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The phallic structures in Gryllotalpidae (Orthoptera: Gryllotalpoidea), and its generic implications

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Abstract

A nomenclature for phallic structures of members of the family Gryllotalpidae is proposed. Genital structures of the main genera of mole crickets are described, discussing the relationships among subfamilies and their generic delimitation. A key is provided for separation of genera based on genitalia structure. Finally, parthenogenesis in genus *Gryllotalpella* is recorded for the first time.

Key words: Phallic complex, genitalia, epiphallus, ectophallus, endophallus, phallic gland, hyalinus plate, Scapteriscinae, Gryllotalpinae

Resumen

Se propone una nomenclatura a las estructuras fálicas de los integrantes de la familia Gryllotalpidae. Se describen las estructuras genitales de los principales géneros de grillos topo discutiendo las relaciones entre las subfamilias y la delimitación genérica de los mismos. Se realiza una clave para la separación de los géneros en base a las estructuras genitales. Finalmente se registra por primera vez la partenogénesis del género *Gryllotalpella*.

Palabras clave: Complejo fálico, genitalia, epifalo, ectofalo, endofalo, glandula fálica, placa hialina, Scapteriscinae, Gryllotalpinae

Introduction

Throughout their taxonomic history, research on mole crickets has been based chiefly on external morphological characters, some of which have the tendency to have phenotypical plasticity if they are not taken in a measurable way. Relevant revisions in these groups go all the way back to Saussure (1861, 1874), Saussure & Zetner (1894), who described several species for the genera *Gryllotalpa*, *Gryllotalpella* and *Neocurtilla*, using characters as wing venation, basal process shape of the fore femora and ocelli shape. Later, Chopard (1969) sketched the genital structures of five species of *Gryllotalpa*, though he does not make a detailed description of the structures themselves. In 1983, Townsend reviews the African species of *Gryllotalpa*, based mostly on external characters, though only the genitalia of *Gryllotalpa africana* and *Gryllotalpa robusta* were used to indicate the differences in the internal processes of the ectophallus. Canhedo-Lascombe & Corseuil reviewed, in 1996, the mole crickets of Rio Grande do Sul (Brazil), using linear morphology such as Nickle and Castner (1984), providing sonogram and ecological data of the species of that region. Nickle (2003) reviews *Scapteriscus* and describes *Indioscaptor*, based on linear morphology.

Phallic characters have not been widely used in the taxonomy of Gryllotalpidae. Gorochov (1984, 1995), studied and characterized the ensiferan genital structures and establishes homologies between the ensifera groups, likewise suggests a relationship between Gryllotalpidae and Malgasiinae (Mogoplistidae) from genital structure. The same author, recently studied various aspects of the evolution of the main structures of the copulatory

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