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## **Hidden pastures Florida scrub is a special habitat**

Scientists from all over come to Highlands County, where they join resident scientists at the Archbold Biological Station to explore the special habitat called Florida scrub. An obvious feature of Florida scrub are patches of open sand where nothing grows. Or so it seems. Some years ago, scientists at Archbold noticed that after a rain tiny trails appeared in the sand, as if a microscopic mole were burrowing just below the surface. Equipped with nothing but curiosity and pocket knives, the scientists carefully scraped away sand above the burrows, discovering that each trail ended in a little cricket a quarter of an inch long, shiny black with reddish knees. It turned out that the cricket was new to science, so Archbold entomologist Mark Deyrup and Cornell entomologist Thomas Eisner described it, naming it *Neotridactylus archboldi*, in memory of Richard Archbold, who founded the Station and protected the land where the cricket was discovered.

Mark Deyrup asked, “What were these crickets doing making burrows 1/8<sup>th</sup> of an inch under the sand? It turned out that they were grazing on a hidden pasture of blue-green algae growing just under the surface of sand in barren open scrub. Alerted by the crickets, scientists began to study the algal layer. Christine Hawkes of the University of Texas at Austin discovered a whole community of microscopic algae and other organisms that colonize the open scrub sand.”

Deyrup continued, “The open sand where the algae grow is sometimes extremely dry, sometimes extremely hot, and always acidic and lacking most nutrients. Organisms that can thrive in such habitats are now being studied for industrial applications in extreme conditions

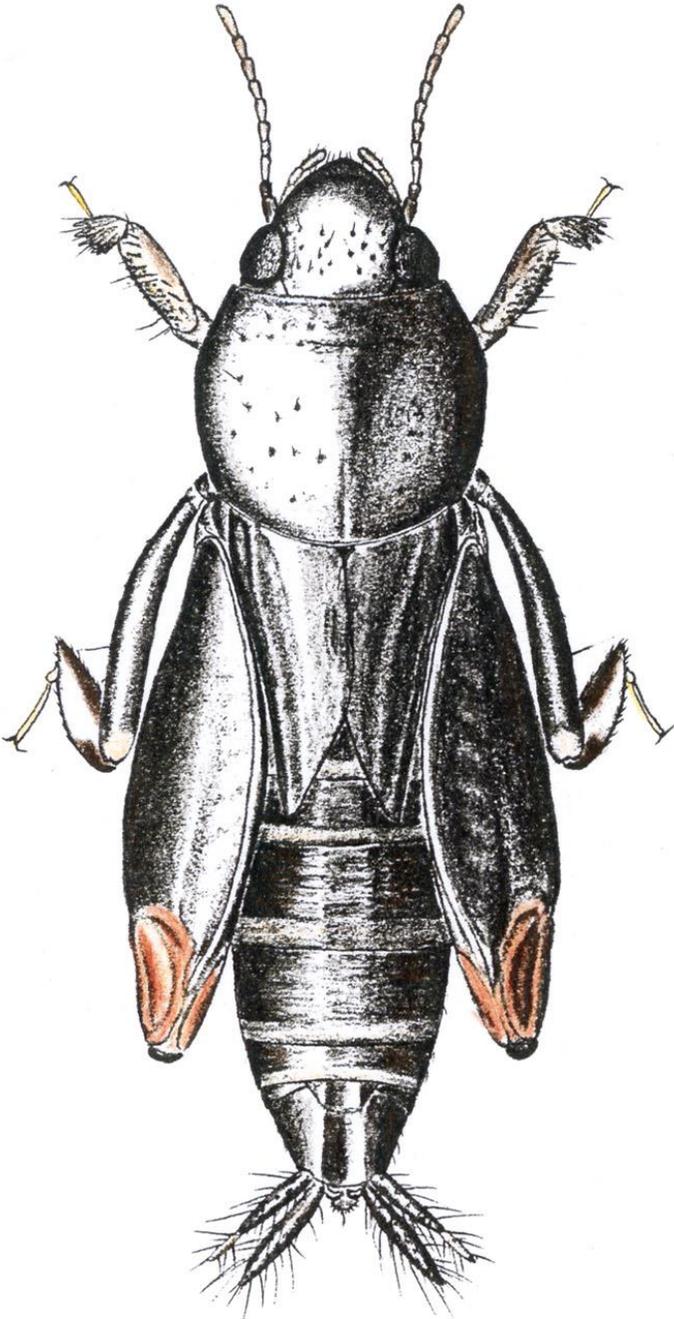
when there is a need for biological processes such as photosynthesis or certain kinds of chemical reactions that require live organisms.”

A few years ago there was an excellent movie called “The Martian,” which effectively disillusioned everybody who imagined that all that was needed to make the Red Planet habitable would be the addition of a few Starbucks. This movie starred Matt Damon, whose heroic and ingenious struggle for survival featured a crop of potatoes growing rapidly under challenging conditions. Unfortunately, there is no Hollywood prize category for “Best Supporting Vegetable.”

If, however, we ever colonize Mars, we are less likely to depend on relatively delicate crops such as potatoes, and more likely to depend on organisms such as blue-green algae, which need far less coddling to produce crops that can be modified into something edible. In preparation for this it is useful to study algae in places such as Florida scrub, where organisms have triumphed over the most daunting conditions.

Incidentally, you could never grow potatoes in the open sand of Florida scrub.

**Photo 1: Sand-dwelling cricket. This species can be easily found after rain in the Florida scrub preserves, such as parts of Highlands Hammock State Park and the Lake Placid Scrub Preserve or at Archbold. Drawing by Mark Deyrup.**



**Photo 2: Strands of blue-green algae found under the surface of scrub sand. Photo by Thomas Eisner.**

