

Honeybees are dying. This may not seem like such a big deal, but beekeepers and farmers across the country have been majorly affected by the phenomena known as Colony Collapse Disorder, the name attributed to the as yet unknown cause of recent massive bee deaths. What many of us don't realize is that bees play a major part in our food production industry. According to the USDA, \$15 billion of crop value can be attributed to bee pollination. Specialty crops, especially almonds, depend on bee pollination so heavily that the sharp decline in bee populations has begun to affect harvests.

While the USDA argues that overall honeybee health has been declining in the past 30 years with the advent of more pesticides and invasive species introduced into the environment, CCD has hit the beekeeping community hard. Entire hives can disappear in a very short time. With some beekeepers losing as much as 90% of their hives, researchers scramble to find the answer to the puzzle.

With the help of many other institutions, including Penn State University, the USDA, the Florida Department of Agriculture, the University of Illinois, a team of statisticians in Belgium, and many more, the NC State University's Department of Entomology is working to find the answer to the question: What exactly is Colony Collapse Disorder? Current theories being researched include new strains of bacterial or viral infections, pesticide poisoning, or invasive pests. Stress is also thought to contribute to colony collapse, like when bees continuously pollinate crops with low nutritional value. And with fewer bees to go around, entire hives are being trucked farther and farther, placing more stress on those adult worker bees that escape contamination. Dr. David Tarpy, Associate Professor and Extension Apiculturist for NC State, described the group's experimental process, "We looked at 200 possible factors, narrowing it down to 61 factors that had logical bearing and no single factor emerged as strongly associated with the disorder. There were trends in the data, for example colonies afflicted with CCD had more parasites, but we don't know that was a cause or effect of CCD."

Part of why CCD is so hard to diagnose is because it is so hard to spot in the first place. The earliest reports of CCD came in 2006, but it is predicted that CCD may have begun at least three years earlier. Dr. Tarpy adds, "The phenomenon of CCD may have been going on prior to it being described. Part of the reason is honeybee colonies have been dying in similar and different ways for a very long time now. Large scale losses of honeybees were not out of the norm."

Fortunately, North Carolina has managed to escape the contaminant thus far. When asked of the damage done in North Carolina, Dr. Tarpy commented, "It's hard to say the magnitude that North Carolina bees have been impacted. We don't even have a very good data collection of honeybees' nation wide. There have been reports of CCD in North Carolina, but technically our department has not verified any case of it. It's hard to verify something that's so fast acting."

So what now? For North Carolina Beekeeper Berry Hines Sr., owner of the Bee Blessed Pure Honey, it is business as usual. "I have not been affected by the CCD problem, but I loose about two percent of my bees each winter. This is normal, or what we call winter loss." Hines has bigger problems than disease among his hives, including big business competition, pesticides, and an indifferent public. "I see a lot of people that are not educated about bees, so they sprinkle around a lot of Seven Dust that kill a lot of bees, while land developers and others are tearing away the habitats of these creatures."

Both Tarpy and Hines believe everyone can help the beekeeping community while scientists continue to search for answers. "There are several things students can do," says Dr. Tarpy. "Become aware of the great opportunities on campus; there are great courses taught every year." Some of those classes include Introduction to the Honeybee and Beekeeping and Advanced Beekeeping. "Become beekeepers and get involved with the local beekeepers throughout the state. We have the highest number of beekeepers in the nation, so they are very well organized and embracing of new beekeepers." The North Carolina State Beekeepers Association, a nonprofit that has been in existence since 1917, holds statewide conferences twice every year and invites everyone to join, beekeepers and ordinary citizens alike.

And as consumers, we must educate ourselves and take responsibility for our purchases. Hines laments that much of the honey found on shelves in the United States comes from overseas, driving small and local keepers out of business. "There's so much boiled and foreign honey in the commercial market that a small business like mine cannot even compete. So a lot of other keepers and I have decided to sell our honey at local farmers markets, eat it ourselves, or feed it back to the bees. One thing I tell people about beekeeping is that it is a labor of love... you have to love it in order to be in it." He also adds, "I find on average that a lot of people know nothing about honey. Most people buy honey according to price, not quality or nutrition or taste. They think that USDA GRADE A is the quality of honey. They do not know that it is in reference to color only. I try to talk to schools and anyone interested about how valuable bees are and how good honey is for the body."

The fact that CCD has been out of the news for the past few years has not helped. Freshman Laura Guderian, a Fashion and Textile Management major, was surprised she had not heard of it in the news at all, especially given its importance to our food supply. "I think it would be interesting to know." Dr. Tarpy commented that CCD probably has not been spoken of lately because of the slow pace of research. "Unfortunately, science doesn't move as fast as media coverage. But there will be more to come."