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Martin Schorr, Schulstraße 7B, 54314 Zerf, Germany. E-mail: oestlap@online.de

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Odonata collected around the Borneo Highlands Resort on Gunung Penrissen, Kuching Division, Sarawak, Malaysia in July 2012

Rory A. Dow

Naturalis Biodiversity Centre, P.O. Box 9517, 2300 RA Leiden, The Netherlands
Email: rory.dow230@yahoo.co.uk

Abstract

Records of Odonata collected above 800m a.s.l. on Gunung Penrissen in western Sarawak are presented. A short note on the location of Mount Merinjak, the type locality of several species, is included. Notable records include two new species from the Platystictidae, *Bornargiolestes* species and *Acrogomphus jubilaris*. Previously unpublished records from Annah Rais, a location at the foot of Gunung Penrissen, made in 2005 and 2006, are included in an appendix.

Introduction

There have been no published records of Odonata definitely collected from above ca 700m a.s.l. from the entire western side of Borneo, despite the fact that there are many mountains in excess of 1000m altitude. Additionally there have been very few records of Odonata from mountains in western Sarawak along the border with Indonesia. The only exceptions are a few records from Gunung Penrissen (ca 1°07'N 110°13'E; see Fig. 1) (all based on specimens collected a long time ago: Lieftinck 1964, 1965, van Tol & Norma-Rashid 1995, these are without altitude, so might possibly be from above 700m), a ca 1300m peak, and some records from the nearby, much lower, peak once known as Mount Merinjak (Laidlaw 1915, 1918, 1920, Dow 2010; see *below*). Here I present records of Odonata from 800m and above on Gunung Penrissen, made in July 2012. This sampling was made possible by a generous grant from the International Dragonfly Fund. Additionally, a few records made around the settlement of Annah Rais, situated at the foot of Gunung Penrissen, in 2005 and 2006, are included in an appendix.

Gunung Penrissen is located on the Sarawak-Kalimantan border, with the peak just inside Sarawak's Kuching Division. Access to the higher parts of Gunung Penrissen is possible only through the Borneo Highlands Resort, a huge development with an 18 hole golf course. The resort and golf course extend from ca 800-1000m, and is sur-



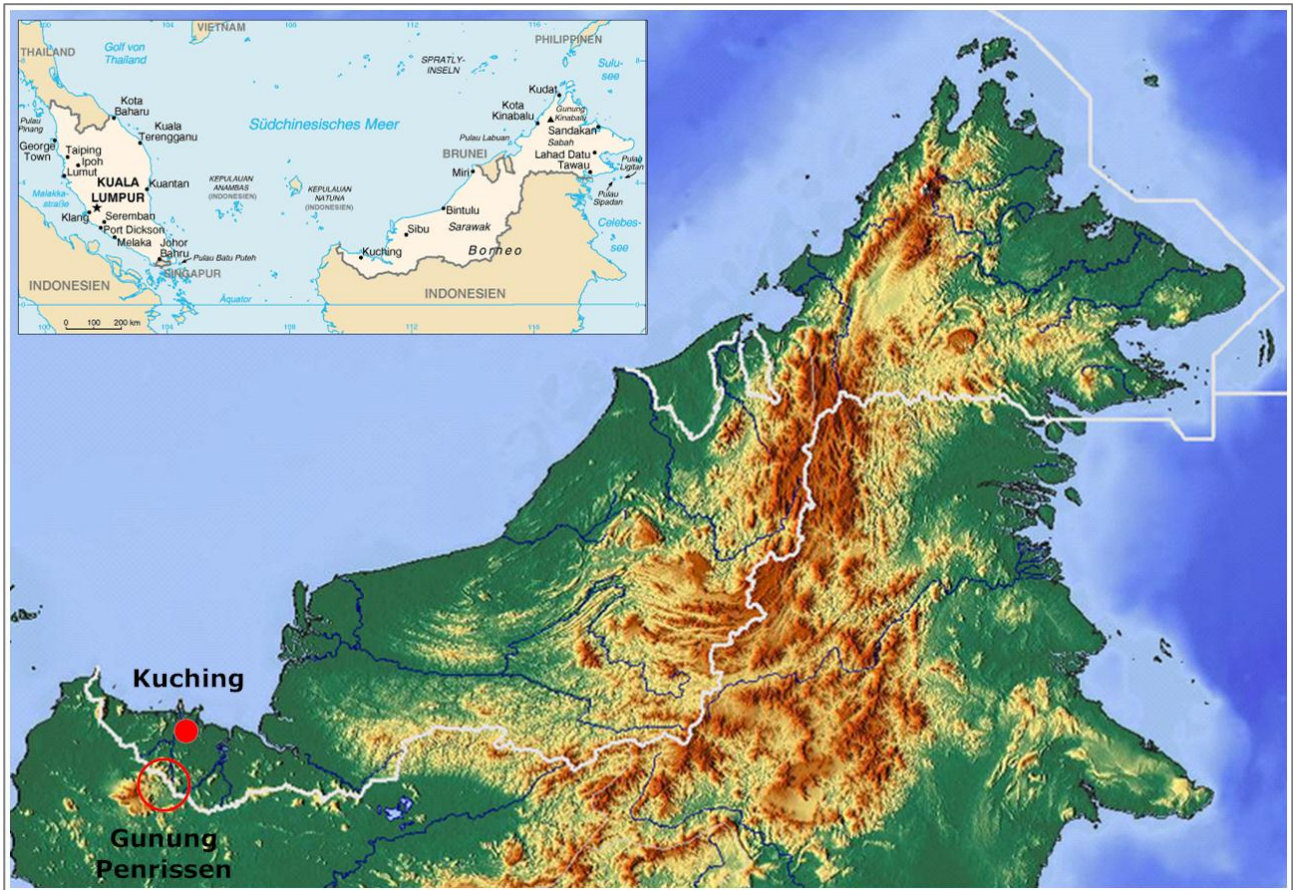


Fig. 1: Sarawak with the capital Kuching. (http://upload.wikimedia.org/wikipedia/commons/1/10/Location_map_Malaysia_Borneo.png) and <http://wikitravel.org/upload/de/d/da/Malaysia.png> (modified).



Fig. 2: Golf course with view to Mt Penrissen (<http://lh6.ggpht.com/-PHc7cvQwas4/TpZTRCarOqI/AAAAAAAAAP0s/olbAFvmu0sc/penrissen%2525202.JPG>).



rounded by rainforest, most of which has been subjected to selective logging in the past, but a small area below the Penrissen peak is almost pristine (Fig. 2). The accessible forested areas are mostly on steep slopes. Sampling of Odonata was carried out from 21-27 July 2012, mostly within the forest, with a small amount of collecting carried out at ponds on the golf course early in the morning and late in the afternoon. The areas sampled ranged in altitude from ca 800-1200m. Weather conditions were variable during the sampling period, with some time lost on most days due to rain. Unfortunately my camera was broken sometime before I arrived at the Borneo Highlands Resort, so this report is unillustrated.

Thirty-six species were collected during the survey, a relatively low number; however a significant percentage of these are notable records, e.g.: *Rhinocypha* species A, B, *Bornargiolestes* species, *Drepanosticta* new species cf *actaeon*, *Drepanosticta* new species cf *dulitensis* and *Acrogomphus jubilaris*. The two new *Drepanosticta* (*sensu lato*: it is unlikely that any true *Drepanosticta* occur in Sundaland) are sister species of species occurring further east in Borneo. Both of the *Rhinocypha* species, of which only females were found, are likely to be new. Nearly a quarter of the species found belong to the Platystictidae, a high percentage. Further sampling will doubtless reveal more species from the area, both in the natural forest areas and in the artificial habitats on the golf course.

A note on the location of Mount Merinjak

Mount Merinjak (a location referred to as Retuh in some publications) is the type locality, or one of the type localities, for a number of species described from Borneo: *Vestalis beryllae*, *Coeliccia flavostriata* and *Coeliccia nigrohamata*. Lieftinck (1965: footnote on page 355) stated that Mount Merinjak is in the Upper Baram area (in north eastern Sarawak). This statement is incorrect (as is implicit in the details given for the holotype of *Coeliccia flavostriata* in Dow 2010): J.C. Moulton, who led the expedition on which all of the Mount Merinjak specimens were collected, makes it very clear (Moulton 1914) that Mount Merinjak is a small peak located south east of Gunung Penrissen in present day Samarahan Division, western Sarawak.

List of species collected

All specimens were collected by the author.

The following codes for groups of samplings sites are used below:

1. Streams and trailside on the main trail running up to the Penrissen peak and back down to the resort.



2. Streams and trailside on a long and seemingly seldom used side trail, eventually meeting the road to the resort a short distance below the main gate.
3. Small forest streams not near the trail system and running onto the golf course.
4. Ponds, streams and drains on golf course.

Zygoptera

Amphipterygidae

1. *Devadatta podolestoides* Laidlaw, 1934

There is now strong evidence that at least three distinct but very similar looking species have been lumped together as *Devadatta podolestoides*. The species at higher altitudes on Gunung Penrissen appears to be the true *D. podolestoides*. 1 – 23.vii: 3 ♂♂; 26.vii: 3 ♂♂, ♀. 2 – 22.vii: 7 ♂♂, ♀. 3 – 21.vii: 2 ♂♂.

Chlorocyphidae

2. *Rhinocypha* species A

Probably a new species; several females, differing in their markings from those of all named species known from Borneo, were collected at one small stream. One female was observed apparently ovipositing amongst a mass of small tree roots close to the stream surface. 3 – 21.vii: ♀; 27.vii: 2 ♀♀.

3. *Rhinocypha* species B

Also likely to be a new species, two females were collected at a steep stream below the summit of Gunung Penrissen; one of them was observed apparently ovipositing into a large log and a vertical, dead, branch, both more than two metres above the stream surface. 1 – 26.vii: 2 ♀♀.

Euphaeidae

4. *Euphaea subcostalis* Selys, 1873

Often a common species in hilly and mountainous terrain, but relatively scarce on most streams investigated in the Borneo Highlands area. 1 – 23.vii: 4 ♂♂. 2 – 22.vii: ♂; 24.vii: ♂; 25.vii: ♂.

Calopterygidae

5. *Vestalis* species cf *amnicola* Lieftinck, 1965

The form of *Vestalis amnicola* occurring on mountains in west Sarawak differs in



the structure of its superior anal appendages from the true *V. amnicola* (type locality Mount Kinabalu in Sabah, widespread in north eastern Sarawak (Lieftinck 1965)). The status of this western form, also known from the Matang Range, Gunung Gading and Gunung Pueh (all in Kuching Division), is under investigation. On Gunung Penrissen it occurred only on smaller forest streams, with the next species being found at larger streams. 1 – 23.vii: 3 ♂♂; 26.vii: 3 ♂♂. 2 – 22.vii: ♂; 24.vii: ♀(?); 25.vii: 2 ♂♂. 3 – 21.vii: ♂.

6. *Vestalis atropha* Lieftinck, 1965

1 – 21.vii: 2 ♂♂; 23.vii: 8 ♂♂. 2 – 24.vii: 3 ♂♂. 3 – 21.vii: ♂; 27.vii: ♂.

7. *Vestalis beryllae* Laidlaw, 1915

This species is locally common in mixed dipterocarp forest in steep terrain, where it breeds in small high gradient streams. Although there are old records from Mount Merinjak (the type locality) and Gunung Penrissen, the present specimens are the first collected in western Sarawak in nearly 100 years. 2 – 22.vii: 3 ♂♂; 25.vii: ♂.

Megapodagrionidae

8. *Bornargiolestes* species

This species is not yet named, but is already known from the Matang Range in Kuching Division (e.g. Dow & Reels 2010). It appears to be much more common at Borneo Highlands than in the Matang Range, with nine of 15 known specimens collected during the survey reported here. 1 – 25.vii: ♂; 26.vii: ♂, 2 ♀♀. 2 – 22.vii: 3 ♂♂, ♀; 25.vii: ♂.

Platystictidae

9. *Drepanosticta* new species cf *actaeon* Laidlaw, 1934

A beautiful species, differing from the rest of the *actaeon* complex (see Dow & Ngiam 2012: 9) in the structure of the penis as well as details of colouration. Fairly common at small forest streams around the Borneo Highlands Resort. 1 – 23.vii: 3 ♂♂, 2 ♀♀. 2 – 22.vii: 6 ♂♂, ♀; 24.vii: 4 ♂♂; 25.vii: ♂, ♀. 3 – 21.vii: ♂.

10. *Drepanosticta* sp cf *crenitis* Lieftinck, 1933

This species is widespread and locally common in Sarawak, where it is typically found at tiny muddy trickles. It differs from the type of *D. crenitis* in the colour of the prothorax. 1 – 23.vii: ♂; 26.vii: ♀. 2 – 22.vii: 4 ♂♂; 25.vii: ♀. 3 – 21.vii: ♂.



11. *Drepanosticta dentifera* Kimmins, 1936

Another widespread and locally common species in Sarawak, but some populations may represent separate species. 2 – 24.vii: 2 ♀♀.

12. *Drepanosticta* new species cf *dulitensis* Kimmins, 1936

This striking new species is closely allied to *D. dulitensis* but differs in the structure of the inferior anal appendages and in its markings. Like *D. dulitensis* it is found on rocky, high gradient forest streams. 1 – 26.vii: ♂. 2 – 24.vii: 2 ♂♂.

13. *Drepanosticta* species cf *forficula* Kimmins, 1936

Only a single female of this species was found; it appears similar to *D. forficula* and its allies, but males must be found before the issue of its identity can be resolved. 2 – 22.vii: ♀.

14. *Drepanosticta rufostigma* (Selys, 1886)

The most common member of the Platystictidae in Sarawak. 1 – 23.vii: 3 ♂♂. 2 – 22.vii: 5 ♂♂; 24.vii: 6 ♂♂; 25.vii: ♂. 3 – 21.vii: 8 ♂♂, ♀.

15. *Drepanosticta versicolor* (Laidlaw, 1913)

Another common platystictid, usually found at tiny muddy seeps and trickles. 1 – 25.vii: ♀.

16. *Telosticta* ?*bidayuh* Dow & Orr, 2012

A number of specimens from the recently described genus *Telosticta* Dow & Orr, 2012 were collected, all the males belong to one species, and are probably just a form of *T. bidayuh*. However they differ from typical *T. bidayuh* in having a more pronounced cleft in the tip of the superior anal appendage (see Dow & Orr 2012a). The females were found at a different site from any of the males, and might or might not be from the same species. 1 – 26.vii: 3 ♂♂. 2 – 22.vii: ♂; 24.vii: 3 ♂♂. 3 – 21.vii: 2 ♀♀.

Coenagrionidae17. *Aciagrion borneense* Ris, 1911

4 – 27.vii: 2 ♂♂, ♀.

18. *Agriocnemis femina femina* (Brauer, 1868)

4 – 22.vii: ♀.



19. *Argiocnemis* species

See Dow & Ngiam (2012: 11) for a brief discussion of this problematic form. 4 – 22.vii: ♂.

20. *Ischnura senegalensis* (Rambur, 1842)

4 – 22.vii: ♀.

21. *Stenagrion dubium* (Laidlaw, 1912)

1 – 23.vii: ♂; 26.vii: 2 ♂♂, ♀. 2 – 22.vii: ♂; 24.vii: ♂.

Platycnemididae22. *Coeliccia flavostriata* Laidlaw, 1918

This species was abundant at small forest streams in the Borneo Highlands area. 1 – 23.vii: 3 ♂♂; 25.vii: 2 ♂♂, ♀; 26.vii: 6 ♂♂, ♀. 2 – 22.vii: 5 ♂♂, 2 ♀♀; 24.vii: 3 ♂♂. 3 – 21.vii: 8 ♂♂, 3 ♀♀; 27.vii: ♂.

23. *Coeliccia* species cf *nemoricola* Laidlaw, 1912

A problematic form, its status will be dealt with elsewhere. 1 – 26.vii: ♂. 2 – 22.vii: 2 ♂♂, 2 ♀♀; 25.vii: ♂. 3 – 21.vii: 2 ♂♂.

24. *Coeliccia nigrohamata* Laidlaw, 1918

2 – 22.vii: ♀. 3 – 21.vii: 2 ♂♂; 27.vii: ♂+♀.

Anisoptera***Gomphidae***25. *Acrogomphus jubilaris* Lieftinck, 1964

A single female was collected whilst apparently ovipositing over a shallow sandy area at the edge of a stream during overcast conditions. 2 – 22.vii: ♀.

26. *Heliogomphus ?borneensis* Lieftinck, 1929

Several teneral *Heliogomphus* were collected, but the condition of the specimens is such that they cannot be identified with certainty. 1 – 23.vii: ♂; 25.vii: ♀. 2 – 22.vii: ♀; 24.vii: ♀.

27. *Leptogomphus williamsoni* Laidlaw, 1912

1 – 26.vii: ♀. 2 – 24.vii: ♀.



Macromiidae

28. *Macromia westwoodi* Selys, 1874

2 – 22.vii: ♀.

Corduliidae

29. *Macromidia fulva* Laidlaw, 1915

2 – 22.vii: ♂.

Libellulidae

30. *Neurothemis fluctuans* (Fabricius, 1793)

1 – 26.vii: ♂.

31. *Orthetrum chrysis* (Selys, 1891)

4 – 27.vii: ♂.

32. *Orthetrum glaucum* (Brauer, 1865)

4 – 27.vii: ♂.

33. *Orthetrum pruinatum schneideri* Förster, 1903

4 – 21.vii: ♂.

34. *Trithemis aurora* (Burmeister, 1839)

4 – 22.vii: ♂.

35. *Trithemis festiva* (Rambur, 1842)

4 – 27.vii: ♂.

36. *Tyriobapta torrida* Kirby, 1889

4 – 22.vii: ♂.



Appendix – records from Annah Rais

Collecting at Annah Rais on March 19, 2005 was conducted by the author (RAD) and Lim Chan Koon (LCK; at the time of the Sarawak Forestry Corporation), and on January 26, 2006 by the author and Graham T. Reels (GTR). Collecting was mostly carried out on the Sungai Annah Rais and tributaries, with some collecting carried out at ponds in the area. The locality (1°14'07.25"N 110°16'59.59"E) is situated app. 32 km south of Kuching.

Amphipterygidae

1. *Devadatta podolestoides* Laidlaw, 1934 — ♂, 26.i.2006, GTR.
2. *Devadatta* species — An unnamed species, common in the lowlands of Sarawak. 2 ♂♂, ♀, 19.iii.2005, RAD.

Chlorocyphidae

3. *Heliocypha biseriata* (Selys, 1859) — 2 ♂♂, 4 ♀♀, 19.iii.2005, RAD; ♂, 26.i.2006, GTR.

Euphaeidae

4. *Dysphaea dimidiata* (Selys, 1853) — 2 ♂♂, 19.iii.2005, RAD; ♂, 26.i.2006, GTR.
5. *Euphaea impar* Selys, 1859 — 3 ♂♂, ♀, 19.iii.2005, RAD.
6. *Euphaea subcostalis* Selys, 1873 — ♂, 26.i.2006, RAD; ♂, 26.i.2006, GTR.
7. *Euphaea tricolor* Selys, 1859 — 2 ♂♂, 19.iii.2005, RAD.

Calopterygidae

8. *Neurobasis longipes* Hagen, 1887 — ♂, ♀, 19.iii.2005, RAD; ♂, 26.i.2006, GTR.
9. *Vestalis amaryllis* Lieftinck, 1965 — 6 ♂♂, 19.iii.2005, RAD; ♂, 26.i.2006, GTR.
10. *Vestalis amoena* Hagen in Selys, 1853 — 5 ♂♂, 19.iii.2005, RAD; 2 ♂♂, 26.i.2006, GTR.
11. *Vestalis atropa* Lieftinck, 1965 — 2 ♂♂, 19.iii.2005, RAD; ♂, 26.i.2006, RAD; ♂, 26.i.2006, GTR.

Megapodagrionidae

12. *Rhinagrion borneense* (Selys, 1886) — 2 ♂♂, 19.iii.2005, RAD; ♂, 26.i.2006, RAD.

Platystictidae

13. *Drepanosticta attala* Lieftinck, 1934 — See Dow & Orr (2012b).
14. *Drepanosticta* species cf *crenitis* Lieftinck, 1933 — ♂, 5 ♀♀, 26.i.2006, RAD.
15. *Drepanosticta rufostigma* (Selys, 1886) — 13 ♂♂, 19.iii.2005, RAD; 8 ♂♂, 26.i.2006, RAD; 6 ♂♂, 26.i.2006, GTR.
16. *Telosticta bidayuh* Dow & Orr, 2012 — See Dow & Orr (2012a).



Disparoneuridae

17. *Elattonneura analis* (Selys, 1860) — ♂, 19.iii.2005, RAD; ♂, 26.i.2006, RAD.
18. *Prodasineura dorsalis* (Selys, 1860) — 2 ♂♂, 19.iii.2005, RAD.
19. *Prodasineura verticalis* (Selys, 1860) — ♂, 19.iii.2005, RAD.

Coenagrionidae

20. *Argiocnemis* species — ♂, 26.i.2006, GTR.
21. *Ceriagrion cerinorubellum* (Brauer, 1865) — ♂, 26.i.2006, GTR.
22. *Pseudagrion perfuscatum* Lieftinck, 1937 — 2 ♂♂, 19.iii.2005, RAD.
23. *Stenagrion dubium* (Laidlaw, 1912) — ♂, 26.i.2006, RAD.
24. *Xiphiagrion cyanomelas* (Selys, 1876) — ♂, 19.iii.2005, RAD.

Platycnemididae

25. *Coeliccia cyaneothorax* Kimmins, 1936 — 2 ♂♂, ♀, 26.i.2006, RAD.
26. *Coeliccia flavostriata* Laidlaw, 1918 — See Dow (2010).
27. *Coeliccia nigrohamata* Laidlaw, 1918 — 3 ♂♂, 19.iii.2005, RAD; ♂, 26.i.2006, RAD.

Gomphidae

28. *Ictinogomphus decoratus melaenops* (Selys, 1858) — ♂, 19.iii.2005, RAD.
29. *Leptogomphus williamsoni* Laidlaw, 1912 — ♀, 19.iii.2005, LCK.

Corduliidae

30. *Macromidia fulva* Laidlaw, 1915 — ♀, 19.iii.2005, RAD; ♀, 26.i.2006, RAD; ♂, ♀, 26.i.2006, GTR.

Libellulidae

31. *Nannophya pygmaea* Rambur, 1842 — ♂, 19.iii.2005, RAD.
32. *Neurothemis fluctuans* (Fabricius, 1793) — ♂, 19.iii.2005, RAD; ♂, 26.i.2006, GTR.
33. *Orthetrum glaucum* (Brauer, 1865) — 2 ♂♂, 19.iii.2005, RAD.
34. *Orthetrum testaceum* (Burmeister, 1839) — ♂+♀, 19.iii.2005, RAD; ♂, 26.i.2006, GTR.
35. *Trithemis aurora* (Burmeister, 1839) — ♂, 19.iii.2005, RAD.
36. *Trithemis festiva* (Rambur, 1842) — ♂, 19.iii.2005, RAD.



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