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Two new endemic Hawai‘ian Lepidoptera: a new species of *Pseudoschrankia* (Erebidae) from O‘ahu, and a new species of *Thyrocopa* (Xyloryctidae) from Moloka‘i

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Abstract

Two new endemic Hawai‘ian Lepidoptera species are herein described. The first, *Pseudoschrankia brevipalpis* sp. nov., is a pollinator of the rare endemic plant *Schiedea kaalae* Wawra. The second, *Thyrocopa keliae* sp. nov., is endemic to Moloka‘i island. Observations of undescribed parasitic mites that attack Hawai‘ian Lepidoptera are presented as well.

Key words: Acari, Hawaii, Molokai, mites, morphology, Oahu, *Schiedea*, taxonomy, *Thyrocopa apikia*, Trombellidae

Introduction

Pseudoschrankia is an endemic Hawai‘ian genus erected by Zimmerman (1958), in which he placed three species first described by Meyrick (1899, 1904). These three species have extraordinary long labial palps, and genitalia clearly unlike *Hypenodes*, where Meyrick originally placed them. Of these three species, only four specimens were used in the original descriptions, and very few individuals have since been collected. This is the first new *Pseudoschrankia* species described since 1904, and the first species with an intact female genitalia dissection available for study.

Thyrocopa Meyrick is a genus of moths endemic to the Hawai‘ian Islands, and is the only endemic genus with transverse bands of spines along its abdominal tergites. Over thirty species have been described, with several others awaiting additional collecting effort before description is prudent (Medeiros 2009). A revision of the genus was prepared by Medeiros (2009) and a phylogeny of most species was proposed by Medeiros & Gillespie (2011). Here, "*Thyrocopa* species D" from the two aforementioned publications is formally described.

Material and methods

Thyrocopa specimens were collected at night with use of a blacklight and sheet, and *Pseudoschrankia* with an aspirator, and were pinned shortly after collecting. Genitalia were prepared and mounted on slides using the following protocol: Abdomens were soaked in simmering 10% KOH solution for one hour, genitalia were removed, stained with lignin pink and chlorazol black, soaked in a sequence of 30% ethyl alcohol, 90% ethyl alcohol, 100% isopropyl alcohol, and Euparal essence, then spread on microscope slides and mounted in Euparal (Bioquip, Rancho Dominguez, CA, USA).

A small region of COI, overlapping with that sequenced for several species in the Erebidae subfamily Hypenodinae, was obtained for the new *Pseudoschrankia* species. DNA was extracted from the legs of field-caught specimens using the standard protocol described in Qiagen’s (Valencia, CA, USA) DNeasy kits. A segment of the protein coding gene COI (mtDNA) was amplified using the primers Ron (C1-J-1751; 5'-GGATCACCTGATATAGCATTTCCC-3') and Nancy (C1-N-2191; 5'-CCCGGTAAAATTTAAATATAAATTTTC-3') and the following thermal profile: 2 min at 94°C; 34 cycles of 94°C for 1 min, 51°C for 1 min, and 72°C for 2 min; 12 min at 72°C. PCR product was purified using ExoSAP-IT (Affymetrix, Santa Clara, CA, USA) and then sequenced on an Applied Biosystems (Grand Island, NY, USA) 3730 DNA Analyzer. The resultant sequence is 432 bases and is available as GenBank accession KP876563, for possible future comparison to additional *Pseudoschrankia* species (see "Remarks" below).