



Review of the genus *Chagasia* (Diptera: Culicidae: Anophelinae)

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Abstract

Genus *Chagasia* Cruz of subfamily Anophelinae (Diptera: Culicidae) is comprised of five species in the Neotropical Region: *Ch. ablusa* Harbach, **n. sp.**, *Ch. bathana* (Dyar), *Ch. bonneae* Root, *Ch. fajardi* (Lutz) and *Ch. rozeboomi* Causey, Deane & Deane. The genus is described in detail and diagnoses, keys and illustrations are provided for the identification of the adult, pupal and larval stages of each species. The larval and pupal stages of a *Chagasia* species (*Ch. bonneae*) are fully illustrated for the first time. A neotype specimen is designated for *Ch. fajardi* to fix its identity and distinguish it from *Ch. ablusa*. The species treatments also include a synonymy (where applicable), a discussion, information on distribution, a synopsis of material examined and a summary of previous literature. The work is considered to be a review rather than a revision of the genus because too few link-reared specimens were available for detailed comparative study of all life stages, and it was not possible to determine the total range of morphological variation and the actual distributions of the species.

Key words: *ablusa* new species, *bathana*, *bonneae*, *fajardi*, mosquito, *rozeboomi*, taxonomy

Introduction

Mosquitoes, family Culicidae, comprise two principal phyletic lineages that are recognised as subfamilies, the Anophelinae and Culicinae (Harbach & Kitching, 1998, Mitchell *et al.*, 2002). The traditional classification of subfamily Anophelinae includes three genera: *Anopheles* Meigen (cosmopolitan), *Bironella* Theobald (Australasian) and *Chagasia* Cruz (Neotropical). Cladistic analyses of morphological data and DNA sequences of various ribosomal, mitochondrial and nuclear genes strongly support the monophyly of the subfamily and the placement of *Chagasia* in an ancestral relationship to all other anophelines (Harbach & Kitching, 1998, 2005; Besansky & Fahey, 1997; Foley *et al.*, 1998; Krzywinski *et al.*, 2001a, b; Sallum *et al.*, 2000, 2002).

Anopheline mosquitoes are traditionally regarded as the most primitive group of Culicidae. However, Belkin (1962) argued that this was not necessarily so and cited morphological traits that could be interpreted to contradict this notion. When and where anophelines evolved could not be definitely determined but he hypothesised that initial differentiation of the group took place in the American Mediterranean Region, probably at the same time that the other major groups of mosquitoes evolved. The basal placement of Anophelinae relative to Culicinae (Pawłowski *et al.*, 1996; Miller *et al.*, 1997; Besansky & Fahey, 1997; Harbach & Kitching, 1998; Mitchell *et al.*, 2002; Shepard *et al.*, 2006) supports the traditional view, and the fact that *Chagasia*, which is confined to the Neotropical Region, is placed basal to the other anophelines suggests a possible New World origin for Anophelinae (Harbach & Kitching, 1998; Krzywinski *et al.*, 2001b). *Chagasia* show several characters reminiscent of non-anopheline mosquitoes, including the strongly arched scutum, trilobed scutellum and setae on the postpronotum. Based on these similarities, *Chagasia* has been considered an ancient group showing affinities with non-anophelines.