



## Article

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### ***Kunanyia stephaniae* gen. nov. & sp. nov. (Lepidoptera: Geometridae: Ennominae): an unusual and rare diurnal moth from the mountains of Tasmania**

CATHERINE J. BYRNE<sup>1</sup> & NASEN WEI<sup>2</sup>

<sup>1</sup>Tasmanian Museum and Art Gallery, GPO Box 1164, Hobart, Tasmania. E-mail: catherine.young@tmag.tas.gov.au

<sup>2</sup>University of Tasmania, Churchill Avenue, Sandy Bay, Hobart. Current address: College of Nature Resources and Environment, South China Agricultural University, Guangzhou, the People's Republic of China, 510640. E-mail: nelsonwns@gmail.com

#### Abstract

We describe the adult, egg, and all larval stages of a new geometrid moth, *Kunanyia stephaniae* **gen. nov.** and **sp. nov.** Although the genus can be placed in the tribe Nacophorini on key morphological features, it possesses a unique suite of characters that distinguish it from other described nacophorines. Larvae reared from eggs obtained from field-collected females, survived to maturity feeding on the dead leaves of *Eucalyptus coccifera* and other *Eucalyptus* spp, an unusual foodplant for Geometridae. To date, adults have only been collected in montane habitats on Mt Wellington near Hobart and Mt Bishop and Clerk, Maria Island, Tasmania.

**Key words:** Nacophorini, Tasmania, eggs, larvae, leaf litter, dolerite, scree, *Eucalyptus*

#### Introduction

The Ennominae are the largest subfamily of geometrid moths in Australia, and the Nacophorini comprise the largest Australian ennomine tribe with 278 described species and 57 genera (McQuillan & Edwards 1996). Australian Nacophorini are highly endemic at the generic level and are mainly distributed in the southern part of the continent. The tribe is also well represented in the Neotropics (Rindge 1983; Pitkin 2002) and possibly in southern Africa (M. Krüger pers. comm.).

The Nacophorini were first proposed as a tribe within the Ennominae by Forbes (1948). The stem genus, *Nacophora* Hulst, was later placed in synonymy with *Phaeoura* Hulst by Rindge (1961). Forbes' classification was narrowly based on the following, predominantly Nearctic, genera: *Aethaloida* McDunnough, *Animomyia* Dyar, *Betulodes* Thierry-Mieg, *Gabriola* Taylor, *Holochroa* Hulst, *Papago* Rindge, *Parexcelsa* Pearsal, *Phaeoura*, and *Thyrinteina* Möschler. This is most likely a natural group based on synapomorphies (see Young 2008a for a discussion). Neotropical taxa were added to the Nacophorini in subsequent revisions by Rindge (1961, 1971, 1983) and Australian representatives assigned to the tribe by McQuillan and Edwards (1996). However the monophyly of the Nacophorini *s. l.* is unlikely on morphological and molecular characters (Young 2008a), and probably should be restricted to Forbes' original concept.

In the most recent phylogenetic study of the Geometridae based on the analysis of eight genes, Sihvonen *et al.* (2011) recovered a polyphyletic Nacophorini, but provided moderate support to a clade of five Australian nacophorine species (bootstrap value 62, 1000 replicates). It should be noted here that two Australian nacophorines included in this group, *Archephanes zalosema* Turner and *Mictodoca toxauta* Meyrick, are not "unassigned to tribe as referred to in this paper (McQuillan & Edwards 1996; Young & McQuillan 2003). Another Australian nacophorine, *Capusa senilis* Walker, was poorly supported as a sister taxon to the rest of the Australian Nacophorini. From their results, Sihvonen *et al.* suggested that the African ennomine *Drepanogynis tripartita* (Prout) and the monotypic Neotropical nacophorine *Aragua* Rindge should be excluded from the Nacophorini, because both taxa fell outside the group of species representing the Australian Nacophorini. However,