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Faunistic Studies
in South-east Asian
and Pacific Island Odonata

Journal of the International Dragonfly Fund

1-18

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published 13.12.2017

No. 23

ISSN 2195-4534

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Internet: <http://www.dragonflyfund.org/>

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Editorial Work: Martin Schorr, Milen Marinov and Rory Dow
Layout: Martin Schorr
IDF-home page: Holger Hunger
Printing: Colour Connection GmbH, Frankfurt
Impressum: Publisher: International Dragonfly Fund e.V., Schulstr. 7B, 54314 Zerf, Germany. E-mail: oestlap@online.de
Responsible editor: Martin Schorr
Cover picture: *Zygonyx iris*
Photographer: Chee Yen Choong

New records of Odonata from Kedah, Malaysia in September 2016, with a checklist of species recorded from the state

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Abstract

The results of a short collecting trip to Kedah in the north-west of Peninsular Malaysia, made in September 2016, are reported. 64 species were collected, 13–14 of these are new records for the state and 28–29 are new records for the mainland of Kedah. A checklist of the Odonata recorded from Kedah (including Langkawi Island) is given in an appendix. At least 126 species of Odonata are now known from the state.

Bahasa Melayu Abstract

Hasil pengutipan daripada kerja lapangan yang singkat di bahagian barat laut Kedah, Semenanjung Malaysia dalam bulan September 2016 dilaporkan di sini. Sebanyak 64 spesies telah berjaya dikutip. 13–14 spesies daripada ini merupakan rekod baharu untuk negeri Kedah dan 28–29 spesies merupakan rekod baharu untuk tanah besar Kedah. Satu senarai semakan Odonata untuk negeri Kedah (termasuk Pulau Langkawi) diberikan dalam satu lampiran. Sekurang-kurangnya 126 spesies Odonata diketahui wujud di negeri Kedah.

Key words: Odonata checklist, Kedah state, Langkawi Island, Malaysia, new records

Introduction

Kedah is in the north-west of Peninsular Malaysia, it shares a border with Thailand, and has Perlis to its north and Perak to its south. Fig. 1 shows the location of Kedah in Peninsular Malaysia. Although better studied than some states in Peninsular Malaysia, it is still insufficiently studied. We are aware of records of Odonata from the mainland of Kedah in: Asahina (1966, 1967), Brooks (1981), Che Salmah et al. (2000), Choong et al. (2006), Dow (2010), Dow et al. (2017), Fraser (1942), Laidlaw (1902a, 1902b, 1931, 1932, 1934), Lieftinck (1933, 1954, 1965a, 1965b), Novelo-Gutierrez & Che Salmah (2006), Wahizatul Afzan & Che Salmah (2005). Additionally, records from Langkawi Island can be

found in Butler (2011), Butler & Kohler (2013), Dow et al. (2016), Farizawati et al. (2014), Fraser (1935, 1942), Inoue (1974), Lieffinck (1954), and Tsuda & Kitagawa (1987), and records from the somewhat confusingly named Pulau Perak can be found in Norma-Rashid et al. (2008). These papers contain records of 112–113 species (four taxa omitted from this figure are discussed in notes to the checklist in the appendix). Che Salmah et al. (2004) and Che Salmah & Wahizatul Afzan (2004) also include records from Kedah, but they are mixed with records from other states in such a way that it is not possible to determine which species has been recorded in which state. Moreover, some of the species listed in Che Salmah & Wahizatul Afzan (2004) certainly do not occur in Malaysia, e.g. the Indian species *Coelliccia fraseri* Laidlaw, 1932 and *Protosticta hearseyi* Fraser, 1922; presumably these records are the result of using inappropriate literature for identification. It is also possible that there are additional relevant publications in the Malaysian and/or Japanese literature of which we are unaware. The holotypes of *Drepanosticta rahmani* Dow, Choong & Ng, 2017, *Teinobasis kirbyi* Laidlaw, 1902 and *Leptogomphus risi* Laidlaw, 1932 are from Kedah.

In September 2016 the first two authors made a short trip to Kedah, staying in the town of Kulim and making day trips from there to various sites. Collecting was carried out on 12–16 September. Unfortunately the second author became ill shortly after our arrival and was only able to conduct limited field work. Even so, and despite the short duration of the trip (only five days sampling), a number of new records were made for Kedah, and a new species was discovered (see Dow et al. 2017). A checklist of the Odonata now known from Kedah is given in an appendix.

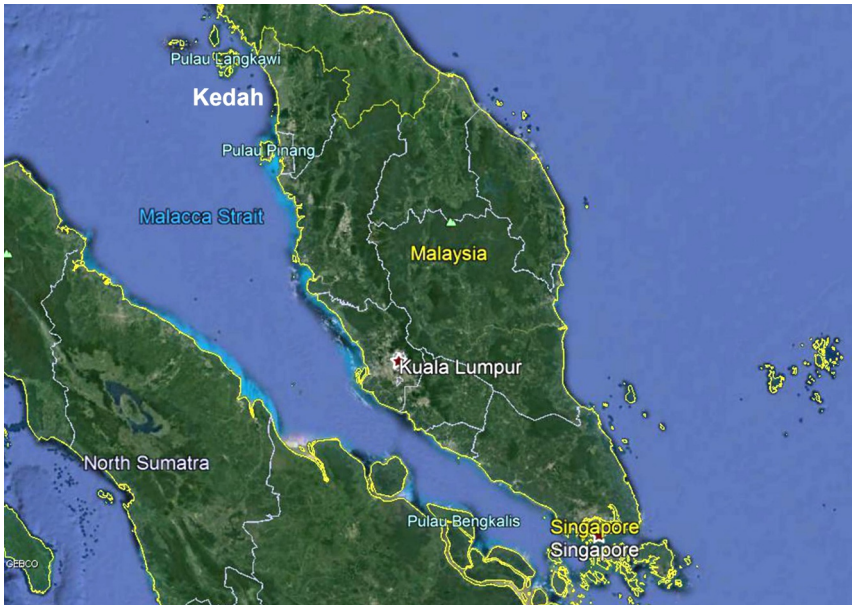


Figure 1. Map of Peninsular Malaysia showing position of Kedah. Image made using GoogleEarth.

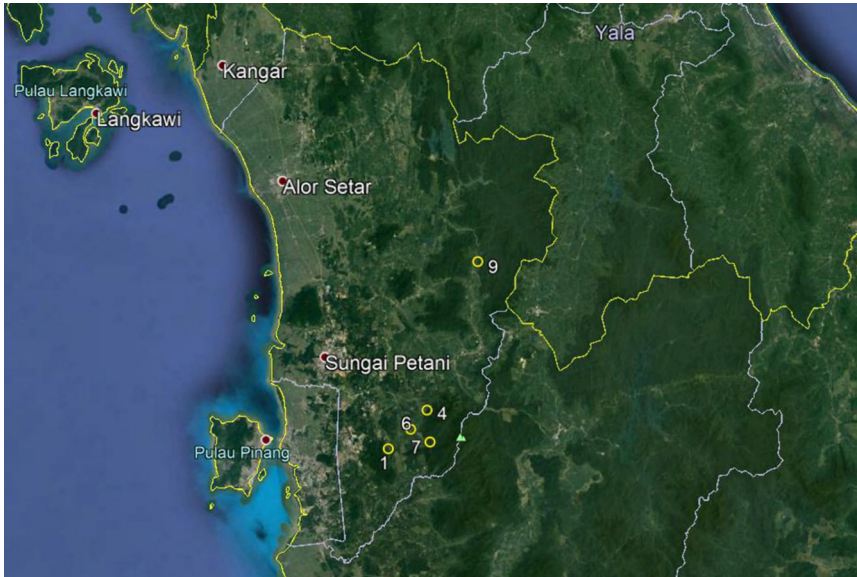


Figure 2. Map showing the main sampling sites. Image made using GoogleEarth..

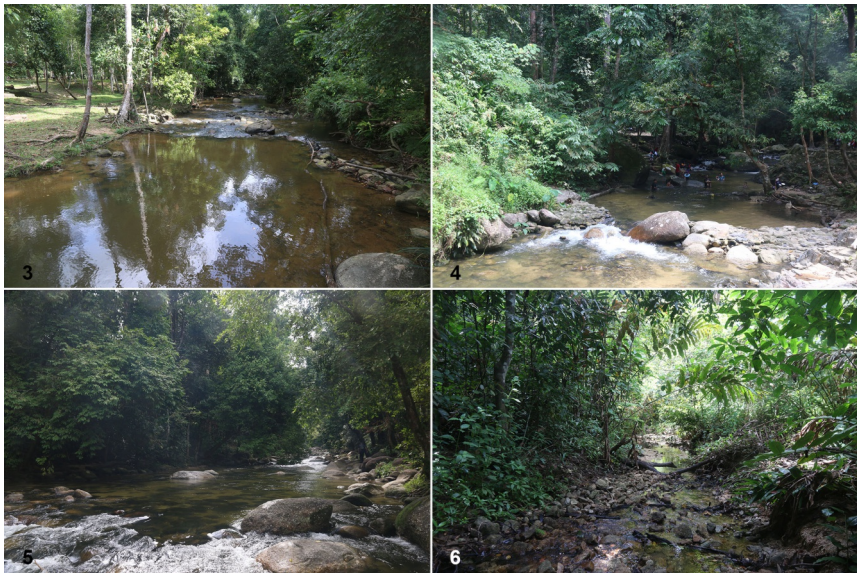


Figure 3–6. Habitat at some of the sampled locations (all photos by C.Y. Choong): (3) main stream at Hutan Lipur Ulu Paip (location 1); (4) main stream at Hutan Lipur Bukit Hijau (location 4); (5) main stream at Hutan Lipur Sungai Sedim; (6) lower part of stream system in hills between Baling and Gulai (Location 9).

Odonata recorded in September 2016

Locations

The main sampling locations are indicated in Fig. 2.

1. Main stream at Hutan Lipur Ulu Paip (12.ix; Fig. 3).
2. Tributary streams at Hutan Lipur Ulu Paip (12.ix).
3. Pond along road outside Hutan Lipur Ulu Paip (12.ix).
4. Main stream at Hutan Lipur Bukit Hijau (13.ix, Fig. 4).
5. Tributary streams at Hutan Lipur Bukit Hijau (13.ix).
6. Rice fields near Hutan Lipur Bukit Hijau (13.ix).
7. Small stream near canopy walk at Hutan Lipur Sungai Sedim (14.ix). Fig. 5 shows the main stream at this location, which was difficult to sample.
8. Small streams reached by walking several km along an old, overgrown, concrete road at Hutan Lipur Sungai Sedim (14.ix).
9. Stream system in hills between Baling and Gulai (15–16.ix; Fig. 6).

Species list

First records from mainland Kedah are indicated by a *, new records for Kedah including Langkawi are indicated by a **. The first two authors' names are abbreviated as RAD and CYC. ♂+♀ indicates a pair in tandem.

Zygoptera

LESTIDAE

Lestes praemorsus decipiens Kirby, 1893*

3 – ♂, 12.ix, CYC.

PLATYSTICTIDAE

Drepanosticta fontinalis Lieftinck, 1937

2 – 17 ♂♂, 12.ix, RAD.

4 – ♂, 13.ix, CYC; ♂, 13.ix, RAD.

5 – 4 ♂♂, ♀, 13.ix, RAD.

8 – 11 ♂♂, 14.ix, RAD.

9 – ♂, 16.ix, CYC.

Drepanosticta rahmani Dow, Choong & Ng, 2017

See Dow et al. (2017) for details. Location 9.

Drepanosticta silenus Laidlaw, 1934**

Until now this species had only been known from records from Bukit Larut (Maxwell Hill) in Perak (Laidlaw 1934, Donnelly 1998).

9 – ♂, 16.ix, RAD.

ARGIOLESTIDAE

Podolestes orientalis Selys, 1862**

8 – 2 ♂♂, 14.ix, RAD.

CALOPTERYGIDAE

Echo modesta Laidlaw, 1902**

Fig. 7 shows a female.

2 – ♂, 12.ix, RAD.

9 – 3 ♂♂, 15.ix, RAD; ♂, 16.ix, CYC; ♂, 16.ix, RAD.

Neurobasis chinensis (Linnaeus, 1758)

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

4 – ♂, 13.ix, CYC.

Vestalis amethystina Lieftinck, 1965

2 – 2 ♂♂, 12.ix, CYC; 2 ♂♂, 12.ix, RAD.

5 – ♂, 13.ix, RAD.

8 – ♂, 14.ix, RAD.

9 – 2 ♂♂, 15.ix, RAD.

Vestalis amoena Hagen in Selys, 1853

See the note to this species in the checklist in the appendix; it is not clear whether or not it has been recorded from Kedah before now.

4 – ♂, 13.ix, CYC; ♂, 13.ix, RAD.



Figure 7: *Echo modesta* female.
Photo by C.Y. Choong.

CHLOROCYPHIDAE

Aristocypha fenestrella (Rambur, 1842)

4 – ♂, 13.ix, CYC; 2 ♂♂, 13.ix, RAD.

8 – ♂, 14.ix, RAD.

9 – ♂, 15.ix, CYC; 2 ♂♂, 15.ix, RAD; ♀, 16.ix, RAD.

Heliocypha biforata (Selys, 1859)

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

2 – ♂, 12.ix, RAD.

Heliocypha perforata (Percheron, 1835)

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

4 – ♂, 13.ix, CYC; ♂, 13.ix, RAD.

Libellago lineata (Burmeister, 1839)

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

Sundacypha petiolata (Selys, 1859)**

2 – ♂, 12.ix, RAD.

DEVADATTIDAE

Devadatta argyroides (Selys, 1859)

2 – 3 ♂♂, 12.ix, RAD.

5 – ♂, 13.ix, CYC; 3 ♂♂, 13.ix, RAD.

7 – ♂, 14.ix, RAD.

9 – ♂, 15.ix, CYC; 3 ♂♂, ♀, 15.ix, RAD; 2 ♂♂, ♀, 16.ix, RAD.

EUPHAEIDAE

Dysphaea dimidiata Selys, 1853 **

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

4 – 2 ♂♂, 13.ix, RAD.

Euphaea ochracea Selys, 1859

4 – ♂, 13.ix, CYC; 3 ♂♂, 13.ix, RAD.

8 – ♂, 14.ix, RAD.

9 – ♂, 15.ix, RAD; ♂, 16.ix, CYC.

6 – ♂, 29.vi, CYC.

7 – 4 ♂♂, 29.vi, CYC; 3 ♂♂, 29.vi, RAD.

9 – ♂, 30.vi, CYC; ♂, 30.vi, RAD.

PHILOSINIDAE

Rhinagrion viridatuma Fraser, 1938

See the comments on this species in Dow et al. (2016) and Kosterin (2014)

4 – ♂, 13.ix, RAD.

PLATYCNEMIDIDAE

Calicnemia chaseni (Laidlaw, 1928)**

8 – ♂, 14.ix, RAD.

9 – ♂, 15.ix, RAD; ♂, 16.ix, RAD.

Coelliccia albicauda (Förster in Laidlaw, 1907)**

2 – ♂, 12.ix, RAD.

5 – ♂, ♂+♀, 13.ix, RAD.

9 – ♂, 15.ix, RAD.

Coelliccia didyma (Selys, 1863)

9 – ♂, 16.ix, RAD.

Coelliccia erici Laidlaw, 1917**

Material of this species, and its confused history, will be discussed in Dow, Choong & Ng (in prep.). Location 9.

Coelliccia octogesima (Selys, 1863)**

Not only is this the first record of this species from Kedah, it also appears to be the most northern record yet known.

5 – 4 ♂♂, 13.ix, RAD.

Copera marginipes (Rambur, 1842)

Fig. 8 shows two males attempting to form tandem with the same female.

2 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

Copera vittata (Selys, 1863)*

8 – ♂, 14.ix, RAD.

Indocnemis orang (Förster in Laidlaw, 1907)**

4 – ♂, ♀, 13.ix, CYC; 2 ♂♂, 13.ix, RAD.

5 – ♂, 13.ix, RAD.

9 – ♂, 16.ix, RAD.

Prodasineura humeralis (Selys, 1860)*

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

9 – ♂, 15.ix, CYC.

Prodasineura laidlawi (Förster in Laidlaw, 1907)

2 – 2 ♂♂, 12.ix, CYC; ♂, ♂+♀, 12.ix, RAD.

4 – ♂, 13.ix, CYC.

9 – ♂, 16.ix, CYC.

Prodasineura notostigma (Selys, 1860)

8 – ♂, 14.ix, RAD.



Figure 8: *Copera marginipes* triple tandem. Photo by C.Y. Choong.

COENAGRIONIDAE

Argiocnemis species**

4 – ♂, 13.ix, RAD.

Ceriagrion cerinorubellum (Brauer, 1865)

3 – ♂, 12.ix, RAD.

Ischnura senegalensis (Rambur, 1842)

6 – ♂, 13.ix, RAD.

Pseudagrion australasiae Selys, 1876*

3 – ♂, 12.ix, RAD.

Pseudagrion microcephalum (Rambur, 1842)

3 – ♂, 12.ix, CYC.

Pseudagrion pruinosum (Burmeister, 1839)

1 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

Pseudagrion williamsoni Fraser, 1922**

3 – ♂, 12.ix, CYC; 2 ♂♂, 12.ix, RAD.

Anisoptera

GOMPHIDAE

Gomphidia abbotti Williamson, 1907*

Common on the main stream at Hutan Lipur Ulu Paip between 10 and 11 in the morning on the day the location was visited.

1 – 2 ♂♂, 12.ix, CYC; 2 ♂♂, 12.ix, RAD.

Gomphidictinus perakensis (Laidlaw, 1902)

This species was common at several of the sites visited during our visit.



Figure 9: *Nepogomphus fruhstorferi* male. Photo by C.Y. Choong.

4 – ♂, 13.ix, CYC; ♂, 13.ix, RAD.

8 – 2 ♂♂, 14.ix, RAD.

9 – 2 ♂♂, 15.ix, RAD.

Nepogomphus fruhstorferi (Lieftinck, 1934)**

Fig. 9 shows a male.

4 – ♂, 13.ix, CYC; ♀, 1.ix, RAD.

9 – ♂, 15.ix, RAD.

Paragomphus capricornis (Förster, 1914)*

1 – ♀, 12.ix, RAD.

MACROMIIDAE

Macromia cf westwoodii Selys, 1874*

The status of the form of *M. westwoodii* occurring in Peninsular Malaysia is not entirely clear.

9 – 2 ♂♂, 15.ix, RAD; ♀, 16.ix, RAD.

LIBELLULIDAE

Acisoma panorpoides Rambur, 1842

3 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

6 – ♂, 13.ix, RAD.

Aethriamanta gracilis (Brauer, 1878)

3 – ♂, 12.ix, RAD.

Brachydiplax chalybea Brauer, 1868

6 – ♂, 13.ix, RAD.

Brachythemis contaminata (Fabricius, 1793)

3 – ♂, 12.ix, CYC.

Cratilla metallica (Brauer, 1878)

4 – ♂, 13.ix, CYC.

Crocothemis servillia (Drury, 1770)

6 – ♂, 13.ix, RAD.

Diplacodes trivialis (Rambur, 1842)

6 – ♀, 13.ix, RAD.

7 – ♀, 14.ix, CYC.

Lyriothemis biappendiculata (Selys, 1878)*

1 – ♀, 12.ix, RAD.

9 – ♂, 16.ix, CYC.

Neurothemis fluctuans (Fabricius, 1793)

3 – ♂, 12.ix, CYC; ♂, 12.ix, RAD.

6 – ♂, 13.ix, RAD.

Neurothemis fulvia (Drury, 1773)

4 – ♀, 13.ix, CYC.

Onychothemis culminicola Förster, 1904**

1 – 2 ♂♂, 12.ix, CYC; ♂, 12.ix, RAD.

4 – ♂, 13.ix, CYC.

Onychothemis testacea Laidlaw, 1902

1 – ♂, 12.ix, RAD.

Orthetrum glaucum (Brauer, 1865)

4 – ♂, 13.ix, RAD.

Orthetrum luzonicum (Brauer, 1868)

3 – ♂, 12.ix, CYC.

Orthetrum sabina (Drury, 1770)

6 – ♂, 13.ix, RAD.

Potamarcha congener (Rambur, 1842)*

6 – ♂, 13.ix, RAD.

Rhyothemis phyllis (Sulzer, 1776)

3 – ♂, 12.ix, RAD.

6 – ♂, 13.ix, RAD.

Rhyothemis triangularis Kirby, 1889*

3 – ♂, 12.ix, RAD.

Tholymis tillarga (Fabricius, 1798)

6 – ♀, 13.ix, RAD.

Trithemis festiva (Rambur, 1842)

1 – ♂, 12.ix, RAD.

9 – ♂, 15.ix, CYC.

Tyriobapta torrida Kirby, 1889*

4 – ♂, 13.ix, RAD.

8 – ♂, 14.ix, RAD.

Zygonyx iris Selys, 1869*

Fig. 10 shows a male.

1 – 2 ♂♂, 12.ix, CYC; ♂, 12.ix, RAD.

4 – ♂, 13.ix, CYC; ♂, 13.ix, RAD.

9 – ♂, 15.ix, CYC; ♂, 15.ix, RAD; ♂, 16.ix, CYC.

Zygonyx ida Selys, 1869

9 – ♂, 16.ix, CYC.

Discussion

We were able to collect 64 species during our brief trip to Kedah; one of these was a new species (*Drepanosticta rahmani*). No less than 13–14 (taking account of the



Figure 10: *Zygonyx iris* male. Photo by C.Y. Choong.

uncertainty over whether or not *Vestalis amoena* has been recorded in Kedah before) of these are first records for the state, and 28–29 are new records for mainland Kedah. It is remarkable that almost half of the species collected had not been recorded in mainland Kedah until now (although possibly there are records in the Malaysian or maybe Japanese literature that we are not aware of). With the new records, 126 species have been recorded in Kedah, 95 from the mainland and 85 from Langkawi, one species (*Rhodothemis rufa* (Rambur, 1842)) has only been recorded from Pulau Perak.

Acknowledgements

We are grateful to Forestry Department Peninsular Malaysia for granting us a permit to collect Odonata in Forest Reserves. The Mohamed bin Zayed Species Conservation Fund provided the grant that supported the field work during reported here. The Economic Planning Unit of Malaysia gave the first author permission to conduct research in Peninsular Malaysia.

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Appendix: Checklist of Odonata recorded from Kedah

Where the first record from either Kedah as a whole or mainland Kedah is not in this publication, a citation to the first record is made in square parenthesis after the species name. **M**: mainland. **L**: Langkawi Island.

Zygoptera

Lestidae

Lestes praemorsus decipiens Kirby, 1894 [**M**: this publication; **L**: Butler & Kohler 2013]

Platylestes heterostylus Lieftinck, 1932 [**L**: Butler & Kohler 2013]

Orolestes wallacei (Kirby, 1889) [**M**: Laidlaw 1902a as *Lestes ridleyi* Laidlaw, 1902]

Platystictidae

Drepanosticta fontinalis Lieftinck, 1937 [**M**: Lieftinck 1965a; **note 1**]

Drepanosticta rahmani Dow, Choong & Ng, 2017 [**M**: Dow et al. 2017]

Drepanosticta silenus Laidlaw, 1934 [**M**: this publication]

Protosticta foersteri Laidlaw, 1902 [**M**: Laidlaw 1902b]

Argiolestidae

Podolestes orientalis Selys, 1862 [**M**: this publication]

Calopterygidae

Echo modesta Laidlaw, 1902 [**M**: this publication; **L**: Fraser 1935]

Neurobasis chinensis (Linnaeus, 1758) [**M**: Laidlaw 1931; **L**: Butler & Kohler 2013]

Vestalis amethystina Lieftinck, 1965 [**M**: Lieftinck 1965b]

Vestalis amoena Hagen in Selys, 1853 [**M**: this publication?; **note 2**]

Vestalis gracilis (Rambur, 1842) [**M**: Laidlaw 1931; **L**: Tsuda & Kitagawa 1987]

Chlorocyphidae (**note 3**)

Aristocypha fenestrella (Rambur, 1842) [**M**: Choong et al. 2006]

Helioocypha biforata (Selys, 1859) [**M**: this publication; **L**: Inoue 1974]

Helioocypha perforata (Percheron, 1835) [**M**: Laidlaw 1902a as *Rhinocypha inas* Laidlaw, 1902]

Libellago lineata (Burmeister, 1839) [**M**: Fraser 1942]

Sundacypha petiolata (Selys, 1859) [**M**: this publication]

Devadattidae

Devadatta argyoides (Selys, 1859) [**M**: Laidlaw 1931]

Euphaeidae

Dysphaea dimidiata Selys, 1853 [**M**: this publication]

Euphaea ochracea Selys, 1859 [**M**: Choong et al. 2006]

Philosiniidae

Rhinagrion viridatuma Fraser, 1938 [**M**: this publication; **L**: Butler & Kohler 2013 as *R. mima* (Karsch, 1891)]

Platycnemididae

Calicnemia chaseni (Laidlaw, 1928) [**M**: this publication]

Coeliccia albicauda (Förster in Laidlaw, 1907) [**M**: this publication]

Coeliccia didyma (Selys, 1863) [**M**: Choong et al. 2006 as *Coeliccia nemoricola* Laidlaw, 1912; **L**: Tsuda & Kitagawa 1987]

Coeliccia erici Laidlaw, 1917 [**M**: this publication]

Coeliccia octogesima (Selys, 1863) [**M**: this publication]

Copera marginipes (Rambur, 1842) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Tsuda & Kitagawa 1987]

Copera vittata (Selys, 1863) [**M**: this publication; **L**: Butler & Kohler 2013]

Indocnemis orang (Förster in Laidlaw, 1907) [**M**: this publication]

Onychargia atrocyana Selys, 1865 [**M**: Laidlaw 1934]

Prodasineura humeralis (Selys, 1860) [**M**: this publication; **L**: Butler & Kohler 2013]

Prodasineura laidlawi (Förster in Laidlaw, 1907) [**M**: Lieffinck 1954; **L**: Butler & Kohler 2013]

Prodasineura notostigma (Selys, 1860) [**M**: Laidlaw 1934]

Pseudocopera ciliata (Selys, 1863) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Butler & Kohler 2013]

Coenagrionidae

Aciagrion borneense Ris, 1911 [**M**: Laidlaw 1934; **L**: Butler & Kohler 2013]

Aciagrion hisopa (Selys, 1876) [**L**: Tsuda & Kitagawa 1987]

Argiocnemis femina (Brauer, 1868) [**M**: Asahina 1966; **L**: Tsuda & Kitagawa 1987]

Argiocnemis minima Selys, 1877 [**M**: Asahina 1966 as *A. d'abreui* Fraser, 1919]

Argiocnemis nana (Laidlaw, 1914) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Tsuda & Kitagawa 1987]

Argiocnemis pygmaea (Rambur, 1842) [**M**: Asahina 1966; **L**: Fraser 1942]

Argiocnemis rubescens rubeola Selys, 1877 [**M**: Asahina 1966; **L**: Tsuda & Kitagawa 1987]

Argiocnemis species [**M**: this publication]

Ceriagrion auranticum Fraser, 1922 [**M**: Asahina 1967; **L**: Butler & Kohler 2013]

Ceriagrion calamineum Lieffinck, 1951 [**L**: Tsuda & Kitagawa 1987; **note 4**]

Ceriagrion cerinorubellum (Brauer, 1865) [**M**: Asahina 1966; **L**: Asahina 1966]

Ceriagrion olivaceum Laidlaw, 1914 [**M**: Asahina 1967]

Ceriagrion praetermissum Lieffinck, 1929 [**L**: Farizawati et al. 2014]

Ischnura senegalensis (Rambur, 1842) [**M**: Asahina 1966; **L**: Tsuda & Kitagawa 1987]

Paracercion calamorum (Ris, 1916) [**L**: Dow et al. 2016]

- Pericnemis stictica* Hagen in Selys, 1863 [**M**: Laidlaw 1902b]
Pseudagrion australasiae Selys, 1876 [**M**: this publication; **L**: Butler & Kohler 2013]
Pseudagrion microcephalum (Rambur, 1842) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Farizawati et al. 2014]
Pseudagrion pruinosum (Burmeister, 1839) [**M**: Wahizatul Afzan & Che Salmah 2005]
Pseudagrion williamsoni Fraser, 1922 [**M**: this publication]
Teinobasis kirbyi Laidlaw, 1902 [**M**: Laidlaw 1902b]

Anisoptera

Aeshnidae

- Anax guttatus* (Burmeister, 1839) [**L**: Tsuda & Kitagawa 1987]
Gynacantha bayadera Selys, 1891 [**L**: Butler & Kohler 2013]
Heliaeschna idae (Brauer, 1865) [**M**: Laidlaw 1934]
Indaeschna grubaueri (Förster, 1904) [**M**: Laidlaw 1902a as *Amphiaeschna ampla* (Rambur, 1842); **L**: Butler & Kohler 2013]

Gomphidae

- Acrogomphus malayanus* Laidlaw, 1925 [**L**: Butler & Kohler 2013]
Gomphidia abbotti Williamson, 1907 [**M**: this publication; **L**: Butler & Kohler 2013]
Gomphidictinus perakensis (Laidlaw, 1902) [**M**: Laidlaw 1902a]
Heliogomphus kelantanensis (Laidlaw, 1902) [**M**: Lieftinck 1933]
Ictinogomphus decoratus melaenops Selys, 1857 [**M**: Wahizatul Afzan & Che Salmah 2005 as *Ictinogomphus rapax* (Rambur, 1842); **L**: Butler 2011]
Leptogomphus risi Laidlaw, 1932 [**M**: Laidlaw 1932]
Macrogomphus species [**L**: Butler & Kohler 2013]
Megalogomphus icterops (Martin, 1903) [**L**: Butler & Kohler 2013]
Merogomphus parvus (Krüger, 1899) [**L**: Butler & Kohler 2013]
Microgomphus chelifera Selys, 1858 [**L**: Butler & Kohler 2013]
Nepogomphus fruhstorferi (Lieftinck, 1934) [**M**: this publication]
Paragomphus capricornis (Förster, 1914) [**M**: this publication; **L**: Butler & Kohler 2013]
Sieboldius japponicus Selys, 1854 [**M**: Laidlaw 1902a as *S. grandis* Krüger, 1899]

Macromiidae

- Epophthalmia vittigera* [**L**: Butler & Kohler 2013]
Macromia cincta Rambur, 1842 [**M**: Novelo-Gutierrez & Che Salmah 2006]
Macromia cydippe Laidlaw, 1922 [**L**: Butler & Kohler 2013]
Macromia ?gerstaeckeri Krüger, 1899 [**L**: Butler & Kohler 2013]
Macromia cf westwoodii Selys, 1874 [**M**: this publication; **L**: Butler & Kohler 2013 as ?*westwoodii*]

Synthemistidae

Idionyx yolanda Selys, 1871 [L: Butler & Kohler 2013]

Macromidia genialis Laidlaw, 1923 [L: Butler & Kohler 2013]

Libellulidae

Acisoma panorpoides Rambur, 1842 [M: Asahina 1966; L: Butler & Kohler 2013]

Aethriamanta aethra Ris, 1912 [L: Farizawati et al 2014]

Aethriamanta gracilis (Brauer, 1878) [M: Choong et al. 2006; L: Butler & Kohler 2013]

Brachydiplax chalybea Brauer, 1868 [M: Wahizatul Afzan & Che Salmah 2005; L: Butler & Kohler 2013]

Brachydiplax farinosa Krüger, 1902 A [M: Wahizatul Afzan & Che Salmah 2005]

Brachygonia oculata (Brauer, 1878) [M: Fraser 1942]

Brachythemis contaminata (Fabricius, 1793) [M: Asahina 1966; L: Tsuda & Kitagawa 1987]

Camacinia gigantea (Brauer, 1867) [L: Butler & Kohler 2013]

Cratilla lineata (Brauer, 1878) [M: Laidlaw 1934; L: Tsuda & Kitagawa 1987]

Cratilla metallica (Brauer, 1878) [M: Laidlaw 1902a; L: Tsuda & Kitagawa 1987]

Crocothemis servilia (Drury, 1770) [M: Wahizatul Afzan & Che Salmah 2005; L: Tsuda & Kitagawa 1987]

Diplacodes nebulosa (Fabricius, 1793) [L: Tsuda & Kitagawa 1987]

Diplacodes trivialis (Rambur, 1842) [M: Wahizatul Afzan & Che Salmah 2005; L: Tsuda & Kitagawa 1987]

Hydrobasileus croceus (Brauer, 1867) [L: Butler & Kohler 2013]

Indothemis limbata (Selys, 1891) [L: Butler & Kohler 2013]

Lathrecista asiatica (Fabricius, 1798) [M: Wahizatul Afzan & Che Salmah 2005; L: Tsuda & Kitagawa 1987]

Lyriothemis biappendiculata (Selys, 1878) [M: this publication; L: Butler & Kohler 2013]

Macrodiplax cora (Brauer, 1867) [L: Butler & Kohler 2013]

Neurothemis fluctuans (Fabricius, 1793) [M: Asahina 1966; L: Butler & Kohler 2013]

Neurothemis fulvia (Drury, 1773) [M: Fraser 1942; L: Inoue 1974]

Neurothemis tullia (Drury, 1773) [M: Laidlaw 1934]

Onychothemis culminicola Förster, 1904 [M: this publication]

Onychothemis festacea Laidlaw, 1902 [M: Wahizatul Afzan & Che Salmah 2005]

Orthetrum chrysis (Selys, 1891) [M: Wahizatul Afzan & Che Salmah 2005; L: Butler & Kohler 2013]

Orthetrum glaucum (Brauer, 1865) [M: Laidlaw 1934; L: Butler & Kohler 2013]

Orthetrum luzonicum (Brauer, 1868) [M: Wahizatul Afzan & Che Salmah 2005; L: Butler & Kohler 2013]

Orthetrum sabina (Drury, 1770) [M: Fraser 1942; L: Inoue 1974]

Orthetrum testaceum (Burmeister, 1839) [L: Butler & Kohler 2013]

- Pantala flavescens* (Fabricius, 1798) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Butler & Kohler 2013]
- Potamarcha congener* (Rambur, 1842) [**M**: this publication; **L**: Tsuda & Kitagawa 1987]
- Pseudothemis jorina* Förster, 1904 [**L**: Butler & Kohler 2013]
- Rhodothemis rufa* (Rambur, 1842) [Pulau Perak: Norma-Rashid et al. 2008]
- Rhyothemis obsolescens* Kirby, 1889 [**M**: Laidlaw 1934]
- Rhyothemis phyllis* (Sulzer, 1776) [**M**: Fraser 1942; **L**: Butler & Kohler 2013]
- Rhyothemis triangularis* Kirby, 1889 [**M**: this publication; **L**: Butler & Kohler 2013]
- Tetrathemis irregularis hyalina* Kirby, 1889 [**L**: Butler & Kohler 2013]
- Tholymis tillarga* (Fabricius, 1798) [**M**: Asahina 1966; **L**: Tsuda & Kitagawa 1987]
- Tramea transmarina euryale* Selys, 1878 [**L**: Tsuda & Kitagawa 1987]
- Trithemis aurora* (Burmeister, 1839) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Butler & Kohler 2013]
- Trithemis festiva* (Rambur, 1842) [**M**: Wahizatul Afzan & Che Salmah 2005; **L**: Tsuda & Kitagawa 1987]
- Trithemis pallidinervis* (Kirby, 1889) [**L**: Tsuda & Kitagawa 1987]
- Tyriobapta torrida* Kirby, 1889 [**M**: this publication; **L**: Butler & Kohler 2013]
- Urothemis signata insignata* (Selys, 1872) [**L**: Butler & Kohler 2013]
- Zygonyx ida* Hagen, 1867 [**M**: Choong et al. 2006 as *Z. iris*]
- Zygonyx iris* Selys, 1869 [**L**: Tsuda & Kitagawa 1987]
- Zyxomma obtusum* Albarda, 1881 [**L**: Butler & Kohler 2013]

Note 1: Laidlaw (1934) recorded *Drepanosticta ? quadrata* (Selys, 1860) from Kedah. It seems likely that this really refers to *D. fontinalis*; we certainly do not think that it refers to *D. quadrata*.

Note 2: Laidlaw (1902a) recorded *Vestalis amoena* from Kedah, in reality this could refer to either *V. amoena* or *V. amethystina*.

Note 3: Inoue (1974) recorded a *Libellago* sp. from Langkawi, in the absence of further information it is not possible to say to what species this record refers.

Note 4: *Ceriagrion coromandelianum* (Fabricius, 1798) was listed from Kedah by Laidlaw (1934); this species is not otherwise known to occur in Malaysia and was not listed in either Lieftinck (1954) or Orr (2005). We note that various authors had identified *C. calamineum* with *C. coromandelianum* until the former was described, so that this record may refer to *C. calamineum*.

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