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A new genus and two new species of Luzarinae cricket from the Atlantic Forest of Northeast Brazil (Orthoptera, Grylloidea)

PEDRO G. B. SOUZA-DIAS^{1,3} & LAURE DESUTTER-GRANDCOLAS²

¹Departamento de Zoologia, Instituto de Biociências, Universidade de São Paulo, rua do Matão, travessa 14, n. 101, 05508-900, Cidade Universitária, São Paulo, SP, Brazil

²ISYEB UMR 7205 CNRS MNHN UPMC EPHE, Muséum national d'Histoire naturelle, Département Systématique et Evolution, 57 rue Cuvier, Case Postale 50 (Entomologie), 75231 Paris Cedex 05, France

³Corresponding author. E-mail: pedrogdias@gmail.com

Abstract

A new genus and two new species of Luzarinae crickets (Grylloidea, Phalangopsidae) are described from the Atlantic Forest of Northeast Brazil. *Marcgraviella muriciensis* Souza-Dias **n. gen., n. sp.** and *M. christiana* Desutter-Grandcolas & Souza-Dias **n. gen., n. sp.** are described using characters of morphology and male genitalia. The new genus is characterized by male genitalia singularities, presenting elongated and inflatable pseudepiphallic parameres, which lies in vertical or almost vertical position, and long and tubular pseudepiphallic arms associated to phallic glands. We provide a discussion about the morphology of male genitalia and the function of the phallic glands and pseudepiphallic arms in *Marcgraviella n. gen.* and related taxa. An identification key for *Marcgraviella n. gen.* and related genera is proposed. These genera, which bear phallic glands, are placed in the newly named group, the Aracambiae.

Key words: Atlantic Forest, Grylloidea, Luzarinae, Neotropical region, taxonomy.

Resumo

Um novo gênero e duas novas espécies de grilo da subfamília Luzarinae (Grylloidea, Phalangopsidae) são descritas da Mata Atlântica do nordeste do Brasil. *Marcgraviella muriciensis* Souza-Dias **n. gen., n. sp.** e *M. christiana* Desutter-Grandcolas & Souza-Dias **n. gen., n. sp.**, são descritas baseando-se em caracteres morfológicos e da genitália masculina. O novo gênero é caracterizado por singularidades na genitália masculina, apresentando parâmeros pseudoepifállicos alongados e infláveis, os quais são verticais ou quase verticais, e longos e tubulares braços pseudoepifállicos associados a glândulas fállicas. Nós apresentamos uma discussão sobre a morfologia da genitália masculina e a função das glândulas fállicas e dos braços pseudoepifállicos em *Marcgraviella n. gen.* e gêneros próximos. Uma chave de identificação para *Marcgraviella n. gen.* e gêneros relacionados é proposta. Estes gêneros, que possuem glândulas fállicas, são agrupados em um novo grupo, Aracambiae

Palavras-chave: Grylloidea, Luzarinae, Mata Atlântica, região Neotropical, taxonomia.

Résumé

Un nouveau genre et deux nouvelles espèces de grillons Luzarinae (Grylloidea, Phalangopsidae) sont décrites de la Forêt atlantique du Nord Est du Brésil. *Marcgraviella muriciensis* Souza-Dias **n. gen., n. sp.** et *M. christiana* Desutter-Grandcolas & Souza-Dias **n. gen., n. sp.**, sont décrits à partir de caractères de la morphologie et des genitalia mâles. Le nouveau genre est caractérisé par des particularités des genitalia mâles, qui présentent des paramères pseudépiphaliques allongés, extensibles, et verticaux ou presque verticaux, et des bras pseudépiphaliques longs et tubulaires associés à des glandes phaliques. La morphologie des genitalia mâles et la fonction des glandes phaliques et des bras pseudépiphaliques chez *Marcgraviella n. gen.* et les taxa proches sont discutées. Une clé d'identification des genres proches de *Marcgraviella n. gen.* est proposée; ces genres, qui portent des glandes phaliques, sont regroupés dans le nouveau groupe des Aracambiae.

Mots Clés: Forêt Atlantique, Grylloidea, Luzarinae, région Néotropical, taxonomie

connected to the membranous cavity that houses the gland, and they are able to expand during copulation, probably by hydraulic pressure (de Mello & de Andrade 2003; de Mello 2007). Thus, it is possible that during copulation, the expanded portion of the pseudepiphallic parameres can increase their attachment to the female's copulatory papilla, acting like claspers.

Vanzoliniella presents smaller pseudepiphallic parameres, with the inflatable area less developed than in the other genera. The occurrence of membranous and hollow parts of pseudepiphallic parameres, probably inflatable, is also reported in more distant Luzarinae genera as *Eidmanacris* and *Ottedana* (de Mello & de Andrade, 2003).

The phallic gland is well developed in all genera, except *Cacruzia*, where it is very reduced. In this genus the pseudepiphallic arms are thin, reduced and the opening duct is not visible.

By contrast, in *Joadis*, a genus described in the Brazilian Amazon that bears phallic glands, the pseudepiphallic arms are straight, lateral and with bifurcate apex, as in *Aracamby*. *Joadis*, however, does not share the morphological features observed in the Aracambiae, mainly in the pseudepiphallic parameres, and is probably close to Amazonian genera that bear phallic glands, as *Grandcolasia*.

The function of the probably glandular internal spherical structures of other Neotropical Luzarinae taxa is unknown.

The male genitalia pattern of *Aracamby*, *Cacruzia*, *Izecksohniella*, *Marcgraviella* n. gen., *Marliella* and *Vanzoliniella* has great importance in the Luzarinae systematics by the possibility of providing relevant characters to phylogenetic hypothesis. It has also a great importance in Luzarinae evolutionary biology, because several cases of convergent and parallel evolution are already documented. The occurrence of phallic glands associated to the opposite pseudepiphallic arms and inflatable pseudepiphallic parameres raises relevant questions regarding the reproductive behavior of this group of crickets, since the role of these structures in mating is unknown. Therefore, the Aracambiae brings new interesting questions and promising perspectives on systematics, reproductive biology, behavioral ecology, and natural history studies.

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