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GUILFORD COUNTY BEE KEEPERS ASSOCIATION

Guilford NEWS

JULY, AUGUST, SEPTEMBER, 2005

a local chapter of NORTH CAROLINA STATE BEEKEEPERS ASSOCIATION, INC.

MEETINGS & PROGRAMS:

- **Tuesday, July 12** 6:30 Covered Dish Meal. Bill Sheppherd, always informative & entertaining will provide the evenings program.

- **Tuesday, August 9** 7:00 (no meal) For club members who were unable to attend the NC Beekeepers July Convention designated members will review & discuss the major presentations and other events.

- **Tuesday, September 13** 6:30 Covered Dish Meal. Scott and Monica Jewell from Alamance County will provide their presentation on "Displaying and Talking About Bees."

NEEDS YOUR ATTENTION:

• **Thanks to Steve Forrest @ Brushy Mountain, our club has a refractometer which you may wish to use to check the moisture content of your honey. Arrive before the meeting starts & Kurt will make arrangements for someone to assist you.**

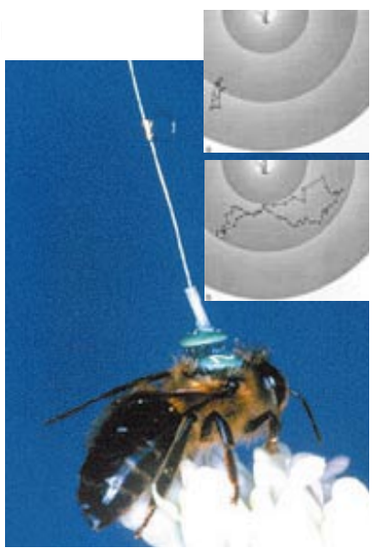
• Remember that the newsletter is now posted on our web site. Paper copies will not be mailed to email recipients.

• Web site Help Wanted: We are in need of individuals who would be interested in helping manage our web site. Specifically looking for someone who might be willing to put together a beginner FAQ section. *We are also interested in knowing about what members might like to see on our web site that would make it more relevant to them and their needs.*

REVIEW:

Waggle dance controversy resolved by radar records of bee flight paths

11 May 2005



A paper published in Nature on May 12th (1) provides new data that resolves a long-standing scientific controversy. In the 1960s, Nobel Prize winning zoologist, Karl von Frisch, proposed that honeybees use dance (the "waggle dance") as a coded message to guide other bees to new food sources. However, some scientists did not accept von Frisch's theory. Using harmonic radar, scientists, funded in part by the UK's Biotechnology and Biological Sciences Research Council (BBSRC) have now tracked the flight of bees that had attended a "waggle dance" and found that they flew straight to the vicinity of the feeding site, as predicted by von Frisch. The tracks allowed the scientists to determine how accurately bees translate the dance code into successful navigation, and showed that they correct for wind drift even when en route to destinations they have never visited before.

If a honeybee worker discovers a good feeding site it is believed that she informs her nest mates through a dance that describes the distance and direction of the feeding site. This 'dance language' was first described by Karl von Frisch in the 1960s but his experiments also showed that bees that had attended the dance (recruits) took far longer to get to food than would be expected. This time delay caused other scientists to argue that the recruits did not read the abstract code in the dance at all, but found the food source simply by tracking down the smell that they had picked up from the dancing bee. Another suggestion was that recruits simply followed the dancer when she flew back to the food, and then other bees joined in. The controversy has persisted because prior to the advent of harmonic radar, no one could show exactly where the recruits flew when they left their hives.

The scientists watched the waggle dance occurring in a glass observation hive and identified recruits. They captured these recruits as they left the hive, attached a radar transponder to them and then tracked their flight paths using harmonic radar. Most recruited bees undertook a flight path that took them straight to the vicinity of the feeding site where they all spent a lot of time in searching flights, trying to locate its exact position. This searching behavior accounts for the time lag that caused the original controversy.

In another set of experiments, bee recruits leaving the hive were taken to release sites up to 250m away. These bees flew, not to the feeding site, but in the direction that would have taken them to the feeding site had they not been displaced from the hive. This result adds weight to von Frisch's original theory and allows alternative hypotheses about bee behavior to be firmly discounted.

Secret "training flights" of bees

Harmonic radar tags on the backs of bees have provided new information about the previously secret "orientation flights" that bees make repeatedly before they become foragers at about 3 weeks of age.

Scientists from the Institute of Arable Crops Research, led by Dr. juliet Osborne, in collaboration with American scientists (University of Illinois at Urbana-Champaign) and researchers from the Natural Resources institute (University of Greenwich), used radar tracking techniques to monitor the early flights of young bees. Their results, published in Nature in Gebruary 2000, show that bees can use these flights systematically to learn about their local landscapes, and to develop "homing" behavior.

With increasing experience, bees fly faster, although their flight time remains constant, so they travel further from the hive. Each flight tends to be restricted to a narrow sector around the hive, with different flight paths providing different viewpoints. Changes in orientation flight are based on experience of previous flights rather than on a bee's age, suggesting a progressive and adaptive learning process that takes account of local circumstances such as pollen availability or weather conditions.

Information about the natural behavior of beneficial insects such as bees contributes to multidisciplinary research aimed at developing farmland ecosystems that preserve biodiversity. This work was supported primarily by the BBSRC, the National Science Foundation, the University of Illinois and the European Community Regional Tsetse and Trypanosomiasis Control Programme.

Ohio State University Extension Fact Sheet

European Hornet

William F. Lyon & Gerald S.Wegner

Although beneficial since it feeds on live insects such as grasshoppers, caterpillars, flies and yellow jackets, the European hornet can fly at night and sting repeatedly in defense of its nest entrance. Sometimes it builds its nest too close to dwellings, hunts in human-use areas, becomes attracted to lights, strips bark from ornamental plants, eats tree fruits, and raids domestic honey bee hives.

Identification

European hornets are large, up to 1-1/4 inches long with the head and thorax (middle part) red-brown. The abdomen (rear part) is black with yellow markings. Sometimes they are confused with the baldfaced hornet, which has a black head, thorax and abdomen with white markings.

Life Cycle and Habits

European hornets normally are a woodland species which builds its nests in hollow trees. Sometimes, nests are found in attics, hollow walls, bird houses, barns, and abandoned bee hives in unprotected places. Nests are covered with a thick, brown envelope (paper-like) composed of coarse, decayed wood fibers which are quite fragile. These nests may have more than one entrance. A mature colony will contain 1,500 to 3,000 cells in six to nine combs. The lower two to four combs contain queen cells. There usually are 200 to 400 workers during the peak population. The life cycle is similar to yellow jackets, with overwintering queens preparing nesting sites in the spring (usually in May). Queens make the nest and lay some eggs. At this time, as the first generation is growing, the queen cares for the larvae by hunting food and enlarging the nest. After larvae reach adulthood, they take over housekeeping, nest expansion, hunting, and caring for the new larvae. The queen lays eggs for the remainder of the year.

During the summer, these hornets can fly at night and are often attracted to light. They sometimes fly into the beam of a flashlight (bumping into the cover glass) or appear at porch party lights, lantern lights at campsites, etc. Occasionally, some fly against windows, causing residents to believe they are trying to get inside to attack them. Workers girdle twigs and branches of numerous trees and shrubs including lilac, birch, ash, horse chestnut, dogwood, syringa, dahlia, rhododendron and boxwood. These plants are sometime killed. Other homeowner complaints involve nesting too close to human-occupied structures; presence in picnic grounds and yards; eating ripe or near-ripe fruit such as apples, puncturing a hole and hollowing out the fruit; and raiding domestic honey bee hives. However, they are not as aggressive as yellow jacket wasps.

Control Measures

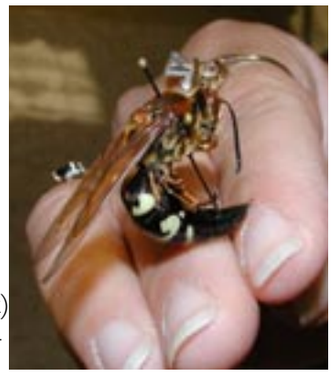
European hornets are very beneficial by destroying harmful insect pests. Do not control these hornets unless necessary. They are primarily a forest species, having few contacts with humans and present a minimal stinging hazard.

Ohio State University Extension Factsheet

Cicada Killer Wasp

William F. Lyon

Although female Cicada Killer Wasps rarely sting unless disturbed, homeowners may become alarmed or frightened because of their very large size (nearly two inches) and foraging habits in unwanted areas. Males have especially aggressive territorial behavior, but have no sting. Females are difficult to provoke, can sting, but rarely do. Adults appear in mid to late summer (July and August) causing special concern to individuals with young children.



CICADA KILLER WASPS ARE NO THREAT TO HONEY BEES

Field Day, 2005

Like to join Guilford County Beekeepers Association?
Meetings are held on the 2nd Tuesday of each month. (Odd months @ 6:30 p.m. with a covered dish meal, even months @ 7:00 p.m.) Just come to our next meeting at the Guilford County Agricultural Center and join in. Dues are $25.00 per year (that's $10.00 for GCBA and $15.00 for expanded membership in the North Carolina State Beekeepers Association).

FOR MORE INFORMATION:

- Don Hopkins, State Inspector: (336) 376-8250
- Guilford County Beekeepers Association web site http://www.guilfordbeekeepers.org
- North Carolina State Beekeepers Association web site http://www.ncbeekeepers.org

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