



***Anopheles (Kerteszia) lepidotus* (Diptera: Culicidae), not the malaria vector we thought it was: Revised male and female morphology; larva, pupa, and male genitalia characters; and molecular verification**

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Abstract

The name *Anopheles (Kerteszia) lepidotus* Zavortink, commonly used for an important malaria vector in the eastern cordillera of the Andes, is here corrected to *An. pholidotus* Zavortink. We discovered that *An. (Ker.)* specimens from Peru, and reared-associated specimens from Ecuador, had unambiguous habitus characters that matched those on the male holotype of *An. lepidotus*. However, the specimens do not exhibit characters of the female allotype and female paratypes of *An. lepidotus*, which are actually *An. pholidotus*. Our specimens are the first correctly associated females of *An. lepidotus*, which allow us to provide a new morphological interpretation for the adult habitus of this species. This finding is also corroborated by molecular data from a portion of the *Cytochrome Oxidase I (COI)* gene and ribosomal DNA Internal Transcribed Spacer 2 (rDNA ITS2). The pupal stage of *An. lepidotus* is described for the first time, and additional larval characters are also noted. Diagnostic morphological characters for the adult, pupal, and larval stages of *An. pholidotus* are provided to separate the two species. All stages of *An. lepidotus* are easily separated from other currently known species in subgenus *Kerteszia* and a new key to the females of *An. (Kerteszia)* is given. Previously published distribution, bionomics, and medical significance data are corrected and enhanced.

Key words: *Anopheles lepidotus*, *Anopheles pholidotus*, redescription, key, morphology, ITS2, COI, malaria

Introduction

Zavortink (1973) provided a preliminary review of current knowledge of the morphological diagnoses for species in subgenus *Kerteszia* Theobald, of genus *Anopheles* Meigen. In that publication he treated 10 species, including two new species, *An. lepidotus* Zavortink, and *An. pholidotus* Zavortink, and one provisional (unnamed) species called “Species 10. Auyan-Tepui Mesa form.” Subsequently three species have been described, i.e., *An. rollai* Cova Garcia, Pulido, & Escalante de Ugueto (1976, 1977b), *An. gonzalezrinconesi* Cova Garcia, Pulido, & Escalante de Ugueto (1977a), and *An. auyantepuiensis* Harbach & Navarro (1996) for “Species 10. Auyan-Tepui Mesa form” of Zavortink (1973). Of the two species described by Zavortink, *An. lepidotus* was based on distinctive characters he noted on two larval exuviae from two reared males collected in Restrepo, Meta, Colombia in 1935, which were previously identified as *An. boliviensis* Theobald by Komp & Orsono-Mesa (1936). Zavortink designated a female collected in 1943 in Villavicencio, Meta, Colombia as the allotype of *An. lepidotus* and 31 female paratypes from various collection dates from Meta, Colombia. *Anopheles pholidotus* was described based on a male holotype, female allotype, and paratypes including a male, a female, larval and pupal exuviae, and whole larvae collected in