

Chapter 51

Patterns of Flight Activity Of Pest Mole Crickets in Georgia

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ABSTRACT

Traps broadcasting synthetic calls sampled populations of the tawny mole cricket, *Scapteriscus vicinus* Scudder, and the southern mole cricket, *Scapteriscus borellii* Giglio-Tos, for two years at three locations in Georgia. Peak flight activity at the southernmost locations preceded that in more northerly areas by one to eight weeks depending upon species and year of study. Tawny crickets comprised 45.3, 12.5, and 1.3% of the total samples from the southern to northernmost locations.

INTRODUCTION

Mole crickets in the genus *Scapteriscus*, burrowing insects with the forelegs highly modified for digging, are important agricultural and turf pests in the southeastern United States. The immigrant species *Scapteriscus borellii* and *S. vicinus* arrived in the United States from South America in the early 1900's (Walker and Nickle 1981, Nickle and Castner 1984). Geographical variation in flight activity of *Scapteriscus* spp. mole crickets has been well studied in Florida (Walker et al. 1983). This study was undertaken at the more northern limits of *Scapteriscus* spp. range to better understand the potential for further colonization by these adventive species, implications for successful release of natural control agents, and to aid refinement of present control strategies.

MATERIALS AND METHODS

Standardized sound trapping stations similar to those described in Walker (1982) were established in three Georgia counties during late September and early October, 1990. Traps were in continuous operation thereafter except for repairs to an acoustic caller at the South Central location during May, 1991. Trapping locations were as follows:

North Central (33.29N 81.57W) Richmond County station was near a residential area bordered by bermudagrass/bahiagrass fields and fence rows.

South Central (32.50N 83.38W) Laurens County station was on a commercial property adjacent to a weedy field of bahiagrass.

South (31.10N 81.57W) Glynn County station was operated at Sea Island airport in an open field. Grasses were primarily bermudagrass/bahiagrass mixture.

Each station consisted of two emitting units, one for each cricket species, centered over a one meter diameter funnel with buckets containing sand as catching devices beneath the funnels. Sound emitters equipped with a photocell produced song (3.3 kHz, 130 p/s; tawny mole cricket and 2.7 kHz, 50 p/s; southern mole cricket) for two hours every night beginning slightly after sunset. Traps were monitored daily during active

spring and fall flight periods and weekly during periods of little activity.

RESULTS

Both tawny and southern mole crickets were collected at all three sites. Tawny mole crickets comprised 45.3, 12.5, and 1.3% of the total two year sample at the south, south central, and north central locations, respectively. Matheny et al. (1982) showed that 36% of southern mole crickets vs. only 7.5% of tawny mole crickets land within 1.5 m of a calling device. Percent capture adjusted to reflect these probable differences in capture rates becomes 79.9, 40.8, and 5.7% tawny crickets for south, south central, and north central locations, respectively.

Minor fall flights and larger spring flights occurred for each species at each location (Figure 1). Year to year variation was most strikingly illustrated in the increase in number of southern mole crickets captured in Laurens County during spring of 1992 and the decrease in collection of the same species in Richmond County during that same time period. Richmond County flights the previous fall had been comparatively large, however.

Peak one-week spring flights, which coincided with median capture, of mole crickets in Georgia varied by year and location (Table 1).

Table 1. Peak (=median) one-week spring flights of mole crickets in Georgia.

Species	Glynn		Laurens		Richmond	
	1991	1992	1991	1992	1991	1992
	Week ending					
Tawny	30 Mar	14 Mar	6 Apr	16 May	11 May	--
Southern	4 May	6 Jun	20 Apr	16 May	25 May	25 Apr

Peak flight activity varied among locations by one to eight weeks. No mid-summer peaks in flight activity occurred.

Geographical variation in *S. vicinus* flights in Florida were minor, with the median cricket of spring and fall flights captured in north Florida four to six weeks after that in south Florida (Walker et al. 1983). *Scapteriscus borellii*, however, exhibited a peak summer flight in south Florida suggesting the development of a second generation of this species in that area.

The smaller proportion of *S. vicinus* captured at the more northerly sites may be attributed to site related population variation, or may accurately reflect greater abundance of *S. borellii* in the Richmond County, GA area. Peak spring flights of *S. vicinus* have occurred by mid-late March in south Georgia and mid-May at the northernmost locations. *Scapteriscus borellii* flights begin later in the spring with large flights occurring well into June.

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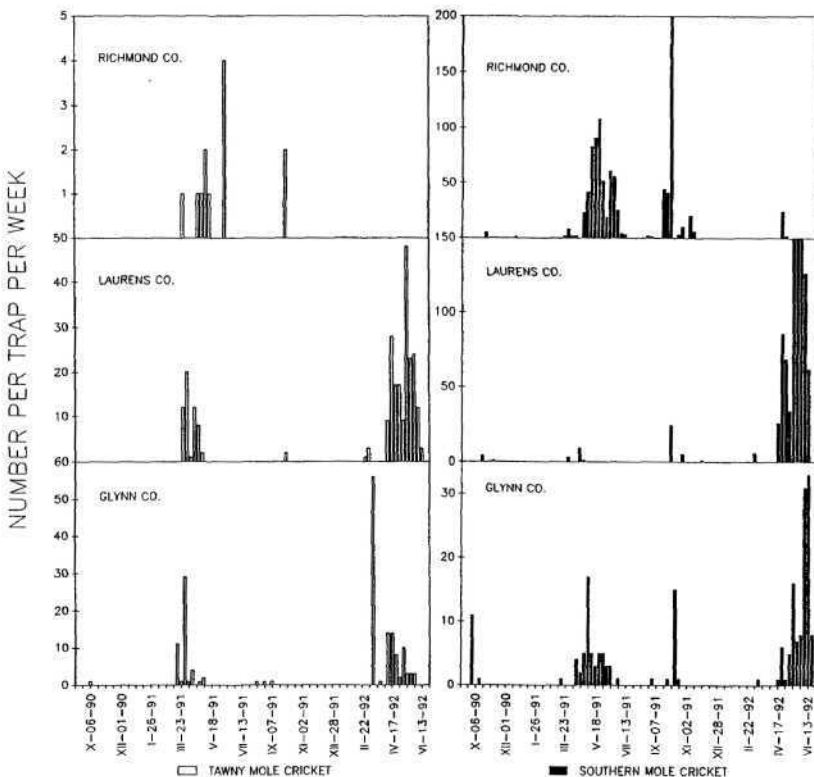


Figure 1. Patterns of flight activity of *Scapteriscus* spp. mole crickets in Georgia.