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Notes on southern Africa Jerusalem crickets (Orthoptera: Stenopelmatidae: *Sia*)

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Abstract

The Old World Jerusalem cricket (JC) subfamily Siinae contains one genus, *Sia*, with two subgenera: *Sia* (*Sia*) with two fully winged species from southeast Asia, and *Sia* (*Maxentius*) with four wingless species from southern Africa. Because there is a dearth of published data about the behavior and biology of these insects, we present new field and laboratory research on southern African *Sia* (*Maxentius*), gather museum and literature information, and present guidelines for collecting and rearing specimens. While we make no taxonomic decisions, this review should be useful for future studies, including a needed taxonomic revision.

We also compare results from these southern African JCs with recent investigations on related New World taxa, where fascinating biological traits and extensive cryptic biodiversity have been uncovered. DNA analysis reveals that these Old and New World JCs are polyphyletic.

Key words: Stenopelmatoidea, Siinae, South Africa, *Maxentius*

Introduction

As presently understood, the orthopteran superfamily Stenopelmatoidea (=Gryllacridoidea) consists of six families (Eades et al. 2012). One of them, the Stenopelmatidae, includes all of the world's Jerusalem crickets (JCs[1]). In turn, this family includes three extant subfamilies (see photos, Figs 1-–3), of which the southern African subfamily Siinae is the main subject of this paper. The Siinae is comprised of one genus (*Sia* Giebel, 1861) and two subgenera: *Sia* (*Sia*) from Malaysia and Indonesia and *Sia* (*Maxentius)* Stål, 1876, from southern Africa (Eades et al. 2012). The four wingless species of *Sia* (*Maxentius*) were described between 1869 and 1916. Interestingly, recent DNA data (Vandergast et al. in prep., Jost & Shaw 2006) show that the New World JC subfamily Stenopelmatinae and southern Africa Siinae are polyphyletic. Information on the third extant JC subfamily from India and Sri Lanka, Oryctopiinae, remains limited to their original descriptions.

We find no biological research published on any of the four described southern African JC *Sia* taxa. Scant (but usually no) mention of this group occurs in the numerous field guides that cover southern African insects including Smit (1964), Bevis (1964), Rentz (1978), Skaife (1979), Weaving (2000), Picker et al. (2004), de Villiers (2008), Holm (2008), and Smith (2008).

Recent investigations on New World JCs have uncovered impressive cryptic biodiversity (Weissman 2001a), interesting aspects of sexual selection including the first case of male complicit, post-coital sexual cannibalism (Weissman et al. 2008), and a complex communication system using abdominal drumming (Weissman 2001b). Given that DNA data reveal the polyphyletic relationship of Old and New World JCs (Vandergast et al. in prep., Jost & Shaw 2006), it is now interesting to place them within a comparative biological framework to deduce the

1. The origin of the common name, Jerusalem cricket, is unknown since no species occurs anywhere near biblical Jerusalem. However, Weissman (2005) speculates on an etymology derived from USA slang of the 1800s, "Jerusalem!", while its first use for South African species appears to be in Toms (2001, p. 76). Picker et al. (2002, 2004) also use this common name for South African taxa.

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