

Invasive Mole Crickets (*Neoscapteriscus*)



When I first moved to Florida in 1979 one of the first insects that fascinated me was what we commonly call a mole cricket. I had no idea what a mole cricket was until a Florida native explained that this critter was a type of cricket that digs into the ground to eat the roots of the grass. My friend continued to clarify that they are called mole crickets because they look like a tiny mole. Looking at this cricket I could see the resemblance to a mole and enjoyed collecting them. They were actually a cool insect to play with; they have claws on the front legs that are used for digging into the soil, and it's huge mandibles are sturdy enough that if it bites you it might give you a scare (but not much harm). Most of us living in Florida have been taught that mole crickets in general are a terrible pest that ruin your lawn. This month we will take a closer look at the peculiar insect we know as the mole cricket.

I learned later we have a total of four species of mole cricket in Florida. Our only native species, commonly known as the northern mole cricket (*Neocurtilla hexadactyla*), and three invasive species, the tawny (*Neoscapteriscus vicinus*) the short-winged (*Neoscapteriscus abbreviatus*) and the southern (*Neoscapteriscus borellii*) mole cricket. Furthermore, it's worth noting that our native species is the only one of the four not considered a pest. Through the lens of ecology this makes sense since our native species is the only one with native natural predators.

Researchers generally agree that the three invasive species originate in South America where their host plant bahiagrass and its cultivars also originated. With the prevalence of bahiagrass dominating landscape choices, we have set a welcome plate for one of Florida's most difficult pests. The problems that we face with imported agriculture is we also import the insects that come with it and without natural enemies they become pests. Although these mole crickets are primarily a turf pest, they also account for significant crop loss that include strawberries, tomatoes, peanuts, sugar cane and other vegetables, as well as ornamentals grown in Florida.

Don't get me wrong, our native species are capable of the same damage the invasive species create, however, there are native predators in North America that keep our native species in check, specifically the *Larra* wasp (*Larra analis*), commonly

known as the "mole cricket hunter." These are solitary ground dwelling wasps that have no nest to guard and therefore lack the aggression that is common with social wasps like the paper wasps. These wasps are also thought to be obligate predators of our native mole cricket, meaning they only attack our native species of mole cricket, parasitize them as a food source for their own young. This happens when two organisms evolve together, and one becomes a specialized predator of the other. Another similar wasp (*Larra bicolor*) was introduced to Florida as a biological means of pest control for the South American species in 1979 by researchers at UF/IFAS after chlordane was banned as a pesticide by the US Environmental Protection Agency. Researchers planted shrubby false button weed (*Spermacoce verticillata*), the host plant of the wasps, to encourage them to stay and propagate. Releases were then made in Gainesville, Tampa, Lakeland, Bradenton, and Ft. Lauderdale, however only the Ft. Lauderdale releases took hold initially. By 2009 surveys demonstrated that the Ft. Lauderdale population had spread to at least 44 counties and showed the high level of effectiveness of *Larra bicolor* as a biological control agent of *Neoscapteriscus* mole crickets at two sites in the Gainesville area. This is by no means a silver bullet, but it gives some hope and planting the host plant *Spermacoce verticillata* to provide the wasps an ideal source of nectar seems to be working.

Knowing which species of mole cricket, you have (if any) is an important factor in controlling them with biologic agents. The invasive species (*Neoscapteriscus*) are known as two claw mole crickets, they can be differentiated from our native (*Neocurtilla*) by the two claws on the front legs; our native species has four claws on the end of its leg, with two more on the rest of its front leg for a total of six claws. In addition, the invasive species (*Neoscapteriscus*) has long wings that cover most of the abdomen, while our native species has short wings. Finally, the invasive species (*Neoscapteriscus*) has a smooth transition from its thorax to its head whereas our native species (*Neocurtilla*) appears to have a hood over its head. Managing these pest will not be an easy task, but if you take a closer look, to identify which mole cricket(s) you have, there is a chance you could let nature do the work and reduce the pesticide footprint around your home and your food.