

A Pictorial Guide to Some Common Bees of the New York City Metropolitan Area

Images and descriptions compiled by Kevin C. Matteson

This is a pictorial guide to some of the most common bee species of New York City. With practice many of these bees are recognizable in the field with binoculars, digital photography or careful observation with the naked eye. Enjoy!

For definitive identification of many species, closer inspection of insect morphology (wing veins, leg parts, etc.) is required. Therefore, we have also provided a taxonomic key to the bee genera of the New York City area. This and other keys often necessitate having specimens in hand to observe features under a scope or through a hand lens. Numerous entomology texts detail how to collect and curate various insects.

In addition to physically collecting insects, digital photography is increasingly being used to identify some bees. You can create an account at <http://bugguide.net> and upload your images to the site. Provided that relevant structures of the insect are in focus (not always the case), bee and other insect taxonomy experts should eventually be able to identify the insect in your image.

For each species, we provide information about their life history characteristics. Definitions for these terms are as follows: Sociality indicates the degree to which species are social (living in groups, in a hive or colony) or solitary (living alone); Nest indicates where females lay eggs, whether in stem cavities, soil, hives, or rotting wood; Foraging range is the estimated distance that bees fly from their nest site to search for floral resources; NYS flight period is the range of months that bees of that species have been observed flying in New York State.

About the Great Pollinator Project

The Great Pollinator Project (www.greatpollinatorproject.org) is a joint program of the Museum of Natural History/Center for Biodiversity and Conservation and the NYC Department of Parks/Greenbelt Native Plant Center. Two major goals of the project are to increase understanding of bee distribution and to raise public awareness of native bees in New York City and it is with these goals in mind, that this guide is provided. The project is partially funded by the New York City Environmental Fund.



Questions/Comments? Contact us at Beewatchers@gmail.com

LARGE BEES (Workers usually >1.0 cm long) WITH HAIRY THORAX AND ABDOMEN

Most bees fitting the above description are bumble bees. Bumble bees can be identified to species by the pattern of coloration (black, yellow, or rusty/buff) on their thorax and abdomen. However, the coloration may vary for females (including workers and queens) and males (including drones) of the same species, and there can be some variation among female workers and male drones. Queens are larger than workers and are most commonly seen in spring, smaller workers are seen summer-fall, whereas males are most commonly seen in the late summer and fall.

Sociality- social (single queen with up to 100 workers); **Nest** - in rodent burrow or tree cavity; **Foraging range**- from 500 to 1500 m from nest



Common Eastern Bumble Bee (*Bombus impatiens*)

Description- Our most common bumble bee. Distinguished by single yellow band on abdominal segment closest to thorax. Worker length 0.85-1.6 cm. Found throughout NYC in gardens, parks, green streets, and other locations with flowers.

NYS flight period- April to November



Female



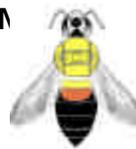
Male



Brown-belted Bumble Bee (*Bombus griseocollis*)

Description- Very abundant as well. Tends to emerge a little later than the Common Eastern Bumble Bee. "Smoky" dark wings. Males with enlarged eyes. Both sexes with brownish-yellow patch of hairs across anterior margin of second abdominal segment. Worker length 0.95-1.8 cm.

N



Females

o September
Images demonstrate slight variation in coloration between individuals



Male



Golden Northern Bumble Bee (*Bombus fervidus*)

Description- Distinctive due to generally yellow hairs contrasting with a black head and a black band between the wings. Has relatively long face, legs, and antennae. Wings are dark and coat is shaggy. Often appears to have a black stripe on the thorax. Loves clovers. Worker length 1.0-1.6 cm. **NYS flight period**- April to October



Females

Images demonstrate slight variation in coloration between individuals



Male

LARGE BEES (Workers usually >1.0 cm long) WITH HAIRY THORAX AND ABDOMEN

Continued from previous page.

Sociality- social (single queen with up to 100 workers); **Nest** - in rodent burrow or tree cavity; **Foraging range**- from 500 to 1500 m from nest



Two-spotted Bumble Bee (*Bombus bimaculatus*)

Description- Yellow hairs on second segment of abdomen may appear as two distinct spots, especially in males. May be confused with *B. griseocollis* or *B. citrinus* males. Worker length 1.3-1.45 cm.
NYS flight period- April to September



Female

Images demonstrate slight variation in coloration between individuals



Males



Confusing Bumble Bee (*Bombus perplexus*)

Description- Male largely yellow excepting black abdominal apex; female with thorax yellow above and black below (not all yellow but with some black hairs dorsally as in other species). More compact in size than *B. fervidus*. Worker length 1.2-1.4 cm.
NYS flight period- April to October



Females

Images demonstrate slight variation in coloration between individuals

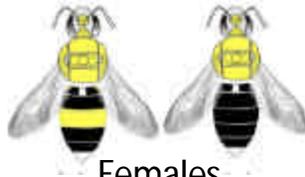


Male



Lemon Cuckoo Bumble Bee (*Bombus citrinus*)

Description- This bee is a social parasite of other bumble bees. Thus, it does not carry pollen on the corbicula of the hind legs. Almost entirely yellow on thorax, shaggy. Abdomen is nearly all black but maybe with a pale yellow band. Female length 1.7-2.1 cm.
NYS flight period- May to October



Females

Images demonstrate slight variation in coloration between individuals



Male

Image credits (from top): all images by J. Ascher; drawings are from the [Simplified Guide to Bumble Bees of Vermont](#) by Leif Richardson.

MEDIUM-SIZED BEES (usually 0.8 – 1.0 cm long) WITH BROWN, BLACK OR WHITE BANDS ON DORSAL ABDOMEN AND HAIRS ON VENTRAL ABDOMEN

These are leaf-cutter bees (Genus *Megachile*). Female leaf-cutter bees take dime-sized circular cuts from rose and other garden plants and use the leaf cuttings to line their nest cells. They also carry pollen on their abdominal scopa (pollen-carrying hairs located on the underside of their abdomen-effectively their belly) rather than on their hind legs (as is the case for most other bees).



Pollen carried on back legs as in most other bees. In contrast, megachilids carry pollen on their abdomen

Sociality- solitary; **Nest** – Stem or artificial cavity lined with leaves or other plant materials; **Foraging range-** ~150-600 m from nest



Alfalfa Leaf-cutter Bee (*Megachile rotundata*)

Description- An species introduced from Europe for pollination of agricultural crops. Contrasting black-and-white hair pattern is shared with other similar species. Female length 0.9-1.2 cm.

NYS flight period- April to November



Paltry Leaf-cutter Bee (*Megachile mendica*)

Description- A native species intermediate in size between the larger *M. texana* and the smaller *M. brevis*. Female length 1.1-1.3 cm.

NYS flight period- April to September



Belted Leaf-cutter Bee (*Megachile centuncularis*)

Description- A medium-sized leaf-cutter bee with brownish rather than whitish hairs. Female length 1.0-1.1 cm.

NYS flight period- May to September

ADDITIONAL DISTINCTIVE MEGACHILID BEES

Continued from previous page.

Sociality- solitary; **Nest** – Stem or artificial cavity lined with leaves or other plant materials

Foraging range- ~150-600 m from nest



Texas Leaf-cutter Bee (*Megachile texana*)

Description- Black and gray coloration. Slightly larger than leaf-cutter bees on the previous page. Female length 1.1-1.4 cm.

NYS flight period- May to September



Giant Asian Resin Bee (*Megachile sculpturalis*)

Description- May appear “wasp-like”. Large head. Black head and “corrugated” abdomen. Wings dark. This is an introduced species. Quite long, usually about 1.5 cm.

NYS flight period- June to September



Wool-carder Bee (*Anthidium manicatum*)

Description- Distinctive coloration. The common name is due to the behaviors of the female, which scrapes hairs off of leaves to create a nice soft nest where she then lays her eggs. Often observed on garden plants Lambs Ear (*Stachys lanata*) or Foxglove (*Digitalis spp.*). This is an introduced species. Female length about 1.0-1.3 cm.

NYS flight period- June to October

MEDIUM-SIZED BEES (usually between 1.0 and 1.5 cm long) WITH LONG ANTENNAE IN MALES

Most bees fitting the above description are long-horned bees (Tribe Eucerini, in NYC most species belong to genus *Melissodes*).

Sociality- Solitary; **Nest** – Soil; **Foraging range-** ~150-600 m from nest



Agile Long-horned bee (*Melissodes agilis*)

Description- Golden-brown to orangeish thoracic hairs. Almost exclusively observed on sunflowers. Very fast flier. Female length 1.0-1.5 cm

NYS flight period- July to September



Black Long-horned Bee (*Melissodes bimaculata*)

Description- Entirely black except for white hairs on legs (often covered in pollen of varying color). Commonly observed on Morning Glory. Male has yellow spot on face while female lacks such markings. Length 1.3-1.5 cm.

NYS flight period- June to September

MEDIUM-SIZED BEES (usually between 1.0 and 1.5 cm long) WITH ANTENNAE NOT AS LONG AS *MELISSODES* AND NO ABDOMINAL SCOPAL HAIRS AS IN *MEGACHILE*

The bees fitting the above description belong to various genera. See below for details.



European Honey Bee (*Apis mellifera*)

Description- Our most well-known bee. Brown and black stripes on abdomen (note that there is considerable variation in coloration though). Abdomen tapers towards thorax. Hair covering eyes suggest “long lashes”.

NYS flight period- February to December

Sociality- social (queen with up thousands of workers)

Nest – hive, may be in tree cavities or cavities in manmade structures (feral colony) or in a hive that is actively managed by a apiculturist.

Foraging range- >1 km from nest



Pruinose Squash Bee (*Peponapis pruinosa*)

Description- Superficially similar to the European Honey Bee. This bee specializes on squash pollen and is often observed in wilted blossoms. Female length 1.25-1.4 cm

NYS flight period- July to September

Sociality- solitary

Nest – soil

Foraging range- ~500 m from nest



Gregarious Cellophane Bee (*Colletes thoracicus*)

Description- Black with orangeish thoracic hairs and black abdomen without hair bands. Emerges late in spring (May and June) when numerous individuals are often observed surveying loose soil for nest sites. Female length 1.2-1.4 cm.

NYS flight period- May to June

Sociality- solitary but often live in aggregations

Nest - soil

Foraging range- ~ 400 m from nest

BRIGHT METALLIC GREEN SWEAT BEES (>0.8 cm)

These bees are bright metallic green and medium-sized.



Pure-green Sweat Bee (*Augochlora pura*)

Description- Length 8 mm.; entire body brilliant green, sometimes more or less coppery. Often observed near rotting wood, where nest sites are often constructed.

NYS flight period- April to October

Sociality- solitary

Nest – Wood (variably clumps of cells dug in rotting wood)

Foraging range- <250 m from nest



Virescent Sweat Bee (*Agapostemon virescens*)

Description- Length 11 mm.; head and thorax brilliant blue-green, abdomen black. Male has “milky” clear wings while female has “smoky” clear wings.

NYS flight period- May to October

Sociality- Solitary and/or Communal

Nest – soil

Foraging range- <250 m from nest

VERY SMALL BEES (<0.8 cm long)

These bees are very small and superficially resemble wasps or flies. They can be extremely abundant in New York City. Small bees belong to three genera: *Hylaeus*, *Lasioglossum*, and *Ceratina*, as shown below.



<- Male



Female ->

Masked Bees (*Hylaeus* spp.)

Description- Very small. Not hairy like other bees (carry pollen internally instead of on hairs). Distinguished by white/yellow "mask" on face (males have more white/yellow than females). Head is v-shaped. The degree of coloration can vary from nearly entire (as in *Hylaeus leptcephalus* male shown at left) to narrow white or yellow slits in females and other species. Female length 0.4-0.6 cm.

NYS flight period- May to September

Sociality- solitary

Nest – Cavity (cells of cellophane-like material)

Foraging range- <250 m from nest



Social Sweat Bee (*Lasioglossum* subgenus *Dialictus* spp.)

Description- Head and thorax brassy-green with pubescent hairs on tip of abdomen. Most are "greenish" but some are "bluish." Female length 0.5-0.7 cm.

NYS flight period- April to October

Sociality- primitively eusocial - individuals at times live in small colonies. Some aspects of a caste social system emerge when they live in groups - there is a queen which is the only individual that reproduces and who is larger than workers (non-reproductive females).

Nest – soil; **Foraging range-** <250 m from nest



Small Carpenter Bee (*Ceratina calcarata*)

Description- General body color bluish to blue-green. More slender than Social Sweat Bees (above). Have small amount of yellow on face (not as much as Masked Bees). Female length 0.65-0.8 cm.

NYS flight period- March to October

Sociality- Subsocial - one adult female provides some parental care (generally protection and feeding) for developing offspring.

Nest - Pithy stems

Foraging range- <250 m from nest

COMMON FLOWER VISITORS THAT ARE NOT BEES

I. **Social Wasps** (Polistes and Vespula)- there are over 20 species in the New York metropolitan area. These are some of the most commonly noticed species.



Polistes dominulus



Vespula germanica



Vespula maculifrons



Dolichovespula maculata

II. **Solitary Wasps** (Sphecidae)- There are hundreds of species of solitary wasp in the New York Metro area. These are some of the more commonly encountered and noticed species.



Spheg ichneumoneus



Spheg pennsylvanicus



Chalybion californicum



Monobia quadridens

III. **Flies (Diptera)**- There are hundreds of species of flies in the New York Metro area. These are some of the more common species often found on flowers.



Syrphid spp.



Toxomerus spp.



Green bottle fly



Muscid fly

Image credits (from top): *P. dominulus* – Inaturalist; all other social wasps- Jo Ann Poe-McGavin. All other images by Kevin C. Matteson.