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Revision of *Isoplenodia* Prout, 1932 with new records from continental Africa (Lepidoptera: Geometridae, Sterrhinae)

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Abstract

Three new species of *Isoplenodia* Prout, 1932 are described and illustrated from continental Africa, expanding the taxonomic scope and known geographic distribution of this previously endemic, monotypic Madagascan genus of geometrid moths. The new species are: *I. vidalensis* Sihvonen & Staude **sp. n.**, from eastern South Africa; *I. kisubiensis* Sihvonen & Staude **sp. n.**, from southern Uganda; and *I. arabukoensis* Sihvonen & Staude **sp. n.**, from southeastern Kenya, central Zimbabwe and southwestern Rwanda. The paucity of available data suggest that the African species may be associated with wet forest or marsh mosaic habitats. Adults and genitalia of all known *Isoplenodia* species are illustrated, and the systematic position of the genus in relation to other genera in the tribe Scopulini is discussed.

Key words: *Isoplenodia*, Madagascar, Africa, taxonomy, systematics

Introduction

The cosmopolitan tribe Scopulini—the genus *Scopula* Schrank, 1802 and its close relatives, one of which is *Isoplenodia* Prout, 1932—is the largest among the geometrid subfamily Sterrhinae, with about 900 described species. The biogeographical region from which most species have been described is Africa, especially sub-Saharan areas (Sihvonen & Siljander 2005). The moths are typically moderate to small compared to other geometrids, and often exhibit sexual dimorphism in wing size, shape and pattern (Sihvonen 2005). Males of Scopulini typically possess secondary sexual characters, including a distinct, round, medial pouch on the 2nd sternite, cerata and mappa on the 8th sternite and hair pencils on the hindlegs; the signum of the female genitalia is often ovoid, granulate, with spines pointing away from the center. In extreme cases the male hindleg tarsi are absent (Sihvonen 2005); the swallowed tibia with a hair pencil is not used for walking but primarily for scent production and distribution (Hashimoto 1992).

On the basis of morphological evidence, the Scopulini have been classified into seven genera (Sihvonen 2005). *Isoplenodia* is considered closely related to the group of genera *Dithalama* Meyrick, 1888, *Somatina* Guenée, [1858] and *Zythos* Fletcher, 1979. This group of four genera is characterised by five synapomorphies, none of which are unique: (1) two forewing areoles are present, formed by R veins; (2) forewing vein R5 runs from the distal areole and is stalked with veins R2-R4; (3) posterolateral appendices are absent on the male 8th sternite; (4) the medial margin of the sacculus is upturned; and (5) the lamella antevaginalis is flap-like, flexible, formed by one plate. However, relationships within this group of genera remain unresolved.

When Prout (1932) erected the monotypic genus *Isoplenodia* for *I. arrogans* Prout, 1932, he characterized *Isoplenodia* as differing from *Epicosymbia* Warren, 1897 as follows (p. 267): "Antenna of ♂ bipectinate with long branches, as in *Epicosymbia*, in ♀ also pectinate, but more shortly than that of *Isoplenia* Warren, 1897. Hindtibia of ♂ shortened and broadened, spurless, fringed above and with a hair-pencil; of ♀ with 2 spurs. Forewing shaped much as in *Epicosymbia*; areole double, SC2 from cell; hindwing with SC2 shortly stalked." To this we add that the female antenna of *Epicosymbia* is fasciculate, and the terminal spurs present in

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