

## THE BIOLOGY AND DISTRIBUTION IN SINGAPORE OF *PRODASINEURA HUMERALIS* SELYS, 1860

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### INTRODUCTION

This paper seeks to document the biology and distribution of the dragonfly, *Prodasineura humeralis* Selys, 1860 (Fig. 1) in Singapore. This species belongs to the order Odonata, suborder Zygoptera and family Protoneuridae and was only recorded for the first time in Singapore at the Chestnut Track area adjacent to Upper Peirce Reservoir as well as from Lorong Asrama in Oct.2006 (L. F. Cheong, pers. comm.), despite being a very common species in Peninsular Malaysia under the name of *Prodasineura verticalis* or *Prodasineura autumnalis* (Orr, 2005). Prior to these sightings no specimens of this species were ever collected from Singapore (H. K. Lua, unpublished data).

### DETAILS OF SIGHTING

In May 2008, this species was found approximately 2 km away from the Chestnut Track area, in a remote arm of the Upper Seletar Reservoir (Fig. 2). This species was found in a very narrow reservoir inlet (approximately 5 m wide and 25 m long), bordered by a dense growth of tall trees and rattan palms, and receiving little direct sunlight for only short periods at midday. The channel is also lined with many overhanging branches and blocked by numerous fallen tree branches in the water. This habitat is typical of this species, which is noted to prefer small- to medium-sized streams in mixed dipterocarp forest (Orr, 2003).



Fig. 1. *Prodasineura humeralis* resting on a leaf at the Upper Seletar Reservoir.

At this locality, individuals of this species were either found perching on protruding parts of the fallen branches or flying very close to the water surface avoiding sun flecks, an observation consistent with those of Orr (2003), who observed a male specimen in Sungei Belalong in Brunei, patrolling the very edge of the shadows, avoiding direct sunlight, suggesting that this species is particularly sensitive to direct light. On 20 Aug.2008, the site was visited once again to locate some female specimens but no females were found. Contrary to the observations made in May, males were observed flying and perching in direct sunlit areas. Others have also observed this species perching in direct sunlit areas in streams in the Central Catchment Nature Reserve and at Lorong Asrama (Ngiam, 2008). Reasons for these contrasting observations are unknown, and more detailed observations need to be carried out to unravel its behavioural patterns.

A possible explanation for this species being found in only three localities in Singapore and not others, despite being one of the commonest species encountered in both Borneo and Peninsular Malaysia (Orr, 2003, 2005), is that in the past, this species was probably widespread throughout Singapore. Then, because of rapid development and land clearance, its suitable habitats have become very scarce and separated from each other by open areas which this species tends to avoid. However, this species has not been found in other suitable habitats including small streams along the reservoirs and Nee Soon Swamp forest even after extensive surveys of these areas. Therefore, it is unlikely that this species will be able to re-establish itself widely in Singapore under current conditions.

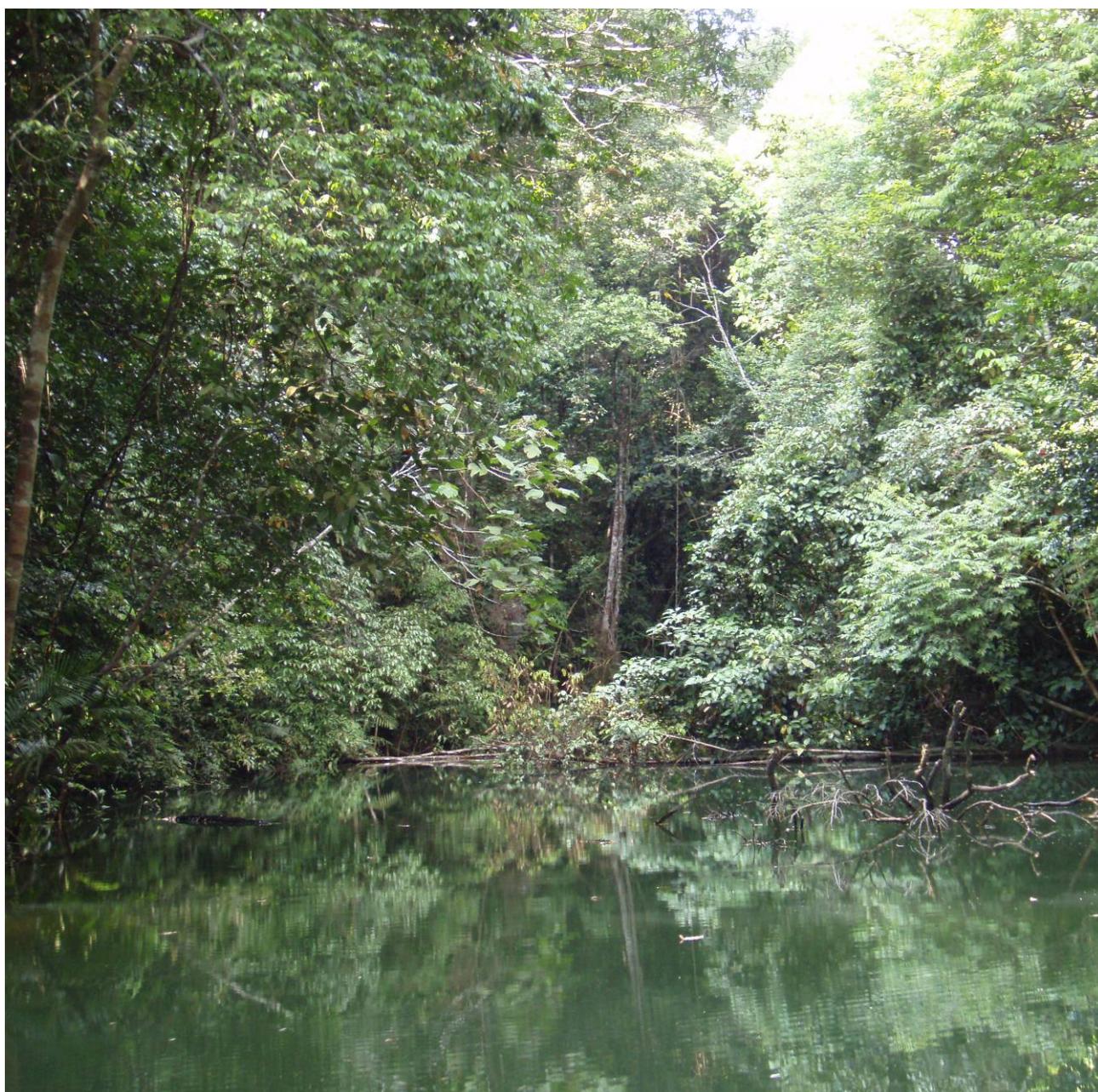


Fig. 2. Habitat of *Prodasineura humeralis* in an inlet of Upper Seletar Reservoir.

## SPECIMEN DETAILS

Descriptions were made from three male specimens caught in May 2008. *Prodasineura humeralis* is a small- to medium-sized, lightly built species, resting with wings closed. This species has an overall length of 34–37 mm. Its wings are 19–21 mm long, abdominal appendages are 29–32 mm long and the thorax is 3–4 mm long. In males the eyes are dark reddish-brown and the head, prothorax and synthorax are brown with variably developed orange-yellow markings. Its abdominal segments are generally dark brown to black with faint patches of orange-yellow on the disto-ventral ends. Although no females were observed, they are reported to have the same orange-yellow markings as the males, but are somewhat duller (Orr, 2003). The male appendages show short and squat superiors and inferiors. This species has near perfect rectangular quadrilaterals with wings showing the anal vein reduced to short anal bridge and separate sectors of the arculus basally. No sub-basal crossvein are seen between CuP and wing margins (Fig. 3).

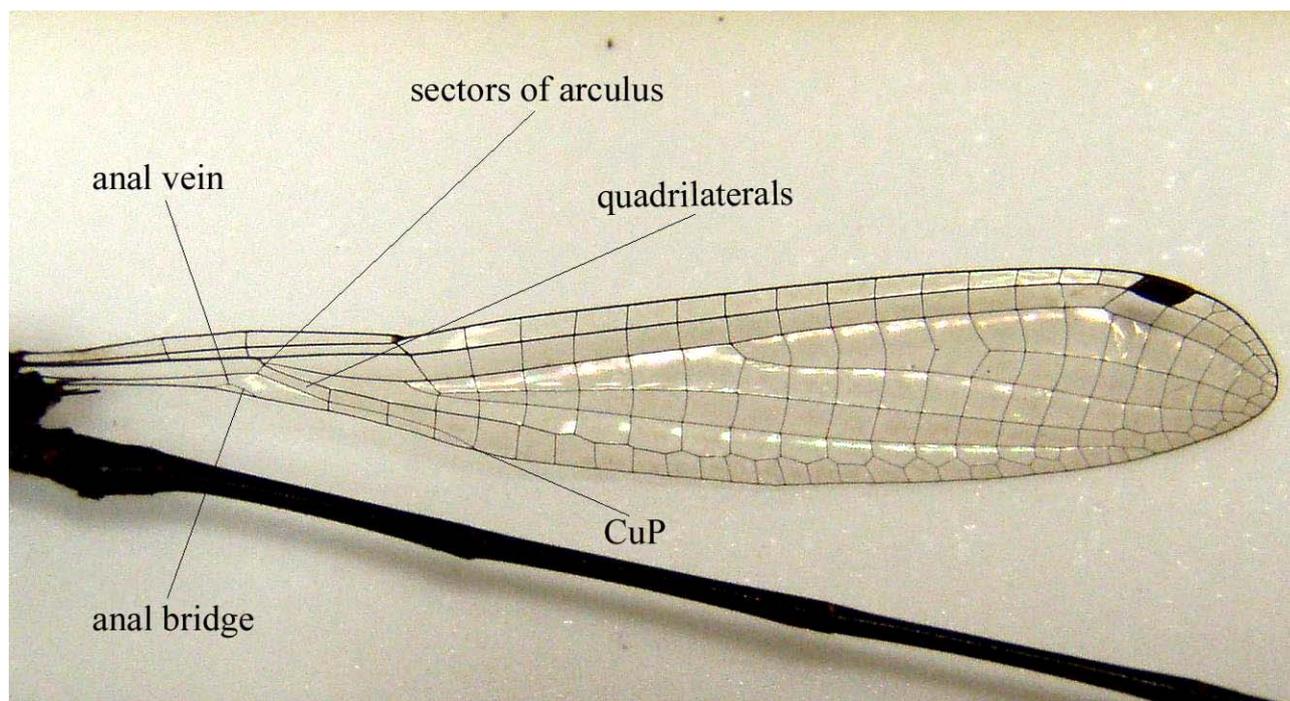


Fig. 3. Hindwing venation of *Prodasineura humilis*

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