Remember…

****

What's Blooming?
Sumac, Alsike clover, Ladino, (white clover), Sweet Clover, Sourwood

Ice Cream Social at Don Moore's home on August 31st, 3:00 pm.

AUGUST 2013
NEWSLETTER OF THE ALAMANCE COUNTY BEEKEEPERS

Alamance County Beekeepers

This month's meeting...

is August the 31st(due to the inclement weather), at Don Moore's House. It is our Annual Ice Cream Social with hive inspections by Don Hopkins and Nancy Ruppert. The time is 3:00 pm until…. the ice cream is gone and the program is finished. Come and have some fun.

Dear club, I need some more input from you fellow members. Traditionally in the past, all or most members contribute towards the newsletter with articles, their experiences, etc. I need all of you to step up and volunteer with current information and news articles so that the newsletter is truly from the club and satisfies the needs of the club. Please contact Ira with your contributions or email them straight to me at sthomas770@earthlink.net. I don't want the newsletter to be the "Camille Show" because for months I haven't received anything from club members themselves and I don't feel that the responsibility should solely fall on the shoulders of the officers either.

We are setting up at Cedarock Park on August 24th for their Heritage Days that demonstrate what life was like in the last century before electricity, cell phones, the social media, etc. We are setting up the bee cage and doing bee talks for the public. An observation hive will be set up so that youngsters can find the queen(another opportunity to interest people in bees). It will be a great advantage to do some work on those wanting to rise in the ranks to being a Master Beekeeper. Contact Mike Ross if you wish to help.

Bees 'Betray' Their Flowers

When Pollinator Species Decline

'Alarming' trend suggests global declines in pollinators could have a bigger impact on flowering plants and food crops than previously realized

Remove even one bumblebee species from an ecosystem and the impact is swift and clear: Their floral "sweethearts" produce significantly fewer seeds, a new study finds.

The study, to be published by the *Proceedings of the National Academy of Sciences*, focused on the interactions between bumblebees and larkspur wildflowers in Colorado's Rocky Mountains. The results show how reduced competition among pollinators disrupts floral fidelity, or specialization, among the remaining bees in the system, leading to less successful plant reproduction.

"We found that these wildflowers produce one-third fewer seeds in the absence of just one bumblebee species," says Emory University ecologist Berry Brosi, who led the study. "That's alarming, and suggests that global declines in pollinators could have a bigger impact on flowering plants and food crops than was previously realized."

The National Science Foundation (NSF) funded the study, co-authored by ecologist Heather Briggs of the University of California-Santa Cruz.

About 90 percent of plants need animals, mostly insects, to transfer pollen between them so that they can fertilize and reproduce. Bees are by far the most important pollinators worldwide and have co-evolved with the floral resources they need for nutrition.

During the past decade, however, scientists have reported dramatic declines in populations of some bee species, sparking research into the potential impact of such declines.

Some studies have indicated that plants can tolerate losing most pollinator species in an ecosystem as long as other pollinators remain to take up the slack. Those studies, however, were based on theoretical computer modeling.

Brosi and Briggs were curious whether this theoretical resilience would hold up in real-life scenarios. Their team conducted field experiments to learn how the removal of a single pollinator species would affect the plant-pollinator relationship.

"Most pollinators visit several plant species over their lifetime, but often they will display what we call floral fidelity over shorter time periods," Brosi explains. "They'll tend to focus on one plant while it's in bloom, then a few weeks later move on to the next species in bloom. You might think of them as serial monogamists."

Floral fidelity clearly benefits plants, because a pollinator visit will only lead to plant reproduction when the pollinator is carrying pollen from the same plant species. "When bees are promiscuous, visiting plants of more than one species during a single foraging session, they are much less effective as pollinators," Briggs says.

The researchers conducted their experiments at the Rocky Mountain Biological Laboratory near Crested Butte, Colorado. Located at 9,500 feet, the facility's subalpine meadows are too high for honeybees, but they are buzzing during the summer months with bumblebees. The experiments focused on the interactions of the insects with larkspurs, dark-purple wildflowers that are visited by 10 of the of the 11 bumblebee species there.

The researchers studied a series of 20-meter square wildflower plots, evaluating each one in both a control state, left in its natural condition, and in a manipulated state, in which they used nets to remove the bumblebees of just one species.

The researchers then observed the bumblebee behavior in both the controlled plots and the manipulated plots. "We'd literally follow around the bumblebees as they foraged," Briggs says. "It's challenging because the bees can fly pretty fast."

Sometimes the researchers could only record between five and 10 movements, while in other cases they could follow the bees to 100 or more flowers.

"Running around after bumblebees in these beautiful wildflower meadows was one of the most fun parts of the research," Brosi says. Much of this "bee team" was made up of Emory undergraduate students, funded by the college's Scholarly Inquiry and Research at Emory (SIRE) grants and NSF support via the Research Experience for Undergraduates (REU) program.

The Rocky Mountain Biological Laboratory is exacting about using non-destructive methodologies so that researchers don't have a negative impact on the bumblebee populations. "When we caught bees to remove target species from the system, or to swab their bodies for pollen, we released them unharmed when our experiments were over," Brosi says. "They're very robust little creatures."

The researchers then observed the bumblebee behavior in both the controlled plots and the manipulated plots. "We'd literally follow around the bumblebees as they foraged," Briggs says. "It's challenging because the bees can fly pretty fast."

Sometimes the researchers could only record between five and 10 movements, while in other cases they could follow the bees to 100 or more flowers.

"Running around after bumblebees in these beautiful wildflower meadows was one of the most fun parts of the research," Brosi says. Much of this "bee team" was made up of Emory undergraduate students, funded by the college's Scholarly Inquiry and Research at Emory (SIRE) grants and NSF support via the Research Experience for Undergraduates (REU) program.

The Rocky Mountain Biological Laboratory is exacting about using non-destructive methodologies so that researchers don't have a negative impact on the bumblebee populations. "When we caught bees to remove target species from the system, or to swab their bodies for pollen, we released them unharmed when our experiments were over," Brosi says. "They're very robust little creatures."

Common Agricultural Chemicals Shown to Impair Honey Bees' Health

First study of real world conditions for crop-pollinating honey bees

In a study of real-world conditions encountered by honey bees as they pollinate crops, researchers gathered pollen from commercial beehives placed in farm fields in the Northeastern US. Here the scientists take pollen samples from bees pollinating Maine blueberries. Credit: MichaelAndree.

COLLEGE PARK, MD - Commercial honey bees used to pollinate crops are exposed to a wide variety of agricultural chemicals, including common fungicides which impair the bees' ability to fight off a potentially lethal parasite, according to a new study by researchers at the University of Maryland and the U.S. Department of Agriculture.

The study, published July 24 in the online journal *PLOS ONE*, is the first analysis of real-world conditions encountered by honey bees as their hives pollinate a wide range of crops, from apples to watermelons.

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The researchers collected pollen from honey bee hives in fields from Delaware to Maine. They analyzed the samples to find out which flowering plants were the bees' main pollen sources and what agricultural chemicals were commingled with the pollen. The research-ers fed the pesticide-laden pollen samples to healthy bees, which were then tested for their ability to resist infection with *Nosema ceranae* – a parasite of adult honey bees that has been linked to a lethal phenomenon known as colony collapse disorder.

On average, the pollen samples contained 9 different agricultural chemicals, including fungicides, insecticides, herbicides and miticides. Sublethal levels of multiple agricultural chemicals were present in every sample, with one sample containing 21 different pesticides. Pesticides found most frequently in the bees' pollen were the fungicide chlorothalonil, used on apples and other crops, and the insecticide fluvalinate, used by beekeepers to control *Varroa* mites, common honey bee pests.

In the study's most surprising result, bees that were fed the collected pollen samples containing chlorothonatil were nearly three times more likely to be infected by Nosema than bees that were not exposed to these chemicals, said Jeff Pettis, research leader of the USDA's Bee Research Laboratory and the study's lead author. The miticides used to control *Varroa* mites also harmed the bees' ability to withstand parasitic infection.

Beekeepers know they are making a trade-off when they use miticides. The chemicals compromise bees' immune systems, but the damage is less than it would be if mites were left unchecked, said University of Maryland researcher Dennis vanEngelsdorp, the study's senior author. But the study's finding that common fungicides can be harmful at real world dosages is new, and points to a gap in existing regulations, he said.

"We don't think of fungicides as having a negative effect on bees, because they're not designed to kill insects," vanEngelsdorp said. Federal regulations restrict the use of insecticides while pollinating insects are foraging, he said, "but there are no such restrictions on fungicides, so you'll often see fungicide applications going on while bees are foraging on the crop. This finding suggests that we have to reconsider that policy."

In an unexpected finding, most of the crops that the bees were pollinating appeared to provide their hives with little nourishment. Honey bees gather pollen to take to their hives and feed their young. But when the researchers collected pollen from bees foraging on native North American crops such as blueberries and watermelon, they found the pollen came from other flowering plants in the area, not from the crops. This is probably because honey bees, which evolved in the Old World, are not efficient at collecting pollen from New World crops, even though they can pollinate these crops.

The study's findings are not directly related to colony collapse disorder, the still-unexplained phenomenon in which entire honey bee colonies suddenly die. However, the researchers said the results shed light on the many factors that are interacting to stress honey bee populations.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~