

Systematic position of *Apodemia paucipuncta* (Riodinidae), and a critical evaluation of the nymphidiine transtilla

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Abstract

Early stage and adult characters (morphology and behavior) indicated that the riordinid *Apodemia paucipuncta* had been erroneously placed in the genus *Apodemia* (Incertae Sedis, previously in tribe Emesini). To infer the systematic position of *paucipuncta*, we performed a cladistic analysis using 72 male morphology characters for 36 species placed in six genera. Our results show that (1) *Apodemia paucipuncta* is the sister species of *Adelotypa eudocia* and together they constitute a new genus in the tribe Nymphidiini, *Hallonympha*, **new genus**; (2) species of *Adelotypa* closely related to *Catocyclotis* and *Nymphidium* also constitute a new genus, *Harveyope*, **new genus**; and (3) sampled species of the Nymphidiini genera *Adelotypa* and *Calospila* do not form monophyletic groups, indicating that these genera are in need of revision. This study furthers our understanding of character definition and homology of the male valva and transtilla within the Nymphidiini, and provides a baseline for future work on riordinid systematics.

Key words: *Adelotypa*, *Calospila*, transtilla, genitalia, *Hallonympha*, *Harveyope*, Nymphidiini

Introduction

Caterpillars of *Apodemia paucipuncta* Spitz (Riodinidae) possess four sets of ant-organs — structures that are involved in interactions with ants (DeVries et al. 2004). Three of these appear to be homologous with those found in the tribe Nymphidiini: vibratory papillae (unique to Nymphidiini), tentacle nectary organs (also in Eurybiini), and balloon setae (also in Helicopini, Charitini and Insertae Sedis; for illustrations see DeVries et al. 2004). In addition, the caterpillars of *A. paucipuncta* possess a novel myrmecophilous cervical gland previously unknown in Lepidoptera (DeVries et al. 2004). Although larval structures indicate that *A. paucipuncta* should be placed in Nymphidiini, they were insufficient to establish a generic placement for this species. The purpose of this investigation is to determine the generic placement of *A. paucipuncta* by using a phylogenetic analysis of adult morphology.

This study uses cladistic analysis to infer the systematic position of *A. paucipuncta* within the Nymphidiini. To this end we examined 72 characters derived from male morphology for 36 representative species. Our results form the phylogenetic basis for describing a new genus for *A. paucipuncta* and its closest relative, *Adelotypa eudocia* (Godman & Salvin). In addition, we describe a second new genus to accommodate five species of *Adelotypa* Warren closely related to *Catocyclotis* Stichel. An important component of our study was the reassessment of homologies in male genitalia, with particular regard to the nymphidiine transtilla.

Material and methods

Preparation of material and terminology

All structures were examined using an optical stereomicroscope with light and dark