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KENT ENVIRONMENTAL COUNCIL NEWSLETTER

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Ohio Bee Survey – A Progress Report

In general, bees are the best pollinators, even though they're not the only animals that fly from flower to flower. It is often recognized that honey bees are having survival problems and that as many as 50% die each year. But honey bees are so unique it's unclear whether their problems are even remotely true for wild bees. Maintaining healthy pollination capabilities in the ecosystem depends on understanding what's happening to wild bees – that is, all bee species except the honey bee. Of Ohio's approximately 450 wild bee species, it is known that some populations are in decline, recently one has even been placed on the endangered species list, the American Bumble Bee (*Bombus pensylvanicus*). Yet other wild bee populations seem to be stable, while the populations of some other genera appear to be increasing.

This uncertainty calls for a rigorous scientific study to find out just how many wild bee species are in Ohio, the extent of their range, and what time of the year they're flying about (i.e. their phenology), and then ultimately which are in decline. That study, the Ohio Bee Survey, is currently underway at The Ohio State University, under the direction of Dr. Karen Goodell on the campus in Newark. Each of Ohio's 88 counties had a study site where bees were collected over a 24-hour period once a week from early May through September 2020. Morgan Park was the study site for Portage County, where 487 bees were collected. All told over 53,000 bees were collected, cleaned, pinned, and labeled for date, time of collection, along with GPS coordinates. Then each bee was given a unique QR identification code and assigned to a separate file in a large database.

Morgan Park in Ravenna, Ohio, is the Portage County site used for the Ohio Bee Survey. A total of 487 bees were collected at this park in 2020. (photo by Bob Heath)

The objective of this research is to identify the genus and species of each of these bees and then to analyze the data to determine their range and phenology. Ultimately, a comparison study will be done in five or ten years to estimate whether each species is in decline or not.

A bee of the genus *Ceratina* hovers over bright flowers. Four species of *Ceratina* are known to

So far, the chief technical coordinator of this project, MaLisa Spring, has identified about 45,000 specimens to genus. She assigned me the task of examining specimens in the genus *Ceratina*, the small carpenter bee, and identifying each to the species level. This shiny black bee is smaller than a grain of rice. It is a solitary bee, constructing its nests in hollow stems of weeds, such as iron weed. They are important pollinators because of their abundance and because they focus on small flowers such as coltsfoot, fleabane, and asters. *Ceratina* are among the most abundant pollinators in Ohio. Losing them would be a great loss in ecosystem pollination services.

occur in Ohio. (photo by Bob Heath)

Four species of *Ceratina* known to occur in Ohio, and each species has males and females (of course). Examination of these bees, however, can be difficult. One problem is that identification of males to the species level differs from identification of females to species. Another problem is that because of its small size, all work must be done under a microscope. It's all new to me; fortunately, MaLisa Spring is a patient teacher. Her original goal was to have all 53,000 specimens identified to species by Christmas, now it's looking more like March 2022. As we finish this research project, I will report the general findings as they become available, especially the findings of the bees collected at Morgan Park. Stay tuned.

—Bob Heath