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### **Archbold Beetle Survey**

Insects are present in virtually every habitat and many are attracted to lights at night, particularly moths, mayflies, flies, and of particular interest, beetles. Archbold Biological Station hosts an impressive number of beetle species within its unique habitats, many of which are found only in central Florida. What beetles live at Archbold and how these populations change over time is of prime interest to scientists and ecologists seeking to preserve the unique and fragile Florida scrub habitat.

For decades, Archbold scientists have been studying and preserving beetles, as well as other insects, to better understand their relationships to the environment. “With more than 40,000 beetle specimens representing more than 3,600 beetle species in our natural history collection, we have abundant evidence of the species that used to live and presently live in the area,” says Stephanie Leon, Archbold’s Entomology Collection Curator. “More than 1,700 of these species are found on Archbold’s property.”

“During a recent survey, beetles were collected both day and night using various methods including nets, hand-collecting, attracting certain species using various baits, and collecting at lights,” explains Dr. Marc Behrendt of Ohio University, a research affiliate of Archbold. “A fair number of interesting species of beetles were collected during the daytime; most were found primarily on plants. However, at night, thousands of beetles arrived at specialized ultra-violet lights.”

Most common were the many species of scarab beetles attracted to the lights, both large and small. These are the ungainly beetles that people often call June bugs. “Scarab colors ranged from black to brown, and some species have an iridescent sheen on their elytra, or shell-like wing covering,” says Ken Karns of the Ohio Coleopterist Society, who collaborated with Dr. Behrendt on the survey. A coleopterist is a scientist dedicated to the study of beetles.

The click beetles were another common group they found. Click beetles are characterized by the ‘click’ mechanism they possess, used to bounce the beetle into the air to avoid predation. “Click beetles ranged in size from a quarter inch to two inches long. One click beetle that came to the black lights had two tiny white spots on its pronotum, the mid-section behind the head,” continues Karns. “In the dark, these white spots light up, a trait called bioluminescence, which is used to attract other beetles of the same species. The beetles utilize the same chemistry as fireflies to light up, and in the darkness it appears that two glowing eyes are watching you!”

Another interesting group of beetles observed were the cerambycids, known as long-horned beetles. Karns describes long-horns as “often large and with dramatically long antennae. Antennae are particularly long on the males so as to find the females that are emitting pheromones, which are chemicals released to attract mates. During the week-long night survey, we collected some cerambycids that were nearly 3 inches long!” Dr. Behrendt notes that many long-horns lay their eggs in stressed or injured trees. “A recent wildfire location yielded several species of cerambycids that were taking advantage of the oaks and pine trees that were scorched, but not killed.”

Dr. Behrendt and Karns’ survey added knowledge of 185 scarab species, 107 click beetle species, and 250 long-horned beetle species in Archbold’s natural history collection.

What does this study indicate? “Although it was only a week-long sampling, all the species collected were already known from previous collections taken at Archbold,” Dr. Behrendt explains. “So despite changing environmental conditions in Florida, the beetle population at Archbold has not changed dramatically. The huge numbers of beetles we caught suggest that the local habitats at Archbold appear to be vibrant and healthy, although a long-term study would be needed to confirm all this momentary evidence.”



**Photo 1: Ken Karns of the Ohio Coleopterist Society uses a specialized ultraviolet light to collect beetles at night for a recent beetle survey at Archbold. Photo by Marc Behrendt.**



**Photo 2: A researcher holds several Thomas's Oak Borer beetles (*Derobrachus thomasi*), a species of long-horn collected during a recent beetle survey at Archbold. Photo by Marc Behrendt.**