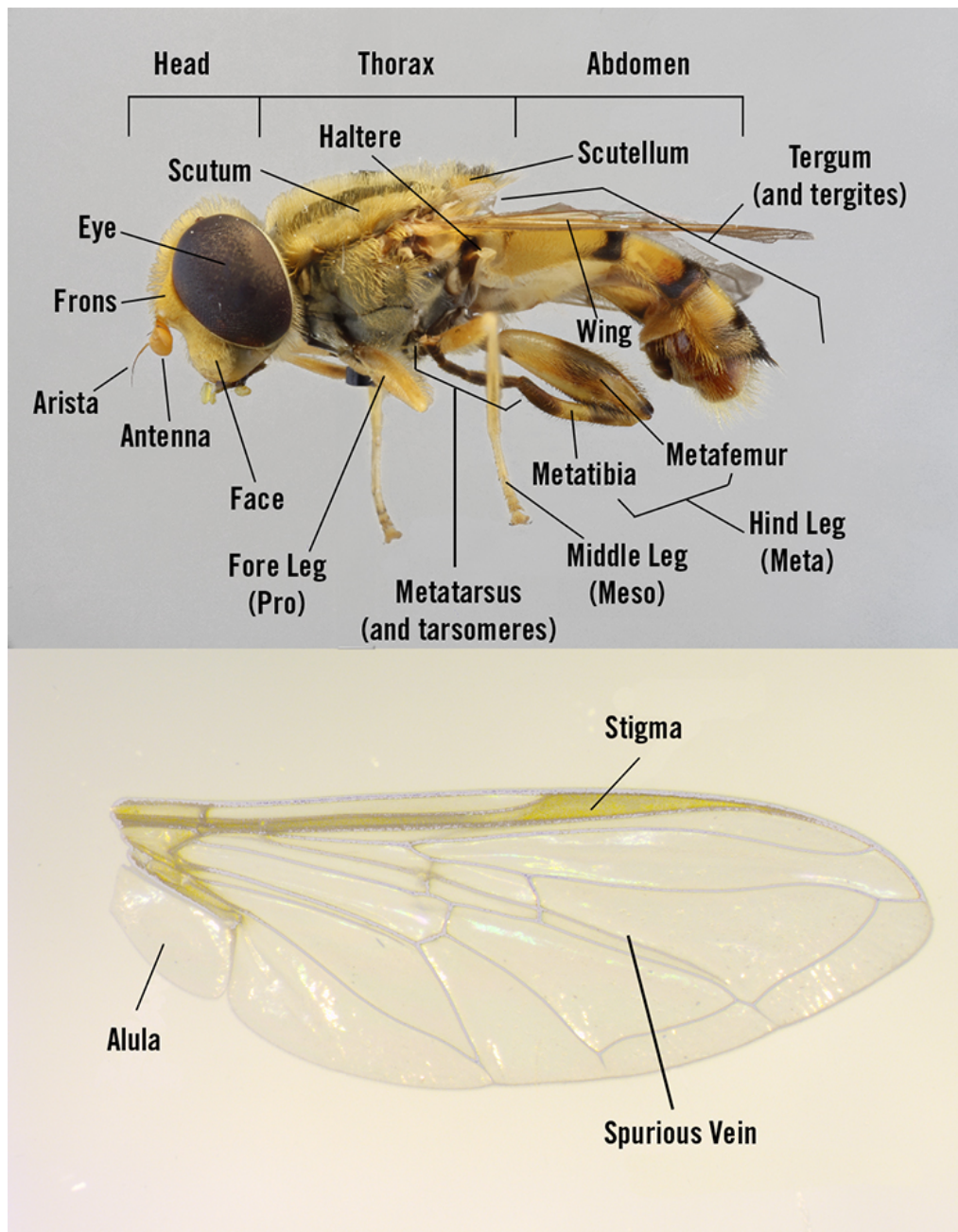


Figure 2. Generalized Hover Fly Anatomy and Important Characteristics. The top image is a lateral view of *Parhelophilus integer* and the bottom is an image of a *Eupeodes americanus* wing. Note the **spurious vein**, an important characteristic of hover flies which is not found in other true flies. Images: C. Scott Clem.

Species Photographs

Photographs appear alongside details of each species representing the most common genera and species of hover flies encountered in Georgia. Species have been divided into three groups based on life history and appearance:

1. Species with primarily predacious aphid-feeding larvae (Syrphinae and Pipizinae),
2. Species with nonpredacious larvae that resemble wasps (Eristalinae part 1)
3. Species with nonpredacious larvae that resemble bees (Eristalinae part 2 and Microdontinae).

Exceptions are noted with asterisks (*). If desired, users can [download a PDF of the species group images and names](#) for quick reference and comparison. Throughout this guide, readers will see diagrams of general life histories (Figures 3 and 15), photos of representative larvae (Figures 4 and 16), and specific details of each species, including their defining morphological characteristics (also signified by arrows on the photos).

This guide covers the majority of common taxa, but it is not comprehensive and does not include some rare and uncommon taxa that occur in Georgia. There are at least 76 genera of hover flies that occur in Georgia, and this guide covers 32 of those. For simplicity, species that cannot be identified without a microscope are only covered at the genus level. There are currently no comprehensive guides to southeastern Syrphidae, but the *Field Guide to the Flower Flies of Northeastern North America* (Skevington et al., 2019) provides beautiful details of taxa, many of which also occur in the Southeast. Please see the section at the end of this guide for a list of genera/species that occur in Georgia but are believed to be less-commonly encountered. For an online pictorial key to North American genera, see Miranda et al. (2013).

Species Information

Group 1: Species With Predacious Larvae

Subfamily Syrphinae

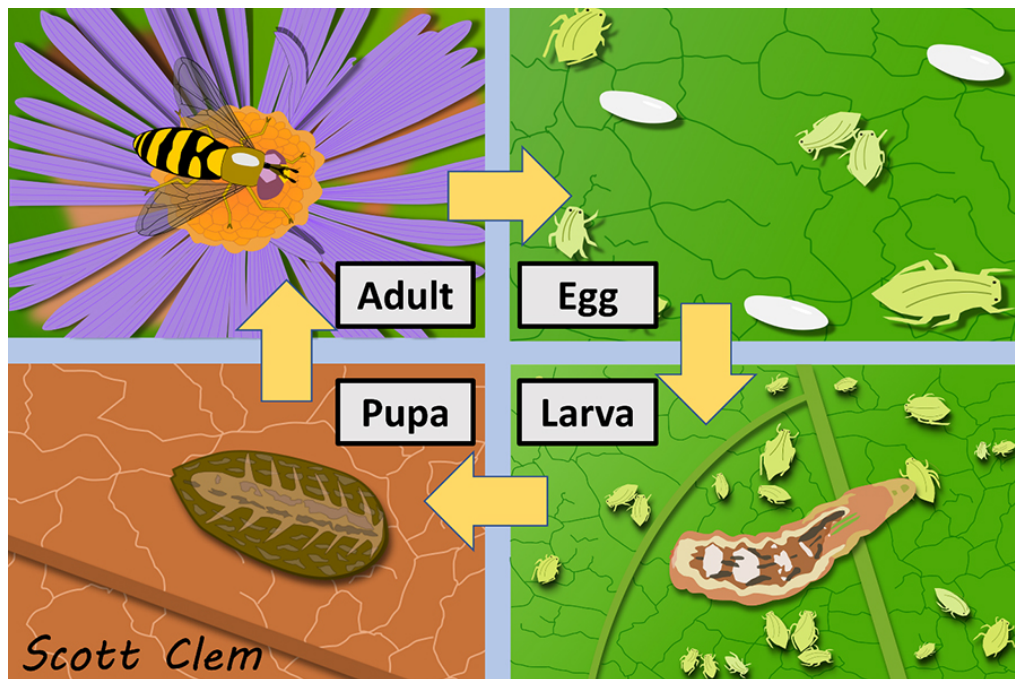


Figure 3. Life cycle of *Eupeodes americanus* (Syrphinae), the Long-Tailed Aphideater. Image: C. Scott Clem.

Figure 3 depicts the *Eupeodes americanus* life cycle and is representative of most flies from the subfamily Syrphinae. Adult flies seek out colonies of herbivorous aphids and will lay an appropriate number of small, white, oval-shaped eggs among them. Tiny first-instar larvae hatch a few days later and immediately begin feeding on the aphids. Larvae become progressively larger as they advance through five larval instar stages. Once they reach the fifth stage they pupate and eventually become an adult to begin the process over again. Most of the time, males and females are easy to distinguish: females have a distinct gap between the eyes **dorsally** (situated near the back) and males are **holoptic**, meaning that their eyes are touching. This is also true for many members of the subfamily Eristalinae, as well as other fly families.



Figure 4. Larval Syrphinae. These larvae generally resemble tiny slugs or caterpillars and are almost always found among aphid colonies. They are often well-camouflaged and difficult to spot, especially at younger stages. Major knowledge gaps exist when it comes to larval

identification, especially species. Some online resources exist, but an identification is usually best achieved by rearing larvae to adults or using genetic markers. Left: *Eupeodes* sp. (Image: Mark VanderWerp). Middle: *Ocyptamus* sp. (Image: Thomas Shahan). Right: *Allograpta* sp. (Image: Ken Childs).

Group 1 Species Descriptions

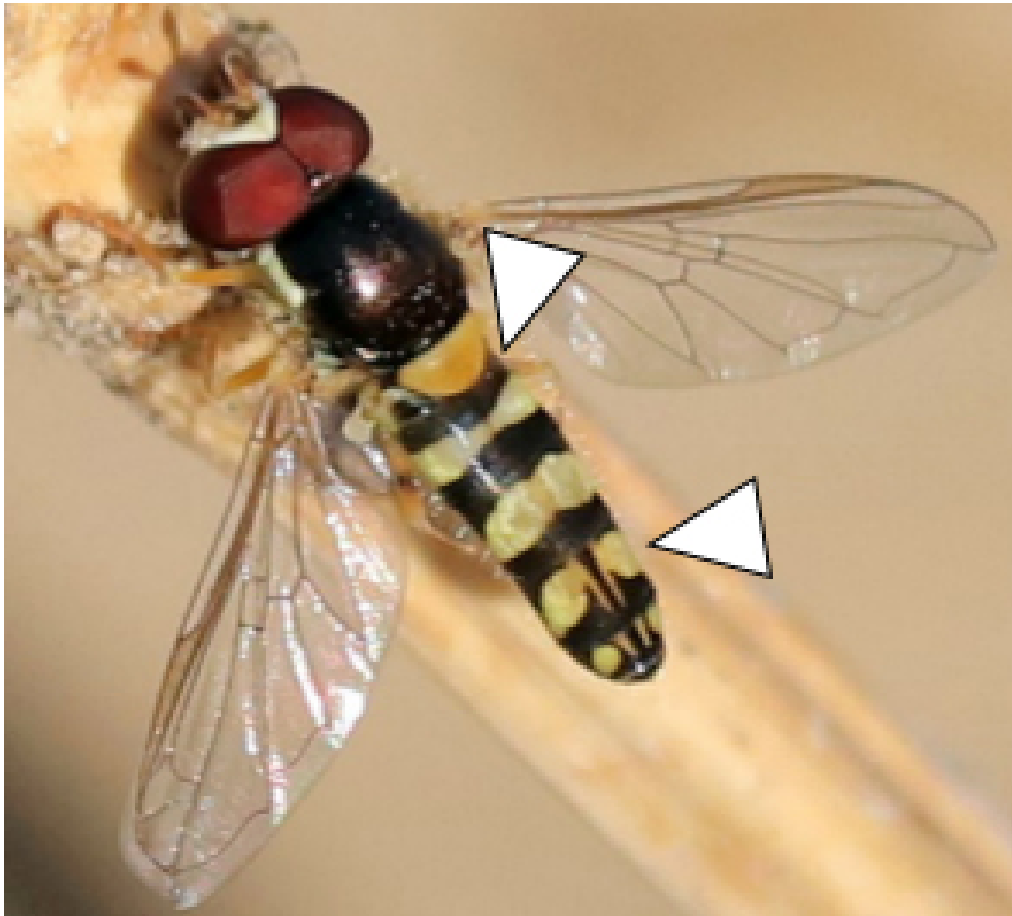




Figure 5. *Allograpta exotica* (Image: Catherine Galley) and *A. obliqua* (Image: C. Scott Clem).

Allograpta

Allograpta species are easily recognized by the four dorsal yellow bands at the tip of the abdomen, two parallel vertical bands, and two diagonal tear-drop shaped bands. Both ***A. exotica*** (4.7–8.5 mm) and ***A. obliqua*** (5.4–9 mm) commonly occur in Georgia, although *A. obliqua* is most common. *Allograpta exotica* tends to be smaller, lighter in color, and has slightly different thoracic and abdominal patterning. Specifically, the vertical bands at the tip of the abdomen are often connected to the middle bands, and the second abdominal tergite is black and lacks a small yellow strip (see arrows in photos).



Figure 6. *Sphaerophoria contigua*, subfamily Syrphinae. Images: Tom Murray (male, inset), C. Scott Clem (female, main image).

Sphaerophoria

Sphaerophoria are slender flies with horizontal yellow-black bands on the abdomen. These are most similar to *Allograpta* species, but they lack the four bands at the tip of the abdomen. They also look similar to, but typically much smaller than, *Eupeodes* or *Syrphus* species. Known as globetails, males (see inset image) have a characteristic globular-shaped tip to the abdomen, which is absent in females. There are at least 10 species in eastern North America, but ***S. contigua*** (6.5–8.8 mm) is by far the most likely to be spotted in the Southeast. It is relatively uncommon in Georgia and further south.



Figure 7. *Eupeodes americanus*, subfamily Syrphinae. Image: C. Scott Clem.

Eupeodes

The genus *Eupeodes* is most easily distinguished from similar genera (like *Syrphus*) by having a black-margined abdomen (see photo). This character is especially apparent when examined from below. Several species occur in the eastern U.S. but ***Eupeodes americanus*** (7–11 mm) is the most common in Georgia. The less common very similar species ***E. pomus*** (6.8–12 mm) may also be encountered but is only distinguishable based on male genitalia (see Skevington et al. 2019). *Eupeodes americanus* exhibits long-distance migration and will fly hundreds of miles from northern latitudes to the southeastern U.S. during autumn (Clem et al. 2022a, Clem et al. 2022b). In Georgia, these flies are most commonly found in the fall and spring.



Figure 8. *Syrphus* sp., subfamily Syrphinae. Image: C. Scott Clem.

Syrphus

The genus *Syrphus* is superficially similar to *Eupeodes* except that it lacks the black-margined abdomen. At least five species occur in Georgia: ***S. torvus*** (8.6–13.3 mm), ***S. vitripennis*** (7.6–11.4 mm), ***S. ribesii*** (8.1–13.3 mm), ***S. knabi*** (7.2–12.9 mm), and ***S. rectus*** (7.2–10.3 mm). These species can be distinguished by a combination of wing, leg, and antennal characteristics (see Skevington et al., 2019; Vockeroth, 1992). Members of the similar genus *Epistrophe* also occur in the state, although they are less common. Like *E. americanus*, some *Syrphus* species also exhibit long-distance seasonal migration. Examine these specimens carefully as they resemble some eristaline hover flies such as *Eristalis transversa* and *Helophilus fasciatus* (see Group 2).



Figure 9. *Xanthogramma flavipes*, subfamily Syrphinae. Image: Stephen Cresswell.

Xanthogramma

Xanthogramma flavipes (7.3–12.3 mm) is not frequently encountered in Georgia but is easily distinguishable by the lateral yellow stripes on the scutum, and by black, yellow, and brownish markings on the abdomen. Larvae of this species are unknown, but they probably feed on underground root aphids tended by ants (Skevington et al., 2019). This species is relatively uncommon in Georgia and further south.









Figure 10. *Toxomerus* species: *T. geminatus*, *T. marginatus*, and *T. politus* (First three images: C. Scott Clem) and *T. boscii* (Fourth image: Judy Gallagher).

Toxomerus

Toxomerus species are almost certainly the most common hover flies encountered throughout North America. In Georgia and across the East Coast, ***T. geminatus*** (6.1–7.6 mm) and ***T. marginatus*** (4.9–5.7 mm) are perhaps the most common species encountered year-round, with ***T. politus*** (7–9 mm) and ***T. boscii*** (4.7–6.8 mm) also occurring regularly. *T. geminatus* and *T. boscii* both have distinctive spade-shaped markings on the abdomen but differ in the amount of yellow at the edge of each tergite. *T. marginatus* is highly variable in coloration but always has a (somewhat subtle) yellow-margined abdomen. *T. politus* has medial quadrangular markings on the abdomen, often with a bluish hue. This species is unusual because the larvae feed on pollen and sap (especially corn and sorghum).

Other less-common species encountered in Georgia but not pictured here include *T. verticalis*, *T. corbis*, and *T. jussiaeae*. See Skevington et al. (2019) and Vockeroth (1992) for details.



Figure 11. *Paragus haemorrhous*, subfamily Syrphinae. Image: Hartmut Wisch.

Paragus

Paragus is recognizable as having a short, stout, and **punctate** (broken into intervals) appearance with a blackish-silver coloration and a black or orange abdomen. It is uncertain how many species occur in Georgia, as numerous species are only identified via male genital dissection (see Skevington et al., 2019; Vockeroth, 1986 and 1992). ***Paragus haemorrhous*** (4.3–5.9 mm), however, is perhaps the most common and quite recognizable. This species has a completely black **scutellum** (hard scale or plate on the thorax of an insect; see arrow in photo) whereas other species have a narrow orange stripe on the tip of the scutellum.



Figure 12. *Platycheirus* sp. Images: Scott King (main), Katy Schulz (inset).

Platycheirus

Platycheirus is a highly diverse genus, with at least 75 species in the Nearctic and 44 in northeastern North America, several of which could occur in the Southeast. Many can be identified by paired rectangular markings on the abdomen that are usually either yellowish or bronzish. ***Platycheirus quadratus*** (7.1–9.1 mm; main image) and ***P. obscurus*** (6.8–9.4 mm; inset image) are perhaps the most frequently encountered species in Georgia. Species can be identified using a variety of characteristics largely based around the shape of male front legs (see Young et al., 2016; Skevington et al., 2019).







Figure 13. *Ocyptamus fuscipennis* (Image: William Hull), *Pelecinobaccha costata* (Image: Fitz Clarke), and *Pseudodoros clavatus* (Image: Jim Moore).

***Ocyptamus*, *Pelecinobaccha*, and *Pseudodoros*—the Slender-Shaped Hover Flies**

Numerous “slender” hover flies occur in Georgia. Among them, ***Ocyptamus fuscipennis*** (6.8–11.3 mm) is probably the most common and can easily be distinguished by the heavily darkened wing pattern. In contrast, ***Pelecinobaccha costata*** (8.7–11.5 mm) exhibits darkened wing pigment only on the anterior edge while ***Pseudodoros clavatus*** (7–12 mm; synonym *Dioprosopa clavata*) exhibits even less of this characteristic. Additional abdominal shape characteristics and patterning differences are also evident.

Four other species, *Baccha cognata*, *Ocyptamus dimidiatus*, *Hypocritanus fascipennis*, and *Victoriana attenuata* (not pictured here) may also be encountered in Georgia, but less frequently. See Skevington et al. (2019) for additional information.

Subfamily Pipizinae



Figure 14. *Pipiza femoralis*, subfamily Pipizinae. Image: Owen Strickland.

Pipiza

Pipizinae is a small group that was only recently defined as a subfamily. These flies are similar to Syrphinae in that they have predacious larvae that attack aphids and other soft-bodied insects, but Pipizinae tend to specialize on gall-forming aphids and other arboreal prey. Members of this genus are all somewhat uncommon.

In Georgia, ***Pipiza femoralis*** (6.5–9.5 mm) is perhaps the easiest to recognize and possibly the most common. *Pipiza* species often have large, pale, nearly rectangular markings on the abdomen. Other genera in this group—also rarely encountered in Georgia, including *Heringia*, *Neocnemodon*, and *Trichopsomyia*—do not have these markings and are nondescript compared to many other hover flies. Little is known about most Pipizinae and several may be of potential conservation significance (Clem et al. 2023).

Groups 2–3: Species with Nonpredacious Larvae

Subfamily Eristalinae

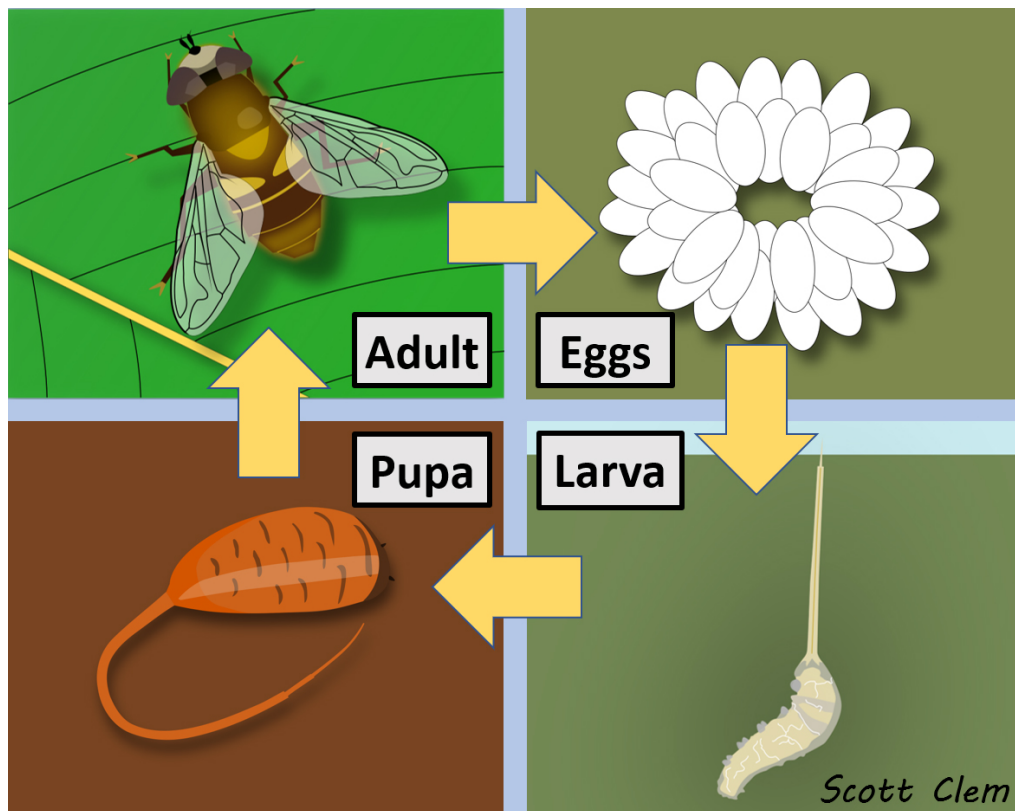


Figure 15. Life Cycle of the Drone Fly, *Eristalis tenax*. Image: C. Scott Clem.

Although life cycles among the Eristalinae are incredibly diverse, Figure 15 is representative for many species. Adults lay eggs in various forms of decomposing organic debris, such as rot holes in trees, decaying wood, sewage dumps, manure piles, compost heaps, etc.

Larvae of many species act as filter feeders, feeding on microorganisms in their environment. Several species also have long breathing siphons (hence the name “rat-tailed maggot”) which helps them breathe in oxygen-deficient (**anoxic**) conditions. Once they reach the fifth larval stage, they crawl away from their mucky habitats to pupate. Later they will emerge as adults, mate, and begin the process over again.

Like the Syrphinae, males and females often exhibit **sexual dimorphism**, meaning that males and females look different. Females often have a distinct gap between their eyes and the males are holoptic (eyes touching dorsally), although this is not the case in all Eristalinae. In many cases, such as with *Eristalis* sp., males tend to have unique abdominal patterns not present in females. Males often establish mate-seeking territories that they aggressively defend against rivals. Rat-tailed maggots are only one of several types of eristaline larvae (Figure 16).



Figure 16. The Diversity of Eristaline Larvae. An aquatic rat-tailed maggot (left) of the genus *Eristalis*; a wood-feeding (**saproxylic**) larva of the genus *Xylota* (middle); plant-feeding (**phytophagous**) Narcissus Bulb Fly larva (*Merodon equestris*; right). Like Syrphinae, the species of Eristalinae usually are very difficult to identify at the larval and pupal stages. Images: Steve McKechnie (left) Stephen Cresswell (middle) and Whitney Cranshaw (right).

Group 2 Species Descriptions: Wasp-Like Mimics





Figure 17. *Copestylum vesicularium* (Image: Clarence Holmes) and *C. vittatum* (Image: Yurika Alexander).

Copestylum

Copestylum flies have a noticeably short and stout appearance, but perhaps their most noticeable feature is the presence of a distinct facial protrusion (see arrow, Figure 17).

Copestylum vesicularium (7.4–10.4 mm) and ***C. vittatum*** (8.1–8.7 mm) are the most common species encountered in Georgia. Whereas *C. vesicularium* is dark and iridescent, *C. vittatum* is black and yellow striped with two round, yellow spots on the scutum. At least two other species (*C. sexmaculatum* and *C. barei*) may be found in Georgia and the Southeast, but they are uncommon (see Skevington et al., 2019, for details). Larvae of some *Copestylum* develop in plants of the family Bromeliaceae. The western species *C. mexicanum* (a rare vagrant in Georgia) feeds on decomposing cacti.





Figure 18. *Helophilus fasciatus* (Image: Tom Murray) and *Parhelophilus integer* (Image: Kevin and Sue Hanley).

Helophilus* and *Parhelophilus

Helophilus fasciatus (10.8–15.2 mm) and *Parhelophilus* species bear a resemblance to each other because they have longitudinal stripes on the thorax and yellow markings on the abdomen. The more common *Helophilus fasciatus*, however, is larger and fairly easy to distinguish with its elongated darkened wing spot known as a **pterostigma** (see arrow, Figure 18). *Parhelophilus* is less common but two species can be encountered in Georgia: ***P. integer*** (8.7–10.9 mm) and ***P. flavifacies*** (9.7–11.7 mm; not pictured). Larvae of both genera are aquatic and associated with decaying vegetation and stagnant or slow-flowing water. Note that other less-common species may also be encountered (see Skevington et al. 2019).





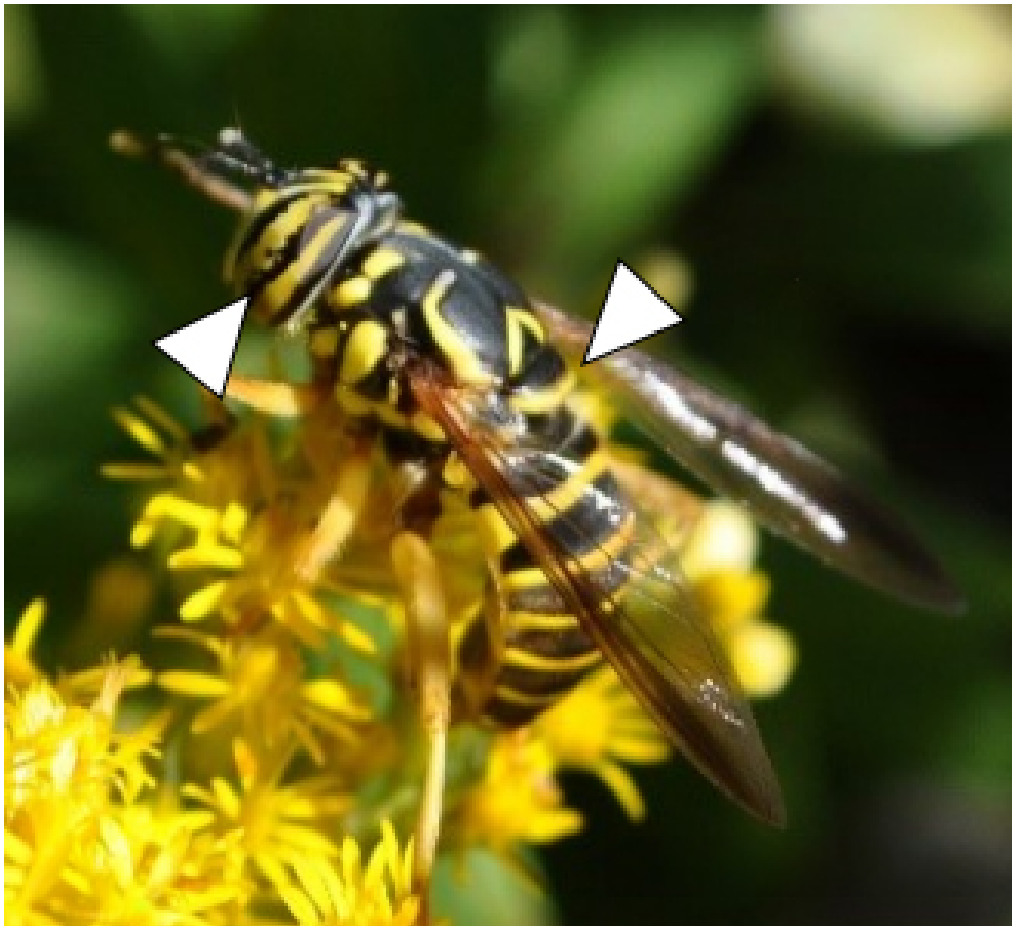






Figure 19. *Meromacrus acutus* (Image: Katja Schulz), *Milesia virginiensis* (Image: Bryan Reynolds), *Spilomyia longicornis* (Image: C. Scott Clem), *Temnostoma daoachus* (Image: Brad Moon), and *T. balyras* (Image: Christina Butler)

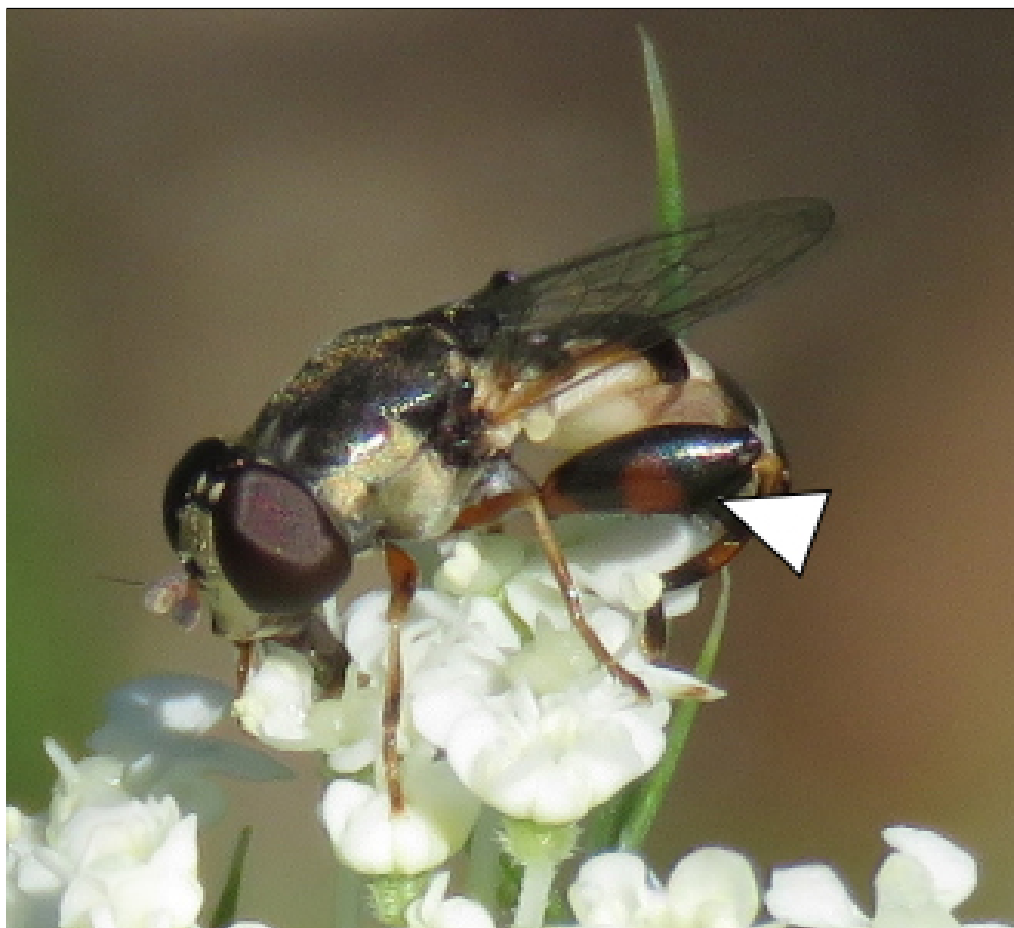
***Meromacrus*, *Milesia*, *Spilomyia*, and *Temnostoma*—the Extreme Wasp Mimics**

Meromacrus, *Milesia*, *Spilomyia*, and *Temnostoma* all contain species that are large, highly convincing wasp or hornet mimics. ***Meromacrus acutus*** (13.3–18.6 mm) and ***Milesia virginiensis*** (16.5–23.6 mm) are the only members of their respective genera found in Georgia and are among the largest hover fly species in North America. Both exhibit thoracic and abdominal patterning that makes them hard to confuse with any other species. *M. virginiensis* is a mimic of southern yellow jacket queens and is known for its curious habit of hovering in front of people. It is this behavior that has coined them the name “news bees” or “good news bees.” If one lands on you, it is believed to be good luck.

At least three species of *Spilomyia* are known to Georgia, including ***S. longicornis*** (12.4–16.2 mm), ***S. texana*** (not pictured), and ***S. alcimus*** (not pictured). These species visit goldenrod (*Solidago* sp.) and other fall-flowering plants and immediately stand out with their dramatic striped eye patterning. *S. longicornis* (12.4–16.2 mm) is the most commonly encountered species and it is best distinguished from *S. texana* and *S. alcimus* by its yellow-rimmed

scutellum (see arrow, Figure 19). Larvae are likely to be found in rot holes of deciduous trees. For distinguishing New World *Spilomyia* species see Thompson (1997).

Several species of *Temnostoma* may occur in Georgia, but three species are most common: ***T. daochus*** (9.5–14.5 mm), ***T. balyras*** (8.5–11.5 mm), and ***T. trifasciatum*** (not pictured). These species may look similar to *Spilomyia* but do not have the striped eye patterning. *T. daochus* is best distinguished from similar species by having a yellow-margined scutellum (see arrow). *T. balyras* and *T. trifasciatum* are both dark with yellow bands on the abdomen and are difficult to distinguish in the field (see Skevington et al. 2019). Larvae of these species may be found in rotting wood.



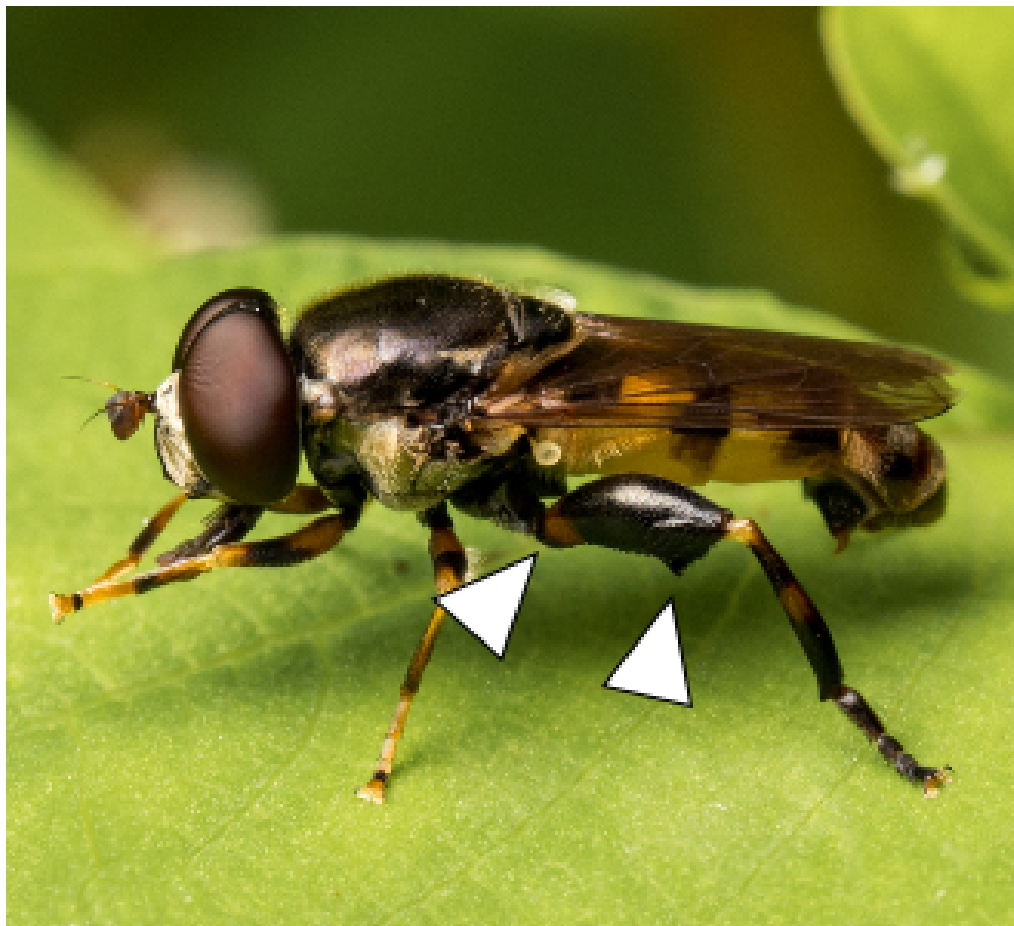
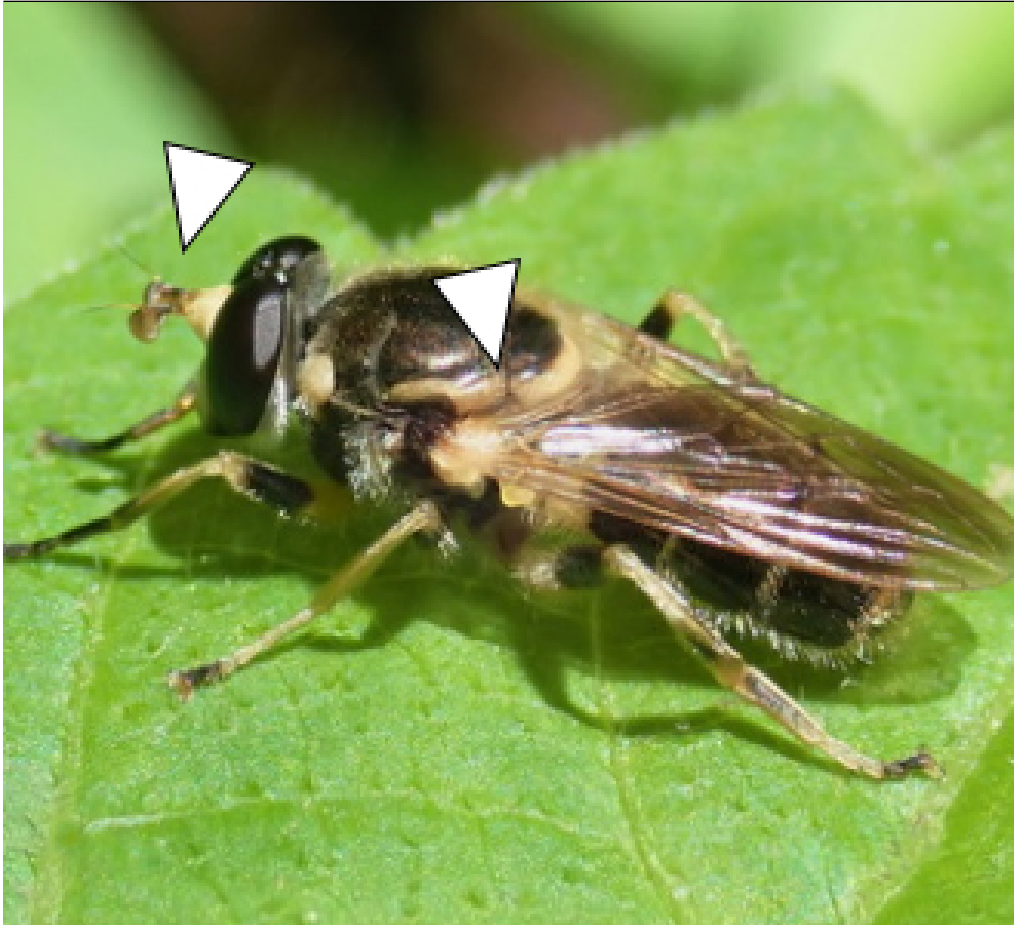


Figure 20. *Syritta pipiens* (Image: Anne Goulden) and *Tropidia albistylum* (Image: Jen Cross).

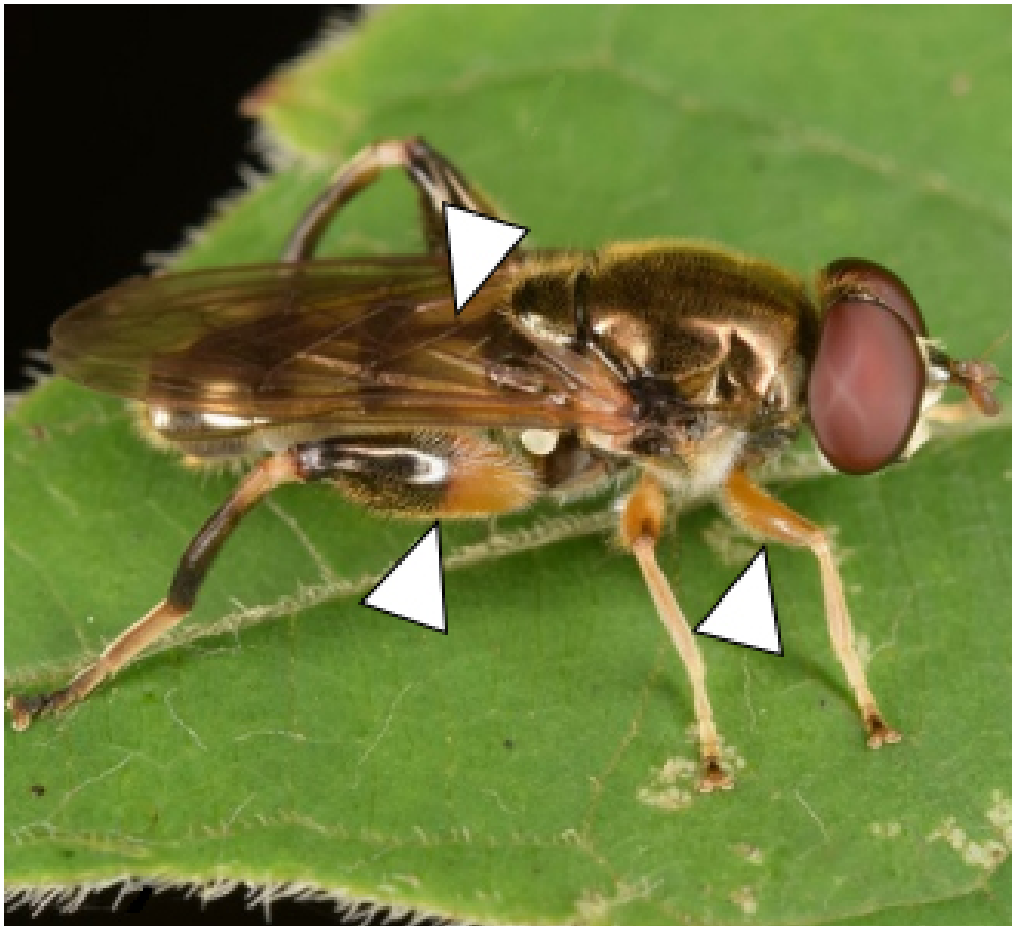
Syritta* and *Tropidia

Syritta and *Tropidia* species are grouped together here because they are both small, black flies with enlarged hind femurs (also known as the **metafemur**) and similar abdominal patterning/shape. However, *Tropidia* species are larger and have a large triangular **process** (a projection or outgrowth of tissue) on the metafemur while *Syritta* species lack this process and have a metafemur with a unique orange/black color pattern. Both ***Syritta pipiens*** (6.5–9.5 mm) and ***S. flaviventris*** (6.9–9.4 mm; not pictured) occur in Georgia and they are distinguished by the presence of a **basal peg** (a short distinct projection) on the metafemur of male *S. flaviventris*. Both of these are introduced species and can be found on many continents around the world.

Tropidia albistylum (10.9–13.4 mm) is by far the most common *Tropidia* in Georgia and it can be distinguished from other similar species by the yellow coloring at the base of the metafemur [see arrow; not present in the common northern species *Tropidia quadrata* (not pictured)] and the large pale patterns on the abdomen [smaller in the rare species *Tropidia calcarata* and *Tropidia mamillata* (not pictured)]. Larvae of *Syritta* and *Tropidia* may be found in decaying organic matter. *Syritta* larvae are particularly fond of compost or manure.









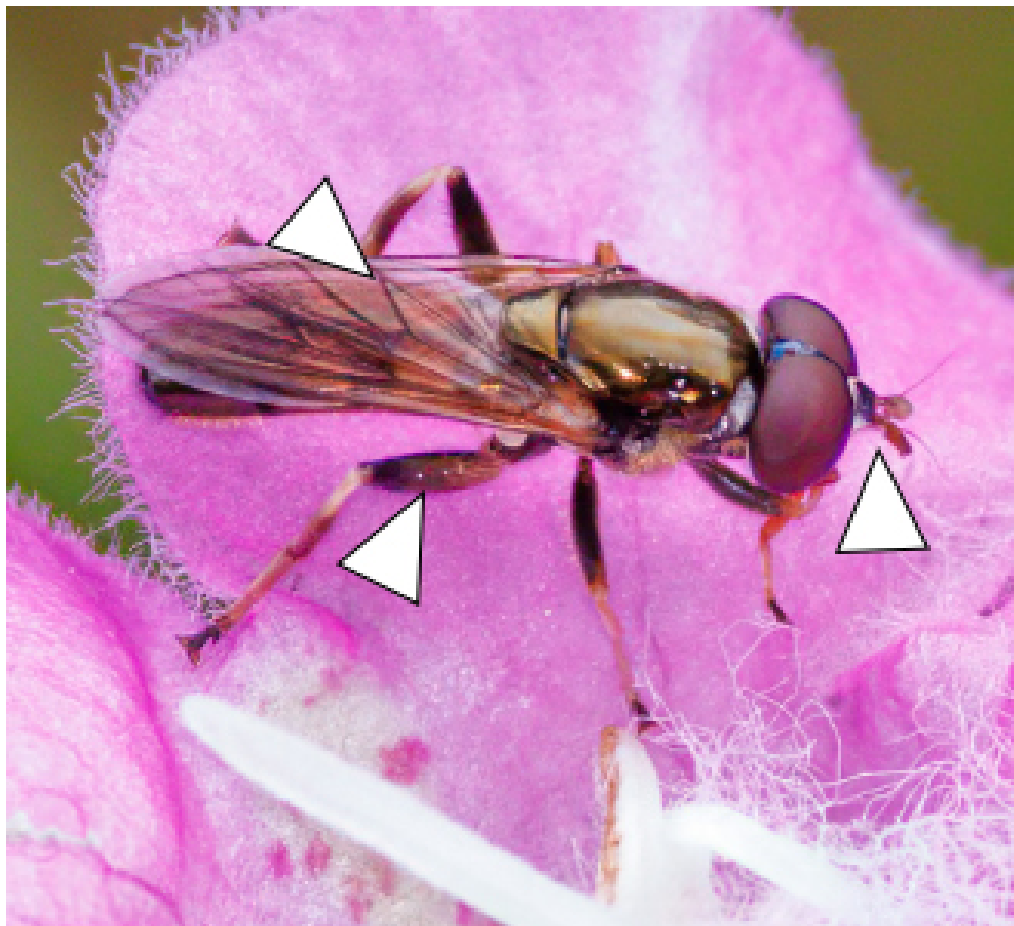


Figure 21. *Blera pictipes* (Image: Paul Bedell), *Chalcosyrphus chalybeus*, *C. metallicus* (Images: Christina Butler), *Xylota bicolor* (Image: Sam O'Connell), and *X. ejuncida* (Image: Brad Moon).

***Blera*, *Chalcosyrphus*, and *Xylota* spp.**

Blera, *Chalcosyrphus*, and *Xylota* are three similar genera that encompass nearly 40 species in eastern North America. Larvae often live in decaying wood and adults tend to visit flowers in forested landscapes, often near water. Although many species are fairly distinct, several can be difficult to distinguish in the field. They generally exhibit black/silver, gray, and orange/yellow/pale color patterns and occasionally have prominent facial protuberances. The five exemplar species pictured here are encountered in the Southeast: *Blera pictipes*, *Chalcosyrphus metallicus*, *Chalcosyrphus chalybeus*, *Xylota bicolor*, and *Xylota ejuncida*. These species demonstrate the range of morphological diversity of these genera.

B. pictipes (7.6–10.3 mm) has a prominent facial protuberance and a distinct yellow mark on the side of the thorax (see arrow, Figure 21). ***C. chalybeus*** (8.5–11.5 mm) is almost entirely a steely blue-tinged black. ***C. metallicus*** (8.1–10 mm) has four pale spots on the abdomen, solid yellow front legs, and a bicolored hind femur (see arrows, Figure 21). ***X. bicolor*** (13.8–14.7 mm) has a nearly solid orange abdomen. Finally, ***X. ejuncida*** (9.6–10.9 mm) also has four pale spots on the abdomen (similar to *C. metallicus*) but lacks a bicolored hind femur and has a shiny

frontal triangle on the head (see arrows, Figure 21).

Pollinator surveys in apple, peach, and blueberry orchards have recorded large numbers of this species (McCravy et al., 2024). Note that many other species and genera may be encountered in Georgia. See Skevington et al. (2019) for details.

Group 3 Species Descriptions: Bee-Like Mimics

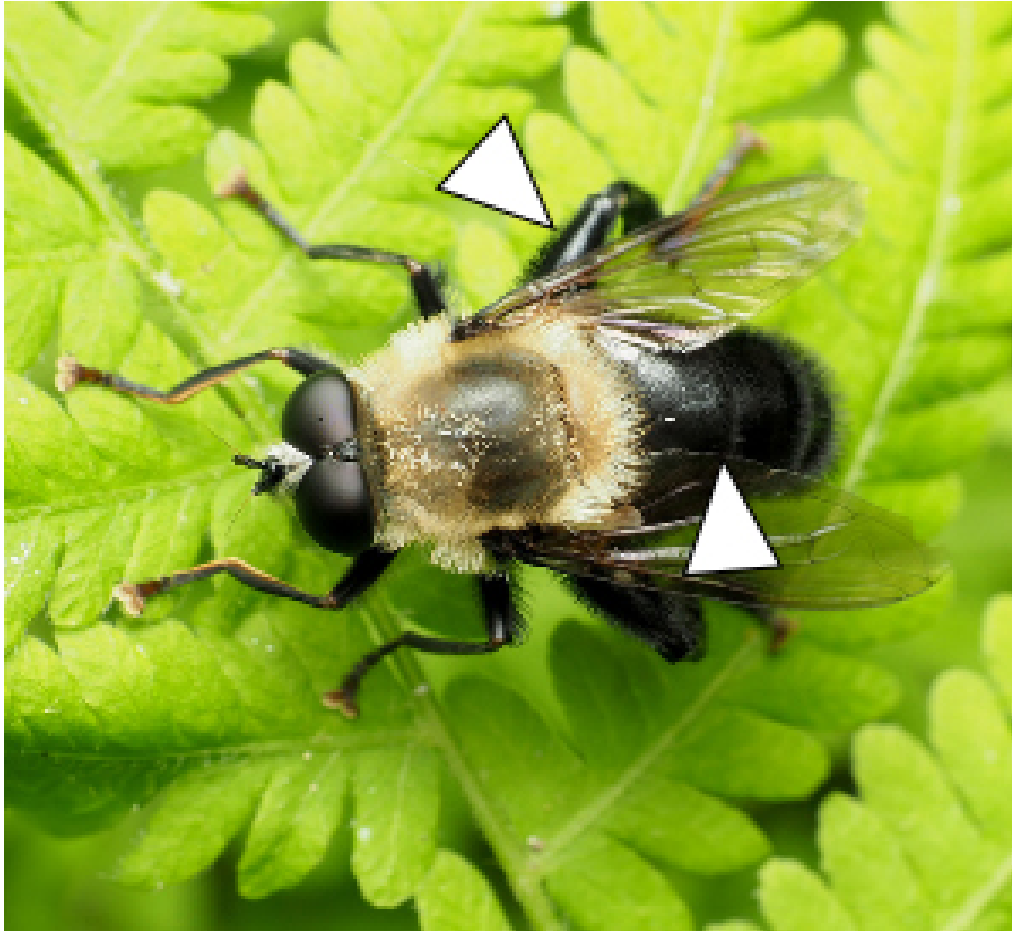








Figure 22. *Mallota bautias* (Image: Katja Schulz), *M. posticata* (Image: Lee Elliott), *Merodon equestris* (Image: Rich Stevenson), and *Pterallastes thoracicus* (Image: Bryan E. Reynolds).

***Mallota*, *Merodon*, and *Pterallastes*—the Extreme Bumblebee Mimics**

Mallota, *Merodon*, and *Pterallastes* are grouped together because they are particularly compelling bumblebee mimics. *Mallota* spp. are perhaps the most compelling. ***Mallota bautias*** (10.5–19.5 mm) and ***M. posticata*** (12–18.5 mm) are the most commonly encountered species of this genus in Georgia. *M. posticata* usually has yellow **pile** (fuzz) on at least the front part of its abdomen, whereas *M. bautias* has a much blacker abdomen (Figure 22). These species also have enlarged distinct hind femurs. Larvae are filter-feeding rat-tailed maggots often found in tree holes with stagnant water (also known as rot holes). Images: Katja Schulz (*M. bautias*) Lee Elliott (*M. posticata*).

Merodon equestris (12.3–17.2 mm) is another bumblebee mimic but this species tends to be sporadically seen in urban or suburban habitats or areas with cultivated plants. Known as the Narcissus Bulb Fly, they are minor ornamental plant pests because larvae (Figure 16) feed on bulbs of daffodil (*Narcissus*) and relatives. Color morphs range from dark to light and there is much diversity in between. However, they tend to be covered in pile and do not have the same massive hind femur found in *Mallota* species. Image: Rich Stevenson.

Pterallastes thoracicus (10.7–13.2 mm) is the only member of its genus in North America and is most often encountered in northern Georgia. This species is recognizable with a thorax covered in dense, fine yellow hair, a black abdomen, and a lack of enlarged hind femurs (compared to *Mallota*). Image: Bryan E. Reynolds.



Figure 23. *Orthonevra nitida*. Image: Maurice Whalen

Orthonevra

Orthonevra nitida (4.5–5.5 mm) is by far the most common member of its genus in the southeastern U.S. This small fly is easily recognized by its striking complex eye patterns, which are not found among other members of its genus in Georgia. *Orthonevra* typically are associated with wetlands and marsh-style habitats. For information on other less common species see Skevington et al. (2019).



Figure 24. *Eristalinus aeneus*. Image: Megan Asche.

Eristalinus

Eristalinus aeneus (8.4–11.7 mm) is an introduced species and the only member of its genus encountered in most of the United States. While extremely common further north, it is relatively uncommon in Georgia. This species is immediately recognizable by its shiny silvery coloration and spotted eyes. Larvae are found in sewage ponds and lagoons and are important in waste recycling.









Figure 25. *Eristalis arbustorum*, *E. dimidiata*, and *E. tenax* (Images: C. Scott Clem); *E. transversa* (Image: Bryan Reynolds).

Eristalis

The genus *Eristalis* (drone flies) consists of many large, common hover flies, most of which are found visiting a wide variety of flowers in a wide range of habitats. All species are thought to have rat-tailed maggot larvae (Figure 16), which are decomposers and can be found in aqueous and semi-aqueous environments. At least 12 species can be found in eastern North America, five of which are commonly encountered in Georgia: *E. arbustorum*, *E. dimidiata*, *E. saxorum*, *E. tenax*, and *E. transversa*. These species can be found year-round in the Southeast but are most abundant during fall and spring.

Eristalis arbustorum (8.3–12 mm), known as the European Drone Fly, is most likely to be encountered in northern Georgia and is very common in northern states. This species resembles *E. dimidiata* and *E. saxorum* but is usually smaller and has a uniformly **pilose** (hairy) face. Males have a conspicuous hourglass shape on the abdomen (see arrows, Figure 25), which is absent in females. A very similar native species, ***Eristalis brousii*** (not pictured) was once very common but has largely been displaced by the introduced *E. arbustorum*.

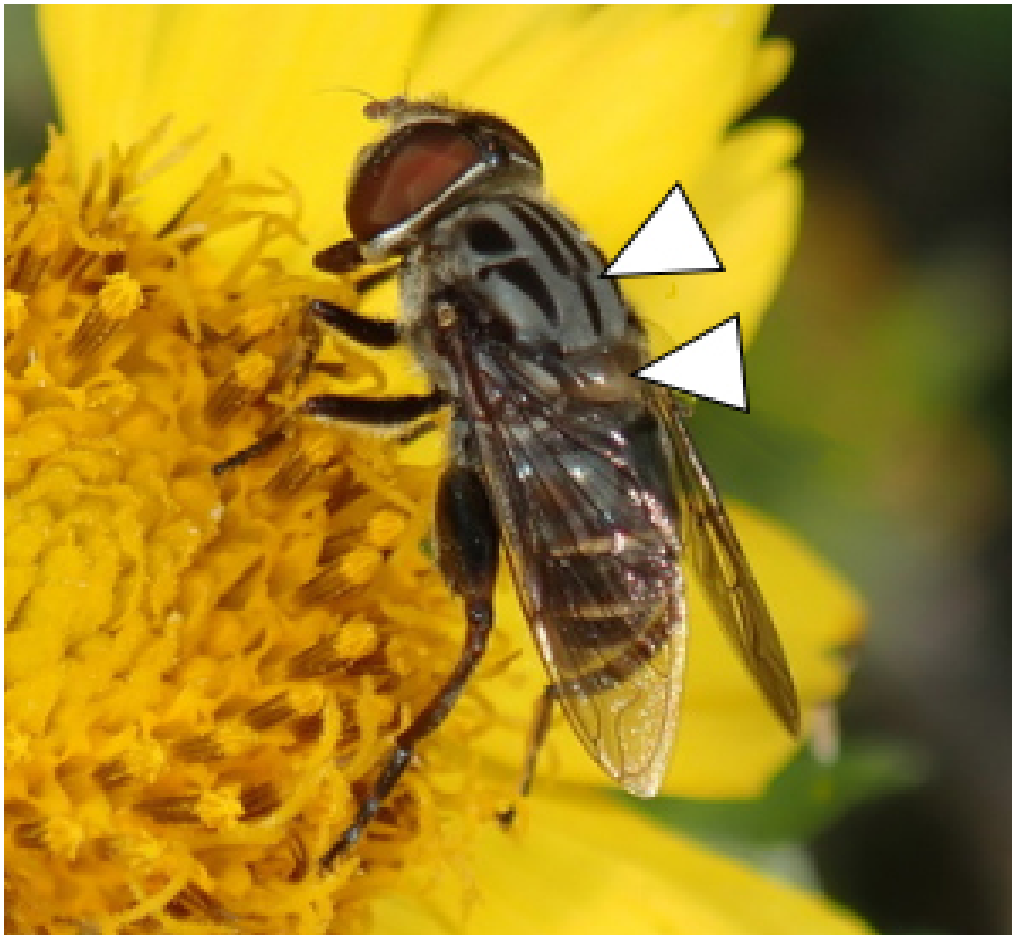
Eristalis dimidiata (10.1–14 mm) is most easily recognized by its black sleek abdomen and darkened wing bases (see arrow, Figure 25). ***Eristalis saxorum*** (11.3–13.7 mm; not pictured) possesses similar features but has a distinct bluish hue.

Eristalis tenax (11.7–15.8 mm) known as the Common Drone Fly is an introduced species notable for being a particularly convincing honeybee mimic. They are commonly misidentified as such in news articles and media about honeybees. On occasion, they can even be found visiting flowers in large numbers, much like honeybees. The existence of this species has spurred the roughly 2000-year-old “Bugonia Myth” in which people believed in the spontaneous generation of honeybees from animal carcasses (Shipley 1918). This myth is found in a variety of literary works, including poetry, Shakespeare, and the Bible in the form of Samson's riddle (Judges 14:14): “Out of the eater something to eat; out of the strong something sweet.” This species, and likely other *Eristalis*, are also interesting because they can cause intestinal **myiasis** (infestation with fly maggots) in humans and animals. In rare instances of accidental ingestion, larvae can wreak havoc on the body.

Eristalis transversa (10.1–12.2 mm) is a native species that is very common and fairly conspicuous. It is a generalist found feeding on many species of prairie flowers, but they seem to have a particular affinity for Black-eyed Susans (*Rudbeckia hirta*) and similar flowers. The bright yellow coloration, particularly on the scutellum, differentiates this species from other *Eristalis*.

Eristalis stipator (9.8–14.8 mm; not pictured) is more common in western North America but is a vagrant in the eastern U.S. It can be distinguished from *E. dimidiata* and *E. saxorum* by its long white curly pile on the third and fourth abdominal segments. It also lacks darkened wing bases.







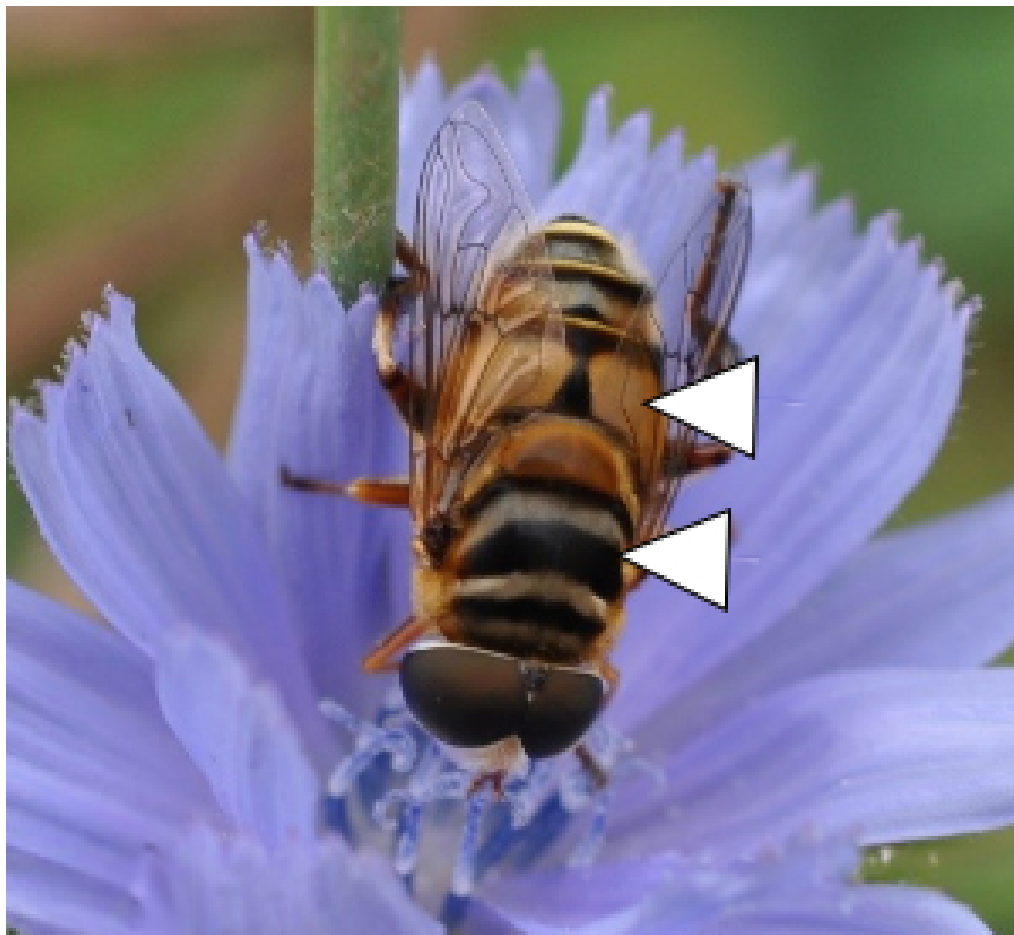


Figure 26. *Palpada agrorum* (Image: Judy Gallagher), *P. furcata* (Image: Karen Yukich), *P. pusilla* (Image: Gabriela Moreno), and *P. vinetorum* (Image: C. Scott Clem).

Palpada

Palpada is one of the few genera that has greater diversity in the South compared to the North (this is also true in *Toxomerus*, *Allograpta*, and *Copestylum*). At least seven species of *Palpada* have been recorded in Georgia, but ***P. furcata*** (8.4–10.4 mm) and ***P. vinetorum*** (10–13.5 mm) are particularly common, followed by ***P. pusilla*** (9.1–12.2 mm), ***P. agrorum***, and ***P. albifrons*** (8–10 mm; not pictured). These species are most easily distinguished by patterns and coloration of the scutum and scutellum (see arrows, Figure 26). *Palpada furcata* has a distinct gray scutum with black longitudinal stripes whereas *P. pusilla* is distinctly bicolored. *Palpada vinetorum* and *P. agrorum* are perhaps the most similar, both with black and whitish scutal bands and large orange-yellow abdominal markings, but *P. vinetorum* tends to be less dark with a duller shade of orange compared to *P. agrorum*. *Palpada albifrons* is a coastal species with a bicolored scutum like *P. pusilla* but with a more creamy-yellow coloration. Two other species, *P. texana* and *P. furcata*, have rarely been spotted in Georgia and are probably western vagrants. *Palpada* larvae are aquatic filter feeders.

Subfamily Microdontinae



Figure 27. *Microdon megalogaster* (Image: Christina Butler).

***Microdon* spp.**

Microdontinae is a small subfamily of rare flies that are most well known for their larval habits as ant-nest brood parasites (Figure 28). These flies are rarely encountered and little is known about the geographic distribution and habits of most species. They are in the extreme minority of hover flies that do not visit flowers as adults. This makes it difficult to predict where and when to find them.

Microdon is the most diverse genus in this subfamily and probably the most commonly encountered in North America. They are large, robust, and often **pilose** (fuzzy) and/or metallic flies distinguished by their elongated antennae and somewhat flattened faces. ***Microdon megalogaster*** (12.5–15.7 mm; Figure 27) is among the more common species found in Georgia and may be distinguished by the yellow pilose scutum and black pilose abdomen reminiscent of bumble bees. *Laetodon*, *Mixogaster*, *Omegasyrphus*, *Rhopalosyrphus*, *Serichlamys* (not pictured), and other *Microdon* species may also be found in Georgia. Consider yourself lucky if you encounter any of them! For species identification see Thompson (1981) and Skevington et al. (2019).



Figure 28. Larval Microdontines. *Microdon*, like the one pictured here, are unique in that they are **myrmecophiles**, meaning they live among ant colonies where they prey upon ant brood. These larvae appear so odd that early taxonomists classified them as mollusks because of their similarity in appearance to marine chitins (Duffield 1981). NOTE: *Microdon* spp. are brood parasites of ant eggs/larvae, thus are technically predacious. (Image: Tom Murray).

Hover Flies Not Pictured but Found in Georgia

Does the specimen you are identifying not match any of the pictures? Here is a list of genera/species that may be encountered in Georgia but are not pictured or discussed in this guide. These are not commonly seen, because either they occupy specialized habitats or niches, or Georgia is at the edge of their range. See Miranda et al. (2013) and Skevington et al. (2019) for details.

Syrphinae

Chrysotoxum plumeum, *Dasysyrphus venustus*, *Didea fuscipes*, *Doros aequalis*, *Epistrophe* spp., *Epistrophella emarginata* (perhaps not too uncommon), *Megasyrphus laxus*, *Melangyna fisherii*, *Melanostoma mellinum*, and *Meliscaeva cincella*.

Eristalinae

Brachyopa spp., *Brachyopampus oarus*, *Callicera erratica*, *Ceriana willistoni*, *Cheilosia* spp., *Chrysogaster* spp., *Cynorhinella longinasus*, *Eumerus funeralis* (minor horticulture pest, not too uncommon), *Ferdinandea buccata*, *Hadromyia* spp., *Hiatomyia cyanescens*, *Lejota aerea*, *Myolepta* spp., *Nuntianus cubanus*, *Pelecocera pergandei*, *Psilota* spp., *Rhingia nasica*, *Sericomyia* spp., *Somula decora*, *Sphecomyia vittate*, *Sphegina* spp. (perhaps not too uncommon), *Teuchocnemis* spp., and *Volucella evecta*.

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