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An annotated checklist and a family key to the pseudoscorpion fauna (Arachnida: Pseudoscorpiones) of Sri Lanka

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Abstract

Sri Lanka is part of the Western Ghats & Sri Lanka biodiversity hotspot. Thus, the conservation of Sri Lanka's unique biodiversity is crucial. The current study is part of an ongoing survey of pseudoscorpion fauna of Sri Lanka. We carried out an island-wide survey of pseudoscorpions using a range of collection methods to sample a diverse set of habitats around the country. This produced 32 species, four of which might be new to science, belonging to 25 genera. The family Cheiridiidae was discovered on the island for the first time. One new combination, *Indogarypus ceylonicus* (Beier, 1973) **comb. nov.**, is proposed. Out of the 47 species now recorded, 20 (43 %) are potentially endemic to Sri Lanka. We provide a checklist of all known species, document their distribution and give a key to the families.

Key words: biodiversity, Deccan plate, endemics, India, Knuckles Range, Central Hills, arachnids

Introduction

Sri Lanka possesses a highly diverse endemic fauna and flora and is a reservoir of unique evolutionary history (Bossuyt *et al.* 2004; Myers *et al.* 2000). Unfortunately, Sri Lanka's diverse invertebrate fauna remains largely unexplored. Several taxonomic studies on both vertebrates and invertebrates were published during British rule of the island (see Pethiyagoda 2005, 2007 for a review). The standard work on Sri Lanka's invertebrate fauna was published as a part of the monographic series "Fauna of British India, including Ceylon and Burma", during this period. However, it did not treat many smaller arachnid orders like pseudoscorpions (Pocock 1900). This situation is now gradually changing, with a renewed interest in the study of Sri Lanka's invertebrate biodiversity (Bahir & Ng 2005; Beenaerts *et al.* 2010; Benjamin 2001, 2004, 2010; Gunawardene *et al.* 2008; Krombein 1981; Naggs *et al.* 2005; Ng 1994, 1995a, 1995b; Ng & Tay 2001).

Sri Lanka is a relatively large (ca 66,000 km²) continental island (Somasekaram 1988), which during the greater part of its geological history was part of the Indian subcontinent (Erdelen 1989). Geologically, it is differentiated into the Precambrian Highland Series, Cambrian Vijayan Series, Southwestern Group and the Miocene limestones (Cooray 1967). Sri Lanka is subdivided into four ecological zones—wet, dry, intermediate and arid—primarily based on annual precipitation (Puvanewaran & Smithson 1993). Additionally, the topology of Sri Lanka is subdivided into three loosely-defined plains of erosion or peneplains: first (0–30 m), second (30–500 m) and third peneplain (500 m upwards) (Adams 1929; Domrös 1998; Wadia 1945). A similar ecological division that subdivides the island into the three zones—lowlands (0–270 m), uplands (270–1060 m) and highlands (910–2420 m), based on a combination of elevation, slope and regional topographic discontinuities—has also been proposed (Dahanayake 1982; Vitanage 1970). These variations may have contributed to the island's high biodiversity and unique evolutionary history (Bossuyt *et al.* 2004).

Sri Lanka's floral diversity and its evolution are comparatively better understood. According to Gunatilleke & Gunatilleke (1991), the rich floras of Sri Lanka are aseasonal forests and relicts of the Deccan flora. The Deccan flora is thought to have evolved in isolation in the late Cretaceous and early Tertiary periods, as the Indian plate

such as pseudoscorpions are useful indicator groups to understand the effects of processes like habitat fragmentation and climate change (Jansen 1997; Marc *et al.* 1999; Miyashita *et al.* 1998). We failed to collect any pseudoscorpions in cardamom (*Elettaria cardamom*) plantations in the Knuckles Range. However, they were abundant in the surrounding home gardens (under bark of other tree species). The reason for this is unclear. It might be due to the extensive use of pesticides or to substances released by the cardamom plants themselves. Pesticides are widely used in agriculture in Sri Lanka, but it is not clear if they affect small invertebrates such as pseudoscorpions. Forests of the Knuckles, Deniyaya and Namunukula Ranges have been cleared for cardamom cultivation. However, some large trees were left for shade and are faunal refuges.

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