GREEN GARDENS
EDUCATION AND DESIGNS

Native Bees of Georgia

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Southeastern Blueberry Bee *Habropoda laboriosa*
Male Side https://native-bees-of-georgia.ggc.edu/?page_id=86

Many people know that bees pollinate one out of every three bites of food that we eat in the United States. This includes the pollination of almost every fruit, nut, and vegetable crop that is produced for sale or in the home garden. "If we want to talk dollars and cents, pollinators add 217 billion dollars to the global economy, and honey bees alone are responsible for between 1.2 and 5.4 billion dollars in agricultural productivity in the United States. In addition to the food that we eat, pollinators support healthy ecosystems that clean the air, stabilize soils, protect from severe weather, and support other wildlife." (Pollinator Partnership) When people think of bees, most people think of the honeybee, *Apis mellifera*, which is not a native bee of the United States. This is actually the European honeybee, and they were brought to the United States by European settlers. These bees promptly escaped from their hives after arrival and began pollinating the native landscape surrounding them.

Honeybees, however, are unable to pollinate many of our favorite plants such as tomato or eggplant flowers. They are also not very good pollinators of some of our other native plants, such as pumpkins, cherries, blueberries, and cranberries. Because of this, and the fact that the honeybee populations are in decline, we have realized that humans should not just depend on the honeybee to pollinate all of our crops and flowers. The native bee population has been dropping since the late 1990's, and also in 2006, there were large increases in honeybee losses, up to 30-90% of any individual colony across the East Coast of the United States. These honeybee losses were attributed to the phenomenon called Colony Collapse Disorder (CCD). What is Colony Collapse Disorder?

This reduction in honeybee hives has caused food production costs to rise as well as reduced crop yields. Many farmers must use honeybee hives, which they rent from apiarists, in order to make sure that their crops are completely pollinated. If honeybee populations continue to drop, it could cause agricultural production to drop precipitously. It would be a good idea then, to have other pollination strategies available for farmers and homeowners. Luckily, there are up to 4,000 native bee species that live in North America. These bees have already evolved to pollinate every fruit, flower, nut, and vegetable crop that is already growing here. However, a lack of knowledge about our native pollinators has contributed to an over-reliance on the honeybee by farmers. In order to study the native bee population in Georgia, Dr. Mark Schlueter from Georgia Gwinnett College along with Nicholas Stewart, as lead taxonomist, began the Georgia Native Bee Biodiversity Assessment Project (GNBBA) in 2010. They believe that native bees might be able replace the honeybee in Georgia as far as pollination services go. The GNBBA surveyed Georgia native bee populations during 2010-2015 in North Georgia apple orchards. There were also surveys performed in several state parks. GNBBA surveys were taken at these locations because traditionally the highest number of bee species and abundance are found around apple orchards. One of the goals for the project is to find out which native bee species are most abundant in agricultural areas and then find out which of these species might be best at replacing the European honeybee in Georgia. The GNBBA survey has determined that there are currently 542 species of bees found in Georgia. However, this number is continually changing as more surveys are conducted throughout the state. If you would like to see what species have been collected in Georgia, visit Native Bees of Georgia.

Bees can be separated into two groups based on the length of their tongues. These parts are called proboscides and are used to gather nectar. Some long-tongued bees in the family of Apidae and Megachilidae prefer long flowers like Penstomen species. These groups are also able to nectar from shorter flowers from the daisy or aster family. The other bee families are short tongued and nectar from flowers that have short rays. Therefore, when planning your garden, it is good to include flowers of many different lengths for native bees.

Native bees use many different strategies to reproduce. There are several families of bees (Apidae, Halictidae, and Megachilidae) with some species using a very unusual strategy that some bird species, such as the Brown-Headed Cowbird and the Cuckoo, use. These species lay their eggs in the nests of other bee species and are called the cuckoo bees. The rest of the bee species all build some type of nest. These nests are provided a mix of pollen, nectar, and saliva before the eggs can be laid inside of them. Once this has happened, these nests are sealed until the young emerge. Some of the nest building bee species will build their nests underground, and others use hollow stems or holes in trees. Other bees are able to chew holes in wood with their powerful jaws.

Because of the different variety of nesting strategies native bees use, it is important to remember them when setting up and caring for gardens and farms. The inclusion of bare sandy soil is important for the five different families of miner bees, as well as leaving the dead stalks of plants up until spring so that they can be used for nest holes by other species. These nest holes are used by most species of the family Megachilidae, including the mason bees and the leafcutter bees. Mason bees use mud to make a cell wall between each egg and its provisions while leafcutter bees clip a perfectly rounded piece of leaf to line their burrows. It is also helpful to have soft chunks of wood available for nesting carpenter bees. Carpenter bees do not like stains or paint.

Native bees collect pollen and nectar from a broad variety of flowering plants. Some bees, such as bumble bees, are generalists and will use pollen from almost any flowering plants. Other bees are specialists because they will only collect pollen from one or two families of flowering plants. An example of a specialist would be the squash bees. This group of bees specializes on cucurbit plants such as squash, pumpkin, and zucchini.

There are many factors that affect how healthy our native bee populations are. The Center For Biological Diversity released a report that concludes “that of the 1,437 native bee species for which there was sufficient data to evaluate, about 749 of them were declining. Three hundred forty seven of these native bee species, which play a vital role in plant pollination, are imperiled and at risk of extinction. (Reuters)” On March 21st, 2017, the first bumble bee was listed on the endangered species list, the Rusty Patched Bumble Bee, *Bombus affinis*. Historically, the Rusty Patched Bumble Bee was found all over the Eastern United States, including Georgia. The reasons for this bee’s decline are believed to be the same as for many of the other bee species (as well as butterflies including the monarch) that have declined and gone extinct. Scientists believe that disease, pesticides, effects of climate change, and habitat loss and degradation are the major causes of decline.

To help offset the decline in bee species (and butterflies), your help is needed. Here are some things that can be done to help:

1) Avoid insecticides, fungicides, and herbicides wherever possible. Particularly be aware of insecticides that belong to the class of neonicotinoids. This class has been implicated as a major cause in the decline of bees. This class of insecticide is systemic and is present in the entire plant, nectar and pollen included.

2) Climate change is causing problems for both insects and birds because it is affecting the timing of blooms for flowers. There are many other issues that climate change causes for living things, but this article is not the place to address these discussions. Please advocate for our leaders to address climate change as much as possible

3) Build gardens and restore native habitat. Reduce the turf-grass footprint as much as possible; work with your local officials regarding road-side mowing schedules. The following link is a resource for building your own bee garden: Plants to Attract Bees

A wonderful way to learn about which native bees might be in your yard or habitat is to use Dr. Sam Droege’s USGS Bee Inventory and Monitoring Lab website: https://www.flickr.com/people/usgsbiml/ . This amazing website is full of detailed pictures of large numbers of our native bee species and the plants and animals that they interact with. It is not too late to save our native bee species!

Resources:

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