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A review of the genus *Amphicnemis* in Peninsular Malaysia and Singapore, with descriptions of two new species (Odonata: Zygoptera: Coenagrionidae)

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Abstract

The *Amphicnemis* species occurring in Peninsular Malaysia and Singapore are reviewed, and two new species are described: *A. bebar* and *A. hoisen* (holotype for both: Malaysia, Pahang, Sungai Bebar). Keys to both sexes of all species are provided. *A. ecornuta* is recorded from Borneo for the first time. A summary of the distributions of the named species of *Amphicnemis* occurring in Sundaland is given. Four species of *Amphicnemis* are now known from Peninsular Malaysia and Singapore, and twelve from Borneo.

Key words: Odonata, Zygoptera, Coenagrionidae, *Amphicnemis*, new species, *bebar*, *hoisen*, peat swamp forest, Malaysia, Pahang, Sarawak, Borneo, Sundaland

Introduction

The genus *Amphicnemis*, as currently understood, has representatives in the Philippines (e.g. Hämäläinen & Müller 1997), Borneo, Sumatra and their satellite islands (e.g. Lieftinck 1954), and Peninsular Malaysia and Singapore. Reagan Villanueva is preparing a revision of the Philippine species currently placed in *Amphicnemis*; according to him none of these species is a true *Amphicnemis* (Villanueva personal communication). The genus has not been recorded from Java or the Lesser Sunda Islands. Of the Greater Sunda Islands, Borneo appears to be the richest in *Amphicnemis*, with 11 named species listed by Orr (2003). *A. ecornuta* Selys, 1889 is reported from Sarawak here, bringing the number of *Amphicnemis* known from Borneo to 12. Records of *Amphicnemis* from Peninsular Malaysia are relatively few and only two species have been recorded: *A. ecornuta* and *A. gracilis* Krüger, 1898 (Hämäläinen 2000). A record of a third *Amphicnemis* species (Hämäläinen 2000) from Pahang in Peninsular Malaysia in fact refers to a species of *Teinobasis* (Dow, in preparation). From Singapore only *A. gracilis* has been recorded (e.g. Norma-Rashid *et* al. 2008). An unidentified *Amphicnemis* species has been recorded from Narathiwat in southern Thailand (Pinratana 2003).

Amphicnemis sensu stricto is typically found in swamp forest; peat swamp is often particularly rich in species and numbers of individuals. Malaysia originally had an estimated 1.54 million hectares of peat swamp forest. Of this, more than 70% was found in Sarawak, less than 20% in Peninsular Malaysia and the remainder in Sabah (UNDP 2006); it is questionable how much of this remains today. The peat swamp forests of Peninsular Malaysia have been reduced to scattered, fragmentary remnants in Selangor, Pahang and Johor States; the largest such area is located in South-East Pahang, and consists of Pekan, Kedondong, Nenasi and Resak Forest Reserves. In September 2009 the authors and Professor Yong Hoi Sen made a short sampling trip to Sungai (Sg.) Bebar in Nenasi Forest Reserve. During this trip two new species of *Amphicnemis* were discovered. The new species are described here as *A. bebar* sp. nov. and *A. hoisen* sp. nov. The discovery of two new species of *Amphicnemis* in such a short period suggests that swamp forest in Peninsular Malaysia has been under sampled to-date and may harbour other novelties.

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