

SCIENTIFIC NOTES

GUT CONTENT ANALYSES OF PUERTO RICAN
MOLE CRICKETS
(ORTHOPTERA: GRYLLOTALPIDAE: *SCAPTERISCUS*)

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Three species of mole crickets occur in Puerto Rico: the changa mole cricket, *Scapteriscus didactylus* (Latreille); the imitator mole cricket, *S. imitatus* Nickle and Castner; and the short-winged mole cricket, *S. abbreviatus* Scudder (Nickle and Castner 1984). Barrett (1902) stated that the diet of *S. didactylus* consisted wholly of living plants, and that the stomach was always found to contain mud and sand. No data were given however, as to the number, sex or stage, and collecting locale for the individuals that were examined. We now report base line data on the feeding habits of the 2 most damaging species, *S. didactylus* and *S. imitatus*.

Specimens were collected in Aguadilla Province, Puerto Rico, 26 May-14 June 1983. *S. didactylus* were obtained by using a soap flush on a heavily infested tee area of the Punta Borinquen Golf Club in Punta Borinquen, and were preserved in alcohol. *S. imitatus* were collected near Isabela by using an electronic calling device (Walker 1982) and were immediately preserved in alcohol or by freezing. The crops, proventriculi, and hindguts were removed, opened and examined under a binocular microscope. Material contained was judged to be plant if it was flat or fibrous, green or gray in color, and if it had root-like or blade-like appearance. Substances were determined to be of animal origin if they were brown or black and obviously sclerotized, or if they contained recognizable structures such as spines, setae, antennae, etc.

Figure 1 indicates the number of *S. didactylus* and *S. imitatus* examined and the percentage of each species containing plant only, animal only, or both plant and animal materials in their digestive tract. A total of 14 male and 18 female *S. didactylus* were dissected. The crops of 25 individuals contained a green-black liquid or jelly-like mass that could not be identified. Green plant material was found in 3 of the crops and both plant and animal matter in 1. Evidence of plant material was found in 26 of the proventriculi examined, while only animal matter was taken from 1, and both plant and animal matter from 1. The contents of 29 of the hindguts examined were composed of grey-green fibers that resembled portions of grass blades and were probably undigested plant tissue. In at least 1 instance this fibrous material was only slightly decomposed and could definitely be identified as of herbaceous origin.

Gut analyses were conducted on 4 male and 25 female *S. imitatus*. Approximately 12 of the crops examined were empty and 17 were distended with air. Plant material was found in 2, and animal matter in 1 of the crops. Approximately 10 of the proventriculi dissected contained fibrous material of plant origin, while 5 were found with sclerites or other animal

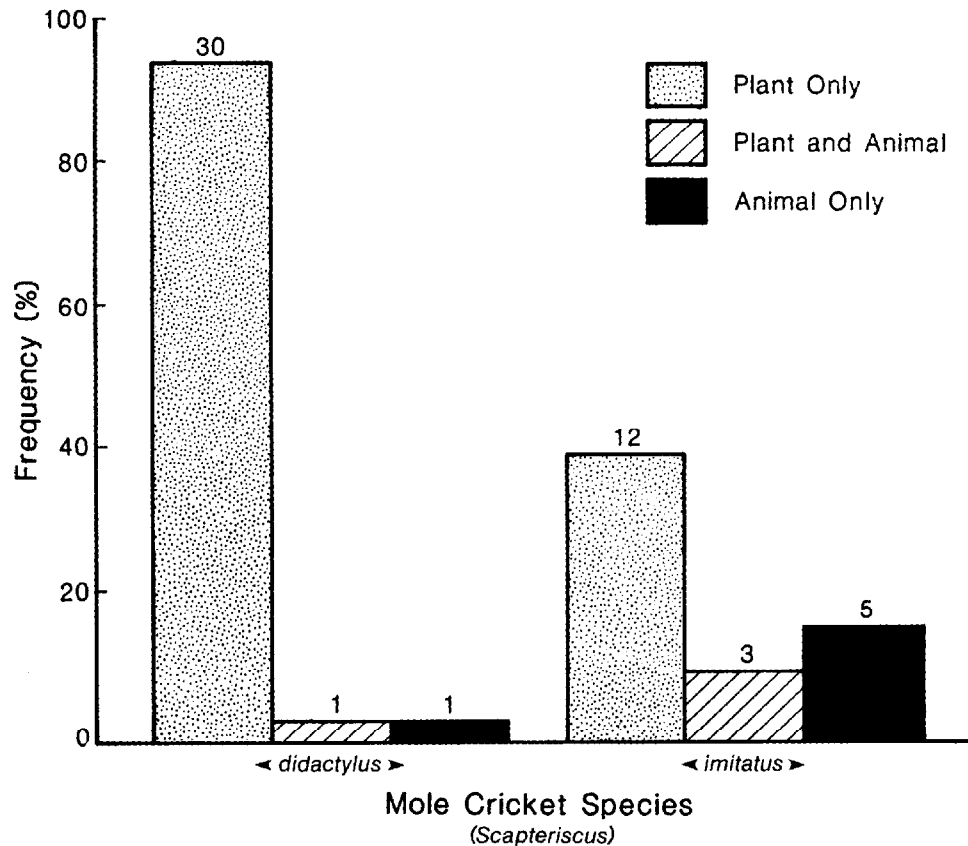


Fig. 1. Frequency of mole crickets classified by gut contents of field and sound trap-collected adult *S. didactylus* and *S. imitatus*. Numbers at top of bars indicate individuals examined.

parts. The hindguts of all *S. imitatus* examined contained a brown semi-solid material. Plant fibers were found in 6, and both plant and animal matter in 3 of the hindguts.

The dissections indicate that *S. didactylus* is a herbivore, feeding primarily on plant tissues, while *S. imitatus* is an omnivore, consuming both plant and animal prey. However, the collection sites may have varied considerably in their composition of plant and animal material. Matheny (1981) reported that *S. acletus* taken from sand or grass showed different frequencies in the amount of plant or animal tissue contained in their alimentary tracts. Weekly applications of Dursban at the site where the *S. didactylus* were obtained may have reduced the soil arthropod fauna. *S. imitatus* were trapped from fields and pastures where no insecticides were in use.

The large number of empty and distended crops found in *S. imitatus* support the theory that this condition is an adaptation for flight. Ulagaraj (1975) observed that 70% of flying adult *S. vicinus* and *S. acletus* that he examined had empty crops distended with gas. Only a small portion of the *S. imitatus* collected were actually observed flying. Many may have crawled to the electronic caller directly from their burrows.

Feeding similarities can be seen between *S. didactylus* and *S. vicinus*,

and between *S. imitatus* and *S. acletus*. Matheny (1981) determined *S. vicinus* to be herbivorous and *S. acletus* to be principally carnivorous in their feeding preferences. The data presented here add to a list of existing behavioral and morphological affinities of *S. didactylus* with *S. vicinus* and *S. imitatus* with *S. acletus* (Nickle and Castner 1984) and support the theory that they may have evolved from 2 different ancestral forms.

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DISTRIBUTION OF MOLE CRICKETS
(ORTHOPTERA: GRYLLOTALPIDAE: *SCAPTERISCUS*)
AND THE MOLE CRICKET PARASITOID
LARRA BICOLOR (HYMENOPTERA: SPHECIDAE)
IN PUERTO RICO

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Three species of *Scapteriscus* mole crickets originating from South America have been introduced on the island of Puerto Rico (Nickle and Castner 1984): the changa mole cricket, *S. didactylus* (Latreille); the short-winged mole cricket, *S. abbreviatus* Scudder; and the imitator mole cricket, *S. imitatus* Nickle and Castner. The absence of specialized natural enemies has allowed them to become economic pests of turf and agriculture, causing extensive damage since the early 1900's (Barrett 1902). At present, the destruction of turf on golf courses causes great expense and necessitates the costly periodic application of insecticides. Although their feeding habits