



Formal taxonomy of species C of the *Anopheles minimus* sibling species complex (Diptera: Culicidae)

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Abstract

The nomenclatural identity of species C of the *Anopheles minimus* complex is resolved by excluding the available junior synonyms of the nominotypical member of the complex and naming it *An. harrisoni* Harbach & Manguin, **sp. n.** *Anopheles formosaensis* I Tsuzuki, *An. christophersi* Theobald and *An. christophersi* var. *alboapicalis* Theobald are retained as junior synonyms of *An. minimus* Theobald based on the provenance of type specimens in geographical areas where *An. harrisoni* is not known to occur. A lectotype is designated for *An. vincenti* Laveran, which thus becomes the senior name of the specific entity known as *An. jeyporiensis* James. Molecular data that diagnose *An. harrisoni* are reviewed and the holotype female is contrasted with the neotype series of *An. minimus*. Available information on the bionomics and distribution of the new species is included.

Key words: Mosquito, *minimus* C, Minimus Complex, *Anopheles harrisoni*, new species

Introduction

Anopheles minimus Theobald is the nominotypical member of a sibling species complex (Minimus Complex) of malaria vectors in the Oriental Region. The taxonomic history of the complex was reviewed by Chen *et al.* (2002) and Harbach *et al.* (2006). As currently defined, the complex includes three genetic species of the Minimus Subgroup within the Funestus Group (Garros *et al.*, 2005b) that are informally denoted in literature as species A, C and E (Harbach, 2004; Somboon *et al.*, 2001). Species A is widespread in the Oriental Region, species C has a disjunctive distribution in Southeast Asia, and species E is known only from Ishigaki Island of the Ryukyu Archipelago, Japan (Somboon *et al.*, 2001, 2005a).

Anopheles minimus was named and described by Theobald (1901) from a single female that became non-extant after 1907 (Harrison, 1980). To fix the identity of this species and provide a foundation for further taxonomic studies of the Minimus Complex, Harbach *et al.* (2006) selected a neotype from specimens collected near the original type locality in Hong Kong. Sequences for the D3 domain of the 28S locus of ribosomal DNA (rDNA) and the cytochrome oxidase subunit II locus (COII) of mitochondrial DNA (mtDNA) obtained from a hindleg of the neotype confirmed its identity as species A. Consequently, *An. minimus* species A is *An. minimus* *s.s.*

Anopheles minimus and species C are partially, albeit dubiously, distinguished by the presence of a humeral pale spot (HP) on the wings. Green *et al.* (1990) found that this spot was present in 78% of species C