THE GREAT OUTDOORS

Deuce points a swarm of honey bees as the swarm gathers on the ground, well-camouflaged on the autumn woodland floor. Photo: J. Morton Galetto.

What's the Buzz?

A displaced honey bee colony touches down in our columnist's yard.

By J. Morton Galetto, CU Maurice River

In mid-October my Brittany pointers and I went for our morning run – okay, truth be told they run, I walk. Our young male, Deuce, hasn't yet gone on a hunting trip so he is a greenhorn. He may react to turtles, rabbits, woodchucks, butterflies, song birds, snakes – you name it. There is no consistency in what prompts him to point. Conversely our nearly four-year-old dog, Mambo, is all business; if it's not an upland game bird or a rabbit she is not interested.

As we started up a woodland access road on our property Deuce suddenly locked up in a stylish point. He was rock solid, and having had a bath the previous day he was especially dashing. I thought at long last a woodcock must have landed in the yard. Maybe he would finally hone his olfactory skills. But when Mambo nonchalantly passed him by I thought, "Not today." Hopefully it wasn't potential trouble; she likely would have taken some interest in a skunk or raccoon.

Then I realized that the ground was alive. It was pulsating in a flurry of miniscule movements that seemed to undulate in a small wave of activity. A swarm of honey bees was carpeting the fall leaves that littered the ground at my feet. Deuce moved in and I warned him, "No Deuce, no trash." "Trash" means trouble - or at least not something we are interested in - and to my surprise he listened – for a change. Or possibly one of the insects hammered home my point by stinging him on the nose, since he rapidly jerked back his head. It was only a little over a month ago that he had introduced me to a nest of yellow jacket wasps, who got far too personal with the seat of my blue jeans. But his reaction this time was brief so I decided he was not really stung.

Honey bees are valuable to farmers and beekeepers, pollinating the crops and flowers in our yards. The United States Food and Drug Administration estimates that about one-third of the food consumed by Americans comes from plants fertilized by honey bees. Some of the 100+ crops dependent on these creatures include cranberries, apples, squash, broccoli, pumpkins, melons, and almonds. Furthermore, one-third of the human diet relies on pollinated plants, 80 percent of which rely on bees.

It is the honey bee's many contributions to people and pollination that prompted me to be especially interested in the plight of this colony and to call beekeeper Lynn Maun.

I have known Lynn since she began working at the Great Egg Harbor Watershed Association in 2005, as their Education and Outreach Coordinator. She is interested in watershed education, native plants, travel and, yes… beekeeping. Like me Lynn is one

of a number of guardians of a local nationally designated Wild and Scenic River, in her case the Great Egg Harbor River. So our interests and paths have crossed a number of times over the past 18 years.

In 2015 beekeeper Ned Morgan presented a program on bees and beekeeping to CU Maurice River. As Lynn's mentor, he helped her begin beekeeping in the spring of 2013. Therefore in thinking about who might help my visitors find shelter for the winter Lynn Maun came to mind. Honey bees have been declining and so finding a home for this colony seemed like an excellent thing to do.

When Lynn arrived she put on some protective gear: a bee jacket with a screened hood, gloves, and rubber wellies. Her movements were measured and calm.

She explained to me that it is odd for a colony to requeen this time of year, since normally they do that in the spring or summer. The bees may have "absconded" meaning the entire hive left, likely taking all the stored honey, with the goal of relocating. The queen was therefore suspected to be within the swarm. The reason they were on the ground was that they hadn't yet found their new home.

Disease or destruction of habitat are two reasons why bees leave home. In the spring of 2022, 40% of all colonies were afflicted with *varroa mites*, a parasite that targets bees. The mites can be seen on the insects or the bees may display deformed wings, caused by a virus spread by the mites. However Lynn said the bees in my yard thankfully appeared to be healthy.

This honey bee has a Varroa destructor mite attached to its abdomen. The mites live on adults but feed on the developing brood, causing malformations and transmitting viruses. Photo: U.S. Geological Survey.

The *Varroa destructor* mite is the primary cause of bee mortality. Bad weather, queen issues, and pesticides also play a role in declines. Pesticides can make bees more vulnerable to diseases. The environmental advocacy group Natural Resources Defense Council (NRDC) believes that insecticides, especially neonicotinoids, play a major role in both bee and human health. The European Union's high court banned neonicotinoids in 2018 to protect pollinators. Despite overwhelming scientific evidence that these toxic insecticides impair aquatic environments and harm birds and nontarget insects that sustain them, they are still widely used in the United States (for more details on neonicotinoids see side bar below).

Back to our morning adventure. It was a chilly 42 degrees Fahrenheit when we discovered the swarm. By the time Lynn arrived the day was beginning to warm up and the bees were acting less lethargic, with a number flying about, although by and large they were primarily still amassed on the ground.

She had brought a bee box with some frames in place, one of which was heavy with honey that could help sustain the bees. The creatures that had taken to flight were interested in this food.

Frames are spanned with a beeswax foundation and honey in an active hive. Lynn removed some of the middle ones from the bee box. This gave her an interior space to transfer the bees from the ground to the box. She gently scooped up the honey bees, using a light-weight dust pan, and then slid them into the empty frame slots. When she returned home she would be able to remove the lid from the transport box and place a bee box filled with trays over the top of the open end, which would allow the bees to migrate upwards and organize themselves between a complete set of frames.

Lynn prepares a honey chamber section of the beehive to accept the swarm. Photo: J. Morton Galetto.

This beehive has the captured bee in the lower section. The top section was placed above the captured bees so they could fill between a full set of frames.

When I asked Lynn what she likes best about bees she talked historically about how colonists introduced these insects in order to pollinate early crops in the new country. However she seemed most enthusiastic about using them as a learning tool.

When teaching, Lynn finds honey bees to be a good choice for introducing children to insects. Many youngsters are frightened of

bugs simply because they don't understand them, and bees can serve as a first step toward better comprehension, offering lots of teachable topics.

Children are fascinated to learn that these tiny creatures have a social order; there are workers, queens, and drones. Banding together to pollinate our crops and flowers, bees will forage as far as five miles from the hive and scouts will report back, performing a "waggle dance" to relay where nectar is available. If resources are abundant they may do a "shake" dance to recruit more foragers.

Honey bees are a great way to help children understand one common relationship between humans and insects. After a lesson, children especially like tasting honey.

As a registered beekeeper Lynn ultimately extracts and bottles honey. The State agricultural agencies around the nation, which are interested in the health of the bees, reserve the right to come onto a property to check hives because of the great societal impacts that spread of disease can mean to bee populations. Anyone selling bees must additionally have them inspected by the State Department of Agriculture, to check the spread of disease.

If you would like to find out more about honey bees Lynn suggests reading "Honeybee Democracy," a book by Thomas D. Seeley. In it he discusses their social structure and how it relates to collective decision-making processes. From the book's jacket: *"[B]ees evaluate potential nest sites, advertise their discoveries to one another, engage in open deliberation, choose a final site, and navigate together—as a swirling cloud of bees—to their new home. Seeley concludes that what works well for bees can also work well for people: any decision-making group should consist of individuals with shared interests and mutual respect, a leader's influence should be minimized, debate should be relied upon, diverse solutions should be sought, and the majority should be counted on for a dependable resolution."*

In the past weeks, when opposing factions have left us without a head in the House of Representatives, possibly our leaders would do well to take a cue from the bees. Don't underestimate our ability to learn from nature if we simply pay attention.

Story Sources

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Struggling beekeepers stabilize U.S. honey bee populations after nearly half of colonies died last year. June 22, 2023. PBS News Hour

Source: *Neonicotinoids 101: The Effects on Humans and Bees*, May 25, 2022. NRDC.org.

(Scroll for sidebar on Neonicotinoids)

What are neonicotinoids
Natural Resources Defense Council (NRDC) Explains Neonicotinoids

Neonicotinoids (commonly called neonics)? They are a class of synthetic, neurotoxic insecticides that are used on agricultural crops, lawns, gardens, golf courses, and in flea and tick treatment for pets. Developed in the mid-1990s, neonics are now the single-most popular insecticide class in the United States.

The way they work is by permanently binding to the nerve cells of insects, overstimulating and destroying them. Exposed insects often exhibit uncontrollable shaking and twitching followed by paralysis before eventually dying. Even at nonlethal doses, neonics can weaken critical functions, such as an insect's immune system, navigation, stamina, memory, and fertility.

Neonics are indiscriminate and kill many nontarget species like butterflies and bees. Neonics are considered 50 times more harmful to insects than the products in use prior to their introduction. Recent studies have shown them being linked to losses in birds, collapse of fisheries, and birth defects in deer. In people a number of neurological health effects such as muscle tremors, lower testosterone, insulin regulation issues, changes in fat metabolism, and birth defects are showing connections to neonics.

Source: *Neonicotinoids 101: The Effects on Humans and Bees*, May 25, 2022. NRDC.org.