

**SCAPTERISCUS BORELLII GIGLIO-TOS: THE CORRECT SPECIES NAME
FOR THE SOUTHERN MOLE CRICKET IN SOUTHEASTERN
UNITED STATES (ORTHOPTERA: GRYLLOTALPIDAE)**

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Abstract.—*Scapteriscus acletus* Rehn and Hebard, 1916, the Southern Mole Cricket, is made a synonym of *S. borellii* Giglio-Tos, 1891, based on examination of types and fieldwork in the United States and Argentina.

Key Words: mole cricket, *Scapteriscus*, Gryllotalpidae

The mole cricket genus *Scapteriscus* Scudder, 1869 includes 13 described species (Chopard 1968, Nickle and Castner 1984), all but one of them occurring naturally in the Western Hemisphere. Giglio-Tos (1894) described the species *S. borellii* from specimens collected in Argentina; it was last reported in taxonomic literature by Hebard (1924). It is a common, widespread species, ranging across Bolivia, Paraguay, Uruguay, southern Brazil, and northern Argentina. In 1916 Rehn and Hebard described a mole cricket from Georgia, *S. acletus*, and indicated that it was the only endemic species of two-clawed mole cricket in the United States. The following information indicates that *S. borellii* and *S. acletus* are actually the same species.

In addition to *S. acletus*, two other *Scapteriscus* mole cricket species, *abbreviatus* Scudder, 1869 and *vicinus* Scudder, 1869, are known to occur in southeastern U.S., both introduced accidentally into the U.S. late in the nineteenth or early in the twentieth century (Chittenden 1903, Rehn and Hebard 1912). Walker and Nickle (1981) demonstrated that in fact all three species were accidental introductions, and they mapped the spread of each species into their present

distributions in the southeastern states. They also indicated that *acletus* occurs in the United States in two morphologically distinct forms, a mottled form and a four-dot form (based on patterns of color on the pronotum). They indicated that the mottled form of *acletus* was introduced into Brunswick, Georgia (type locality), about 1904, and into Mobile, Alabama, about 1919, and that the four-dot form of *acletus* was introduced into Charleston, South Carolina, about 1919 and into Port Arthur, Texas, about 1925. In their discussion, they cited the speculation by Worsham and Reed (1912) that *S. vicinus* (reported incorrectly as *didactylus*) was transported probably in soil ballast used in commercial shipping of the nineteenth century.

Nickle and Castner (1984) traced the probable avenues of transport of each of the introduced mole crickets found in the U.S. and suggested that *abbreviatus*, *acletus*, and *vicinus* probably all came from Argentina or southern Brazil, since all three species are found in that region. Today the sharp geographic boundaries delineating mottled and four-dot populations of *S. acletus* are not as distinct as previously supposed, although four-dot populations are nearly uni-

form in Texas, Louisiana, peninsular Florida, and South Carolina, and mottled individuals are more likely to be found in Alabama, Mississippi, and southern Georgia. The mottled population in the vicinity of Brunswick, Georgia, upon which Rehn and Hebard based their original description of *acletus*, seems to have been replaced or assimilated by four-dot forms spreading either from South Carolina or from yet another possible site of introduction near Jacksonville, Florida, where two juvenile four-dot specimens were collected in 1924 (see Walker and Nickle 1981, fig. 1).

Although the two forms are somewhat different in color patterns and overall robustness, there are no clear-cut differences to suggest that they are different species. I consider them to be conspecific, representing variants in color patterns of the widespread South American species. Each form probably was introduced as small samples of individuals from different localities in South America early in the twentieth century. Based on analysis of museum specimens of South American *Scapteriscus* (Nickle and Castner 1984), the mottled form of *S. acletus* was probably descended from specimens from southern Brazil, whereas the four-dot forms probably came from Argentina.

Because researchers in Florida are developing a biocontrol program for the economic control of mole crickets in southeastern U.S., it has become important to correctly delimit the pest species and to find their native homelands. In a field trip to northern Argentina in 1981, I found that mole crickets morphologically identical to *S. acletus* from peninsular Florida were attracted to an artificially produced calling song of *acletus*, a trill of 55 p/s with a carrier frequency of 2.6 kHz. The attraction of individuals to the pair-forming calling sound is generally a strong indication of conspecificity. The holotype and paratype of *S. borellii* loaned to me from the Museo Anatomie Comp., Università di Torino, in Turin, Italy, are identical to the four-dot form of *acletus*, and

I conclude that *acletus* is a junior synonym of *borellii*, **NEW SYNONYMY**.

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LITERATURE CITED

- Chittenden, F. H. 1903. Some insects recently injurious to truck crops. United States Department of Agriculture Bulletin, Division of Entomology 40: 113-120.
- Chopard, L. 1968. Pars 12. Gryllides, pp. 215-500. In Beier, M., ed., Orthoptera Catalogus. W. Junk, 's-Gravenhage.
- Giglio-Tos, E. 1894. Viaggio del dott. Alfredo Borelli nell' Repubblica Argentina e nel Paraguay. Bollettino Musei di Zoologia ed Anatomia comparata della R. Università di Torino 9: 1-46.
- Hebard, M. 1924. Studies in the Dermaptera and Orthoptera of Ecuador. Proceedings of the Academy of Natural Sciences of Philadelphia 76: 109-248.
- Nickle, D. A. and J. L. Castner. 1984. Introduced species of mole crickets in the United States, Puerto Rico, and the Virgin Islands (Orthoptera: Gryllotalpidae). Annals of the Entomological Society of America 77: 450-465.
- Rehn, J. A. G. and M. Hebard. 1912. On the Orthoptera found on the Florida Keys and in extreme southern Florida. I. Proceedings of the Academy of Natural Sciences of Philadelphia 64: 235-276.
- . 1916. Studies in the Dermaptera and Orthoptera of the Coastal Plain and Piedmont region of the southeastern United States. Proceedings of the Academy of Natural Sciences of Philadelphia 68: 87-314.

- Scudder, S. H. 1869. Revision of the large, stylated, fossorial crickets. *Memoirs of the Peabody Academy of Sciences* 1: 1-28.
- Walker, T. J. and D. A. Nickle. 1981. Introduction and spread of pest mole crickets: *Scapteriscus vicinus* and *S. acletus* reexamined. *Annals of the Entomological Society of America* 74: 158-163.
- Worsham, E. L. and W. V. Reed. 1912. The mole cricket (*Scapteriscus didactylus* Latr). *Georgia Agricultural Experiment Station Bulletin* 101: 251-263.