

Biodiversity Record: New Singapore record of the damselfly, *Aciagrion borneense*

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Recommended citation. Ngiam RWJ, Thio HB & Tang HB (2023) Biodiversity Record: New Singapore record of the damselfly, *Aciagrion borneense*. Nature in Singapore, 16: e2023024. DOI: 10.26107/NIS-2023-0024

Subject: Bornean slim, *Aciagrion borneense* (Insecta: Odonata: Zygoptera: Coenagrionidae).

Subject identified by: Robin W. J. Ngiam and Tang Hung Bun.

Location, date and time: Singapore Island, marsh at Holland Plain, off Old Holland Road; 27 & 28 December 2022 around 1000 hrs.

Habitat: Freshwater marsh in an open field bordered by herbaceous shrubs and a grove of tembusu (*Cyrtophyllum fragrans*) trees (Figs. 1 & 2).



Fig 1. Aerial view of marsh at Holland Plain. Fig. 2. Less dense section of the marsh where subject was found. (Photographs by: Robin W. J. Ngiam).

Observers: Thio Hui Bing, Robin W. J. Ngiam and Tang Hung Bun.

Observation: A male damselfly was photographed by Thio Hui Bing on 27 December 2022 (Fig. 3). This individual, about 3 cm in body length, was perched near the water surface on a sedge plant (*Eleocharis ochrostachys*).



Fig 3. Dorsal view of male *Aciagrion borneense* on 27 December 2022. (Photograph by: Thio Hui Bing).

On the following day, Robin Ngiam and Tang Hung Bun visited the site where presumably the same individual was found perched low on a sedge (Figs. 4 & 5). It was about 15 m from the edge of the marsh in an open area where the sedges are less dense (Fig. 2), and was apparently a few metres from where it was first spotted on the previous day. The observers were able to obtain close-up photographs (Figs. 6–8) as the damselfly was relatively inactive. It was released unharmed after photography in hand, and flew low for a few metres to another sedge. The individual appeared to keep to the more open areas and avoided denser vegetation when disturbed.

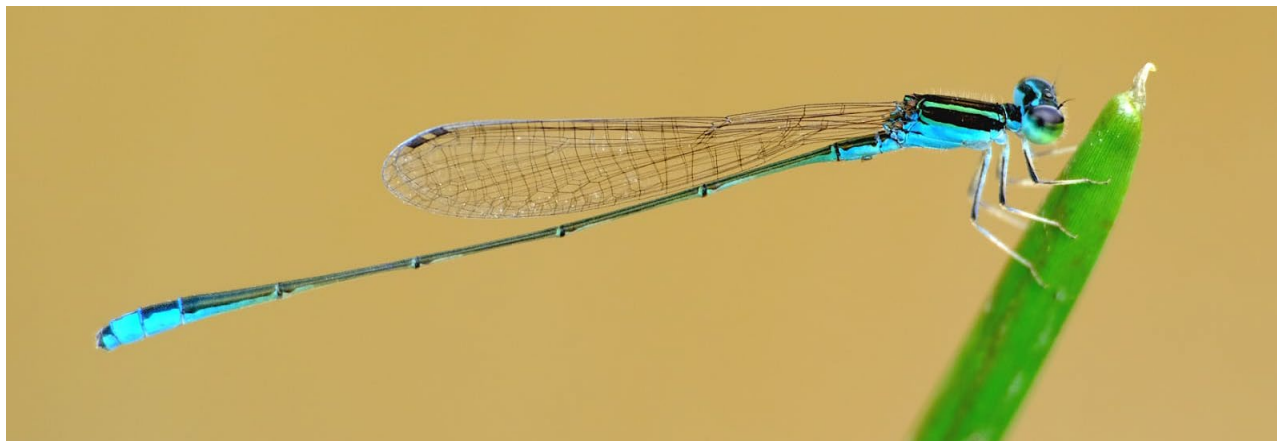


Fig 4. Lateral view of male *Aciagrion borneense* on 28 December 2022. (Photograph by: Tang Hung Bun).



Fig 5. Dorso-lateral view of male *Aciagrion borneense* on 28 December 2022. (Photograph by: Robin W. J. Ngiam).

Description of the individual (based on photographs and terminology from Watson & O'Farrell, 1991): Eyes black and blue-green, with continuous blue stripe across occiput between eyes. Frons and clypeus light green, labrum light bluish-green. Anterior and lateral part of prothorax blue. Bluish-green antehumeral stripe on synthorax. Synthorax blue laterally with black mesepimeron. Coxa, trochanter and femur of legs bluish. Black band on dorsum of femur. Abdominal segments 1–3 (S1–S3) black with blue markings on side. S4 to S6 black. S7 and S8 with blue side markings which is more extensive in S8. S9 blue with thin black stripe dorsally. Markings on S10 similar to S8. Superior anal appendages very short and black.

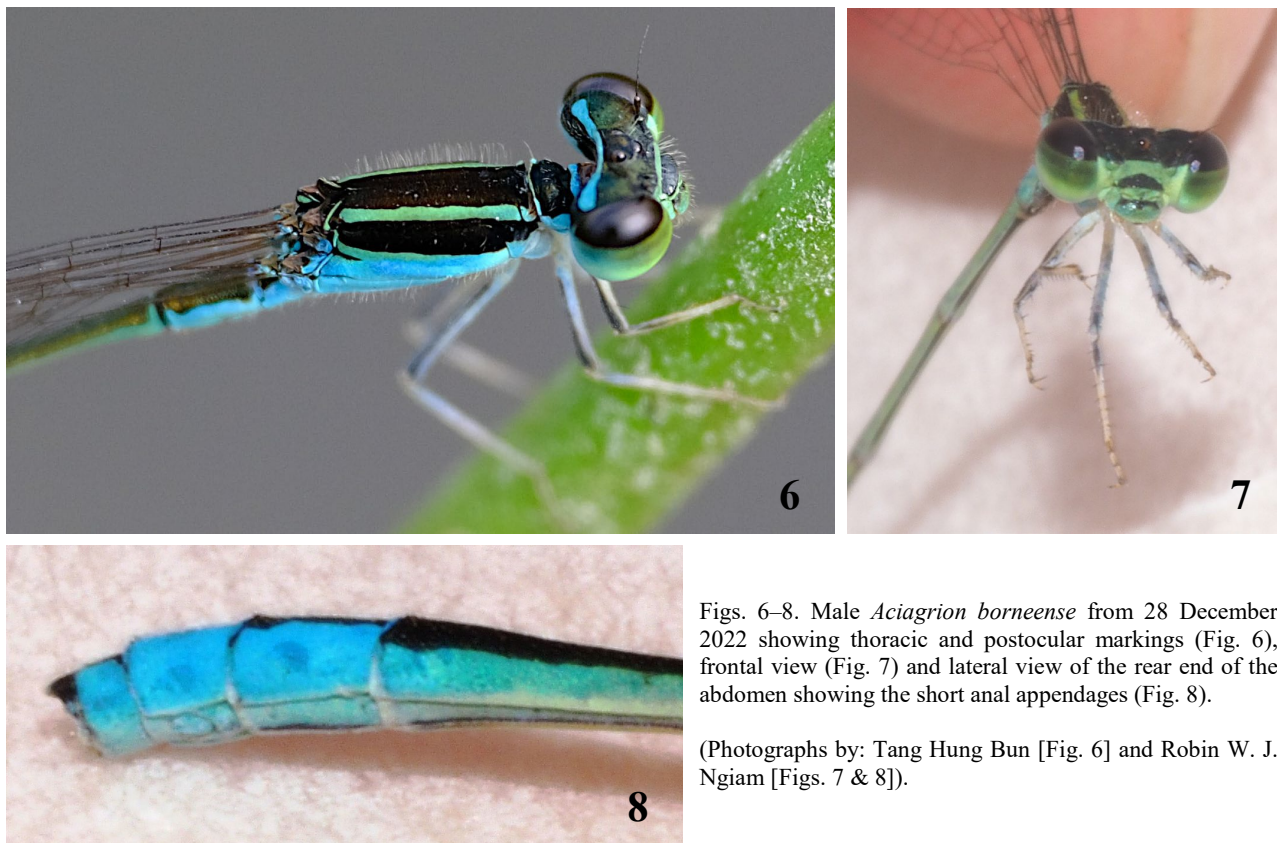
Remarks: *Aciagrion borneense* Ris (1911) represents a new record for Singapore and increases the national odonate list to 137 species. It is also the second species of the genus recorded here, the other being *Aciagrion hisopa* (Ngiam & Ng, 2022). *Aciagrion borneense* is widely distributed in Sundaland (Orr, 2005) with records from Sumatra, Borneo, the Malay Peninsula and north to Cambodia and Vietnam (Dow, 2011). Its presence in Singapore was expected (Dow, 2011). Although widespread, it is rather local in occurrence but common (Orr, 2003). However, despite our best efforts

over the next few weeks, we failed to locate additional individuals. The provenance of this individual is therefore intriguing. It may have dispersed from a yet undiscovered nearby population. It may also have been carried to the location by the Sumatra squall during the windy northeast monsoon in December 2022 (NEA, 2022), as wind-borne dispersal is not unheard of in odonates (Mitchell, 1962; Corbet, 2000). Kalkman and Smitt (2002) attributed the new record of *Platycnemis subdilitata* in the Canary Islands to winds originating in the Sahara. Regardless, the origin of *Aciagrion borneense* in Singapore is less important than the fact that the marsh exists in Holland Plain to support the damselfly's occurrence there.

Aciagrion borneense is known to occur in open areas bordering forest (Orr, 2005). Indeed, in Sarawak (Borneo), Robin Ngiam had observed the species in habitats similar to this marsh. This discovery further enhances the marsh's value as an odonate hotspot. A working checklist of the site now contains at least 30 species, some of which thrive in open shallow freshwater marshes near forest edges; for example, the nationally vulnerable *Indothemis limbata* and the uncommon *Lestes praemorsus*, *Rhyothemis triangularis* and *Diplacodes nebulosa*. The marsh is sited on the former Fung Yun Thai Cemetery which was exhumed in 1981 (Remember Singapore, 2013). It is bordered by a grove of Tembusu trees (*Cyrtophyllum fragrans*), and shrubby vegetation such as Simpoh Air (*Dillenia suffruticosa*) and *Melastoma malabathricum*. The marsh opens into a large open field currently utilised by unmanned aircraft enthusiasts. A soft clayey substrate retains the water at an average depth of about 30 cm, which allows a lush bed of *Eleocharis ochrostachys* to thrive over the entire water body with small sections of cat-tail plants (*Typha angustifolia*), and dead trees and fallen branches which cannot survive the inundated conditions (Fig. 1). Large numbers of tadpoles of the painted chorus frog (*Microhyla butleri*) and dark-sided chorus frog (*Microhyla heymonsi*) were observed in the marsh but there were no fishes.

Examples of such marshes are mostly found on sites that have undergone a change in land-use and left vacant for a long time. Given the appropriate bio-physical environment, it may form naturally and over years become a self-sustaining aquatic habitat. However rapid urban development in recent years means that potential sites are no longer afforded the long time-scale required for marsh formation. Hence, naturally shallow freshwater marshes like this are scarce in Singapore. Odonates, especially threatened species, that flourish on such marshes are therefore adversely affected by habitat loss. In this regard, we strongly recommend that these marshes be accorded a higher priority during environmental impact assessments and subsequently their conservation.

Taking reference from the specific epithet, we herein propose the English vernacular name 'Bornean slim' for *Aciagrion borneense* in Singapore. Based on the conservation assessment criteria set out in Ngiam & Cheong (2016) for Singapore, we determined *Aciagrion borneense* to have a national conservation status of Critically Endangered (found in only one location), Restricted (found only at the marsh) and Very Rare.



Figs. 6–8. Male *Aciagrion borneense* from 28 December 2022 showing thoracic and postocular markings (Fig. 6), frontal view (Fig. 7) and lateral view of the rear end of the abdomen showing the short anal appendages (Fig. 8).

(Photographs by: Tang Hung Bun [Fig. 6] and Robin W. J. Ngiam [Figs. 7 & 8]).

Acknowledgements: Thanks to Rory A. Dow for corroborating on species identification and taxonomic discussion. Marcus Ng helped in subsequent searches after the initial discovery.

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