



Article

Phalangopsidae crickets from the Indian Region (Orthoptera, Grylloidea), with the descriptions of new taxa, diagnoses for genera, and a key to Indian genera

LAURE DESUTTER-GRANDCOLAS¹ & RANJANA JAISWARA²

¹Muséum national d'Histoire naturelle, Département systématique et évolution, UMR 7205 CNRS, Case postale 50 (Entomologie), 57 rue Cuvier, 75231 Paris cedex 05, France. E-mail: desutter@mnhn.fr

²Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560012, India

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Abstract

The Indian region is presently the second region after the Neotropics in terms of diversity of phalangopsid crickets. Yet their study is impeded by the lack of necessary taxonomic tools for taxon identification. In the present paper, all generic diagnoses are clarified, using morphological and genitalic characters; female genitalia are described and illustrated for all genera with known females. New taxa are described from southern India: *Kempiola flavipunctatus* Desutter-Grandcolas **n. sp.**, *Opiliosina meridionalis* Desutter-Grandcolas **n. gen., n. sp.**, *Phalangopsina bolivari* Desutter-Grandcolas **n. sp.**, *P. chopardi* Desutter-Grandcolas **n. sp.**, *P. gravelyi* Desutter-Grandcolas **n. sp.**, and *Speluncasina* Desutter-Grandcolas **n. gen.** The list of phalangopsid crickets from the Indian Region is updated, and a key to phalangopsid genera proposed.

A lectotype and a paralectotype are designated to fix the name of *Phalangopsina dubia* (Bolivar, 1900). *Opilionacris annandalei* Chopard, 1928, previously transferred to the African genus *Phaeophilacris* Walker, 1871, is transferred to the genus *Speluncasina* Desutter-Grandcolas **n. gen.**, while *Larandopsis jharna* Bhowmik, 1981 and *L. newguineae* Bhowmik, 1981 described from New Guinea are transferred to the eneopterine genus *Lebinthus* Stål, 1877. Finally *Luzaropsis confusa* Chopard, 1969 is removed from its synonymy with *L. ferruginea* Walker, 1871.

Key words: New genera, New Species, Taxonomy, India, Sri Lanka, Orthoptera

Introduction

The current data on extant crickets show that the Indian Region is the second richest region after the Neotropics in terms of phylogenetic and biological diversity of the cricket Phalangopsidae family. Available data document a potentially huge diversity of behaviour, habitat and way of life, not mentioning unique phenotypes, such as *Cacoplistes* Brunner von Wattenwyl, 1873, or the supposedly glandular specialization of *Aspidogryllus* Chopard, 1933b.

Yet, studies on Indian Phalangopsidae are still very scarce; apart from few studies mostly devoted to species found in caves (Sinha 1973, Sinha and Agarwal 1977, Agarwal and Sinha 1987, Sahu *et al.* 2011), most concern taxonomy. In his *Fauna of India*, Chopard (1969) synthesized all previous works and proposed keys to genera and species. This huge work is now still in use, because it is highly practical, even though it is far from up-to-date in terms of taxonomy. From an opposite point of view, Chandra *et al.* (2010) published an updated list of Indian crickets, which sums up another perspective of basic taxonomic knowledge (i.e., species list), but should be completed with other practical tools such as diagnoses and identification keys. This unbalanced state of knowledge impedes modern studies on the evolutionary biology and behavioural ecology of Indian phalangopsids for lack of identification tools. The aim of the present paper is then to propose a synthetic view of Indian phalangopsid taxonomy, in order to facilitate further studies of these insects, in taxonomy or in other fields of biology.

In the present paper, generic diagnoses are clarified using morphological characters as much as possible in addition to genitalic ones; new Phalangopsid taxa are described from Southern India; and the list of species from the Indian Region is updated accordingly. A key for Indian genera is proposed, taking into account male and female morphological characters, and biological data are given when available.

Cricket taxonomy has been deeply modified with the analysis of male genitalic structures (Chopard 1961, Randell 1964). An additional step, initiated by the seminal paper by Alexander and Otte (1967), has been the study of female genitalia, and most specifically the shape of copulatory papilla, which may have a diagnostic value at genus and species levels. Male and female genitalia are now more and more routinely studied in cricket taxonomy, sometimes at the expense of morphological characters, which may result in unpractical taxonomic works for taxa diagnoses and descriptions. Precise descriptions of male and female genitalia are used here as a complement to morphological features in the definition of genera and description of species.

Material and methods

Studied material. The specimens studied here come from the MNHN collections or were collected in Southern India during field work for the CEFIPRA project 3009-1 (PIs L. Desutter-Grandcolas, MNHN and R. Balakrishnan, IISc). They were collected by sight only, by day and during the night, to get habitat information for each individually collected specimen.

Descriptions. Forewing venation is named after Desutter-Grandcolas (2003) and Robillard and Desutter-Grandcolas (2004). Male and female genitalia have been dissected on water relaxed specimens, cleaned in cold KOH, and drawn using a stereomicroscope Leica MZx12 with a camera lucida. They are preserved in glycerin in a small vial pinned with each examined specimen. Male genitalia are named after Desutter (1987), modified in Desutter-Grandcolas (2003). SEM observations were performed at the Plateforme de Microscopie électronique of the MNHN, using a JEOL-JSM 840 electronic microscope (7kV), after a 60sec gold-coating.