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Hive a Look and See: Bee Identification Guide

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Introduction to Bees

Pollinators, such as honeybees, beetles, butterflies, moths, and hummingbirds, are indispensable components of our food web. Globally, animal and insect pollinators contribute to 35% of all food production, with 87 of the leading 115 crops dependent on these native pollinators. A 2014 White House study estimates that pollinators contribute \$24 billion annually to the U.S. economy (\$15 billion from honeybees alone), from honey yields and pollinating our seeds and crops. Without honeybees, we will see smaller harvests and higher food prices for staples like almonds, cucumbers, and cranberries.

Not Just Honeybees

When we think of bees, we tend to think of honeybees. Cute little bees that create delicious, sweet honey. In New York State there are actually 450 different types of bee species! All bees are excellent pollinators. Here are some common bees to look for in your backyards.



Bumblebees

A bumblebee is identified by its black and yellow stripes and fuzzy bodies. Bumblebees can range from 3/4 inch to 1.5 inch in length. They build their nests close to the ground, in places like compost heaps, wood or leaf piles, or abandoned rodent holes. Bumblebees are social insects that live in colonies of 50-400 bees. There is one queen, and the other bumblebees gather food to serve her and care for the developing larvae bees. Bumblebees are excellent and effective pollinators and can collect pollen twice as fast as a honeybee. They use a technique called “buzz pollination”, where

the bee clings to the bottom of a flower and vibrates its flight muscles, causing the pollen to fall out of the flower and onto the bee.

Carpenter Bees

Carpenter bees can be identified by their bare, shiny abdomen that is all black. They measure about 1 inch long. The thorax on some carpenter bee species is yellow; other species have a white, black, brown, or blue thorax. The common name "carpenter bee" derives from their nesting behavior; nearly all species burrow into hard plant material such as dead wood or bamboo. Carpenter bees are solitary bees and do not form colonies. They live in small nests constructed by one female who bores into wood to lay her eggs in several small cells. They are important pollinators for native plant communities, gardens, and even some crops—of \$29 billion in value attributed



to insect pollination, 15% of that value comes from native species like the carpenter bee. These bees are also important for pollinating wild plants, contributing a food source for birds and other wildlife. Having a stable carpenter bee population encourages a stable ecosystem!



Mason Bees

Masons bees are identified by their furry undersides and have a black/blue metallic appearance. Mason bees pollinate 2-3 times better than honeybees because of their furriness, way of flying and how they visit flowers. In fact, the USDA suggests 625 mason bees (250 females and 375 males) **or** 2 honeybee hives (which equates to about 120,000 honeybees) to pollinate an acre of apple trees. Mason bees will pollinate flowers even when it is cold and drizzly whereas honeybees only like to fly on nice weather days. Mason bees rarely sting and only the female is able to sting.

Sweat Bees

Sweat Bees are one of the smallest, socially diverse and commonly-found bees in North America, aside from the Honeybee. Sweat Bees can vary greatly in appearance; however, they are mostly slender, dull to metallic black, green, blue or purple. As their name suggests, female Sweat Bees are attracted to human sweat and will consume it for its salt content, although males typically do not. Adult Sweat Bees are ground dwellers that construct their nests in vacated insect burrows and moist, rotting wood or find temporary housing within logs. While being generalist pollinators, Sweat Bees are essential wild pollinators of a wide range of (commercial) crops, fruits, native flora and fauna. They are also key pollinators of commercial sunflowers.



Honeybees

Honeybees are glossy golden-yellow with brownish black stripes and have a long stinger that hangs out the back and average around a 1/2 inch in size. Honeybees have a distinct barrel-shaped body and do not have a thin middle section between the thorax and abdomen. Honeybees are often mistaken for wasps. If you look closely, and if they have visited nearby flowers, you may notice pollen on their legs. Most U.S. honeybees live in artificial hives maintained by beekeepers. Honeybees will travel over 3 miles to

forage and are essential in pollinating a wide variety of New York's plants and crops. New York has more than seven million acres in agricultural productions, and many of the state's leading crops, such as apples, cabbage, berries, pumpkins rely heavily on honeybee pollination. Research shows that from 2017-2018, beekeepers in New York State alone lost over 40% of their honeybee colonies, providing an immediate risk to our food supplies.

Wasps

There are over 4,000 species of wasps in the U.S. Wasps are very important pollinators. Wasps may look like honeybees, but there are several ways to distinguish between the two. Wasps are



typically 1/4 to 1 inch long, generally not covered with fuzzy hairs (making them less efficient pollinators) and have a narrow middle section between the thorax and abdomen, this is the most noticeable physical difference from bees. The most recognizable wasp is a yellow jacket with yellow and black stripes. Yellow jackets are important predators of pest insects, especially caterpillars. If you are growing a vegetable garden, these wasps can be your allies.



Threats to Bees

Scientists have documented a global decline in honeybee populations since 2005. Massive bee die-off events and colony collapse disorder are putting our ecosystem and food production at risk. Unfortunately, stressors such as pesticide exposure, climate change, and habitat loss are contributing to major losses in bee populations. This rise in bee deaths has been largely linked to the explosive growth in the use of neonicotinoids (“neonics”) and other harmful pesticides. Neonics, are a class of pesticides that are used for controlling insect pests. When applied, either as a seed coating or a spray, neonics are absorbed through a plant’s roots and leaves and then distributed throughout the entire plant. Neonics target insects’ nervous systems, which causes paralysis and death. Because neonics are absorbed throughout the entire plant, they are present in a plant’s pollen and nectar, which is attractive to pollinators. Even at sub lethal levels, pollinators that are exposed to neonics can experience problems with mobility, navigation, learning, foraging, and their ability to “home in” or find their hive. Additionally, foraging bees can carry neonic residues back to their hive, exposing the entire colony to these toxic chemicals. As a result, hive production and activity decreases or it can lead to colony collapse disorder.

Policies to Protect Bees

The European Union has banned the use of neonics due to their unacceptable risk to pollinators, but many of these toxic neonics are still commonly used in New York. Neonic corn and soybean seed treatments account for 73% of neonics used in NY agriculture. Curbing New York’s use of neonics is critical in protecting our pollinators. Multiple bills have been introduced in the New York State legislature to address neonics and new bills will likely be introduced in 2021. Stay up to date on legislation to protect bees and how you can help pollinators by signing up for CCE action alerts at www.citizenscampaign.org!

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