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**Taxonomic revision and systematics of New Guinea and
Oceania pygmy water boatmen (Hemiptera: Heteroptera:
Corixoidea: Micronectidae)**

PAUL P. TINERELLA



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Taxonomic revision and systematics of New Guinea and Oceania pygmy water boatmen (Hemiptera: Heteroptera: Corixoidea: Micronectidae)

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Abstract

The pygmy water boatmen of New Guinea and Oceania are revised. The two genera and ten species occurring throughout the region are described and keyed. *Papuanecta* **gen. nov.**, is erected to accommodate *P. inelryjelnor* **sp. nov.** and *P. minajerwioides* **sp. nov.** The following new combinations are proposed in *Papuanecta*: *Papuanecta sinistra* (Chen) **comb. nov.** and *P. minajerwi* (Tinerella and Polhemus) **comb. nov.** *Micronecta ludibunda graphiptera* Horváth **syn. nov.** and *M. ludibunda langkana* Wróblewski **syn. nov.** are synonymized with the nominate species, *M. ludibunda* Breddin. Following the provision of the International Code of Zoological Nomenclature [article 23.9.2] (ICZN 1999), *Sigara monotata* Kirkaldy (1897b) is designated **nomen oblitum** and *Micronecta quadristrigata* Breddin (1905a) as **nomen protectum**. The Australian species *Micronecta queenslandica* Chen is newly recorded for Papua New Guinea. A total of nine species is recorded from New Guinea and the Solomon Islands. One additional recently described species, *Micronecta jenniferae* Tinerella, is reported for Fiji. All species are illustrated. Discussion and documentation of primary type material are provided, and where available, type specimens are illustrated. Male genitalic structures are illustrated with scan-

ning electron micrographs for all species except *Papuanecta sinistra* (Chen). Genitalic structures of *P. sinistra* are redrawn from Chen (1965) and additional material. Line drawings are included of all other diagnostic features. Color habitus illustrations of each species (male and female) are also included. Distribution maps are presented for all recorded taxa except *M. jenniferae*. Diagnostic morphology and variation, and relationships of New Guinea Micronectidae with other Australasian taxa and world micronectid faunas, are discussed. A cladistic analysis and zoogeographic discussion of New Guinea species relationships are presented.

Key words: Heteroptera, Corixoidea, Micronectidae, pygmy water boatmen, morphology, biogeography, aquatic insect

Introduction

This paper contributes to a larger-scale synthetic revision of the micronectid (Heteroptera: Corixoidea) fauna of Australasia, and treats the micronectid fauna of New Guinea, including Indonesian New Guinea [=Papua Province], Papua New Guinea, and the Solomon Islands. Micronectidae were recently reported from Fiji with the description of *Micronecta jenniferae* Tinerella (Tinerella 2006a), which marks the easternmost distribution of the family in the eastern hemisphere and is the sole representative of the taxon throughout Oceania. A revision of the micronectid fauna of Australia was presented by the author in an unpublished PhD dissertation (Tinerella 2006b). At present, Micronectidae are not recorded from New Caledonia or the adjacent islands. Micronectidae do not naturally occur in New Zealand (Winterbourn *et al.*, 2006); however, the Asian genus *Synaptonecta* Lundblad was recently accidentally introduced there via aquarium plants (Jansson and Meyer-Rochow 1990).

Micronectidae, or pygmy water boatmen, are a diverse group of very small corixoids (0.8–5.5 mm), distributed worldwide. The family comprises over 200 species, the greatest diversity being throughout tropical and subtropical latitudes (Tinerella 2006b). Historically, the taxonomic rank of the group has been debated; several proposals and reversals for family status have been presented, but all arguments have been based entirely on conjecture. Nieser (1999a) recently restored family rank to Micronectidae, giving a short list of autapomorphies of the family, but with no formal phylogenetic analysis. Tinerella (2006b) provided a formal phylogenetic analysis based on morphological and molecular characters, substantiating the familial status of Micronectidae.

The Micronectidae of New Guinea and adjacent areas were last treated in part by Chen (1960, 1965) and Wróblewski (1962b), but neither author provided a synthetic taxonomic revision for the region. In both authors' treatments, species were adequately described and illustrated; however, both investigators were limited by a paucity of material from the region. The present revision is based on a wealth of new material from the region generously made available by the institutions and individuals listed in Table 1. These combined collections consist of much historical material (1950s and 1960s) and more recent collections, all of which have facilitated a far better understanding of species within the region. On a world scale, generic concepts within Micronectidae are largely unresolved, due primarily to fragmentary historical treatment of regional faunas. Regional species-level revisions, such as this paper, will provide a framework for examination and refinement of generic concepts.

Here, the genus *Micronecta* Kirkaldy is redefined based on a limited study of the genotype *M. minutissima* (Linnaeus) and Australasian taxa. One new genus, *Papuanecta*, is erected to accommodate two new species: *Papuanecta ineltryjelnor* **sp. nov.** and *P. minajerwioides* **sp. nov.** Further, *Micronecta sinistra* Chen and *Micronecta minajerwi* Tinerella and Polhemus are transferred to *Papuanecta* gen. nov. The known genera and species of Micronectidae for New Guinea and Oceania are keyed.

A phylogenetic analysis focusing on generic-level relationships of New Guinea and Oceania Micronectidae was conducted (see below). This investigation was based on parsimony analysis of 25 morphological characters, using two outgroup taxa, *Tenagobia mexicana* Deay and *Synaptonecta issa* (Distant) (Corixoidea: