

ODONATA (INSECTA) FAUNA OF KRAU WILDLIFE RESERVE, PAHANG, MALAYSIA

Chee Yen Choong*

Centre for Insect Systematics, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor

*Corresponding author: cyochoong@ukm.edu.my

ABSTRACT

Records of Odonata collected at sites in Krau Wildlife Reserve, Pahang, in October 2007 and August-September 2013 are presented. A total of 85 species from 14 families were collected. Of these 72 species are the new records for Krau Wildlife Reserve. A new species of *Prodasineura* was collected, and yet to be named. These records are combined with existing records from Krau Wildlife Reserve in literature to produce the checklist of the Odonata known to the reserve. At present 102 species from 14 families are known from Krau Wildlife Reserve.

Keywords: Odonata, Dragonflies, Krau Wildlife Reserve, Pahang, Peninsular Malaysia

INTRODUCTION

Among the states in Peninsular Malaysia, the Pahang state is quite well studied for its Odonata. The main published records of Odonata of Pahang are available for Tasik Bera (Norma-Rashid *et al.* 2001), Tasik Chini (Fadilawati *et al.* 2008), Fraser's Hill (Ng & Choong 2010), Cameron Highlands (Ng *et al.* 2011), Sg Bebar (Dow *et al.* 2012) and Kuala Tahan (Ng *et al.* 2012).

Krau Wildlife Reserve (KWR), adjacent to the well known Taman Negara National Park, Pahang is located in the central part of Peninsular Malaysia. KWR is mainly covered by lowland dipterocarp forest. Sg Krau, Sg Lompat and Sg Teris are the main rivers in KWR. Areas in KWR are frequently flooded during rainy season. Sporadic Odonata records for KWR can be found in Norma-Rashid *et al.* (1996) and Hamalainen (2000). Records for KWR in Norma-Rashid *et al.* (1996) were from Sg Krau, Sg Lompat, Sg Perlok and Sg Pian whereas records in Hamalainen (2000) were from Perlok Pos, Bukit Rengit and Kuala Lompat. A total of 30 species were reported in these two published literatures.

I carried out short samplings in KWR on three occasions, once in 2007 and twice in 2013. Here I present the results of my survey together with a summary of the available literature records to produce a list of Odonata known from KWR.

METHODOLOGY

Sampling was done on three occasions at various sites in KWR – 23-25 October 2007 at Kuala Gandah and Institut Biodiversiti (IBD); 21-27 August 2013 at Kuala Lompat Pos, Sg Pian, Sg Teris and IBD; and 22-26 September 2013 at Sg Serlok and IBD. Sampling in October 2007 was done during a short visit and retreat to KWR, and the samplings in August and September 2013 were done during the KRW inventory programme by PERHILITAN. Adult Odonata were collected using handheld nets. Specimens were preserved with acetone treatment and drying in silica gel. The family level taxonomy used here follows that in Orr (2005). The latest taxonomic treatment of families Megapodagrionidae and Argiolestidae (Kalkman & Theischinger 2013) is adopted.

The material collected is held in either the Centre for Insect Systematics at Universiti Kebangsaan Malaysia (UKM) and the Institut of Biodiversiti (IBD) at Lanchang, Pahang. Specimens were identified to species under a microscope, by reference to the relevant literatures, and direct comparison with materials from other places.

RESULTS

A list of all species observed and collected in KRW by me (columns C-G), and records that I have found in previously published literatures (columns A and B), is presented in Table 1. A total of 85 Odonata species were observed and collected on the three occasions in 2007 and 2013. Of these, 72 species (marked with * in Table 1) are new records for KWR. *Prodasineura autumnalis* identified in Norma-Rashid *et al.* (1996) is treated here as *Prodasineura humeralis*. *Prodasineura humeralis* and *P. autumnalis* are very close to each other, however, only *P. humeralis* occurs in Peninsular Malaysia (Orr 2005). The *Amphicnemis* sp. female specimen in Hamalainen (2000) has been later identified as *Teinobasis cryptica* by Dow (2010).

DISCUSSION

At present 102 species of Odonata are now known to occur in KWR. Of these, 85 species were collected/observed during the three occasions in October 2007 and August-September 2013, and 72 species are first confirmed records from KWR. *Rhinagrion viridatum*, *Teinobasis cryptica*, *Megalogomphus sumatranus*, *Orthetrum glaucum* and *Zyxomma obtusum* listed in Norma-Rashid *et al.* (1996), and *Lestes praecellens* and *Amphicnemis ecornuta* listed in Hamalainen (2000) were not collected by me during the three sampling occasions. All these species are common species in Peninsular Malaysia except *Teinobasis cryptica*, *Lestes praecellens* and *Amphicnemis ecornuta*. The *T. cryptica* record from KRW is the single record of this species known from Peninsular Malaysia (Dow 2010). *Pantala flavescens* and *Rhodothemis rufa* were observed (not collected) at Sg Pian. These two species are common and easy to be identified on spot.

Prostosticta curiosa was found in abundant at Sg Serlok site. It was spotted foraging at forest floor vegetation not far from the river. The first record of *P. curiosa* in Peninsular Malaysia was from Sekayu, Terengganu (Choong *et al.* 2012). KWR is the second site for *P. curiosa* in Peninsular Malaysia. *Burmagomphus arthuri* is a rare species, and only a handful of specimens are known in collections (Dow 2009). So far, all the *B. arthuri* specimens known from Peninsular Malaysia are from KWR. The first record of *Burmagomphus insularis* in Peninsular Malaysia is from Taman Negara Kuala Koh, Kelantan (Choong 2007). KWR is the second site for *B. insularis* in Peninsular Malaysia. *Argiocnemis* sp. collected at various sites in KWR is a widespread species in Peninsular Malaysia and Borneo, and its status has been discussed in Ng *et al.* (2011). A new species of *Prodasineura* was collected from Sg Teris. This new species is allied to *Prodasineura tenebricosa* (Lieftinck, 1937) found in Borneo. The description of this new species will appear elsewhere. Other interesting and uncommon species collected from KWR are *Aciagrion hisopa*, *Drepanosticta sharpi*, *Gynacantha limalis*, *Libellago semiopaca*, *Neruoasis longipes*, *Prodasineura interrupta*, *Rhyothemis plutonia* and *Teinobasis ruficollis*.

My collecting data and that of Norma-Rashid *et al.* (1996) and Hamalainen (2000) are from the southern (Kuala Gandah, IBD, Sg Rengit and Sg Teris), western (Sg Pian, Sg Lompat, Sg Krau and Sg Perlok) and central (Sg Serlok) parts of KWR. The eastern and northern parts of KWR have yet to be explored for Odonata, particularly the highland area of Gunung Benum. The species tally for KWR is expected

to increase once these areas have been surveyed. It is interesting to note that new species descriptions of recent years in Peninsular Malaysia are from the state of Pahang (Dow *et al.* 2007, 2010). The discovery of the unnamed *Prodasineura* species from Sg Teris in KWR has strengthened the fact that the state of Pahang may still house many notable species yet to be discovered.

CONCLUSION

At present the Odonata checklist of KWR has 102 species, and a few species (*Amphicnemis ecornuta*, *Burmagomphus arthuri*, *B. insularis*, *Prodasineura* sp., *Teinobasis ruficollis* and *T. cryptica*) are novel species to Peninsular Malaysia. This checklist provides a basis for future reference and study of Odonata diversity of Peninsular Malaysia.

ACKNOWLEDGEMENTS

I am grateful to PERHILITAN for inviting me to the KRW inventory programme, and to Rory Dow for assistance to confirm the identity of a few specimens.

REFERENCES

- Fadilawati, A., Choong, C.Y., Ng, Y.F. & Zainal Abidin, A.H. (2008). Kepelbagaian pepatung (Odonata) di kawasan Tasik Chini Pahang, Malaysia. *Proceedings of the 10th MSAB Symposium, Kuching 2008*. pp. 809-813.
- Choong, C.Y. (2007). Dragonflies (Insecta: Odonata) of Kuala Pertang and Kuala Koh at Taman Negara National Park Kelantan. *Journal of Wildlife & Parks*, **24**: 57-61.
- Choong, C.Y., Ng, Y.F. & Dow, R.A. (2012). Odonata (Insecta) from three forests of central Terengganu, Malaysia. *Malayan Nature Journal*, **64**(2): 95-104.
- Dow, R.A. (2009). *Burmagomphus arthuri*. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.1. Available from www.iucnredlist.org, version (01/2013), downloaded on 07 November 2013.
- Dow, R.A. (2010). A review of the *Teinobasis* of Sundaland, with the description of *Teinobasis cryptica* sp. nov. from Malaysia (Odonata: Coenagrionidae). *International Journal of Odonatology*, **13**: 205-230.
- Dow, R.A., Choong, C.Y. & Ng, Y.F. (2010). A review of the genus *Amphicnemis* in Peninsular Malaysia and Singapore, with description of two new species (Odonata: Zygoptera: Coenagrionidae). *Zootaxa*, **2605**: 45-55.
- Dow, R.A., Choong, C.Y. & Orr, A.G. (2007). Two new species of *Chalybeothemis* from Malaysia, with a redefinition of the genus (Odonata: Libellulidae). *International Journal of Odonatology*, **10**(2): 171-184.
- Dow, R.A., Ng, Y.F. & Choong, C.Y. (2012). Odonata of Sungai Bebar, Pahang, Malaysia, with four species recorded for the first time from mainland Asia. *Journal of Threatened Taxa*, **4**(3): 2417-2426.

- Hamalainen, M. (2000). Ten species added to the list of Peninsular Malaysian Odonata. *Notulae odonatologicae*, **5**: 53-55.
- Kalkman, V.J. & Theischinger, G. (2013). Generic revision of Argiolestidae (Odonata), with four new genera. *International Journal of Odonatology*, **16(1)**: 1-52.
- Ng, Y.F. & Choong, C.Y. (2010). Dragonflies (Odonata) of Fraser Hill, Pahang. In *Bio-Kejuruteraan Penilaian Ekosistem dan Spesies 2010 Bukit Fraser*: (Adam, J.H., Gasim, M.B., Sakawi, Z., Choy, E.A., Rahman, Z.A., Tambi, N. & Juhari, M.A.A. eds.) , pp. 45-50. Universiti Kebangsaan Malaysia: Bukit Fraser Research Centre. .
- Ng, Y.F., Choong, C.Y. & Dow, R.A. (2012). Odonata records from Kuala Tahan, Pahang, Peninsular Malaysia in December 2010. *Notulae odonatologicae*, **7(9)**: 77-88.
- Ng, Y.F., Dow, R.A. & Choong, C.Y. (2011). New records of Odonata (Insecta) from the Cameron Highlands, with first records of two species for Malaysia. *Journal of Science & Technology in the Tropics* **7**: 9-16.
- Norma-Rashid, Y., Mohd-Sofian, A. & Zakaria-Ismail, M. (2001). Diversity and distribution of Odonata (dragonflies and damselflies) in the fresh water swamp lake Tasek Bera, Malaysia. *Hydrobiologia*, **459**: 135-146.
- Norma-Rashid, Y., Zakaria-Ismail, M. & Hamalainen, M. (1996). Odonata fauna from Kelantan, Pahang and Muar drainages, Malaysia. In *Conservation and Faunal Biodiversity in Malaysia* (Zainal Abidin, A.H. & Zubaid, A. eds.), pp. 129-139. . Penerbit Universiti Kebangsaan Malaysia, Bangi. .
- Orr, A.G. (2005). Dragonflies of Peninsular Malaysia and Singapore. Kota Kinabalu: Natural History Publication (Borneo).

51	* <i>Prodasineura notostigma</i> (Selys, 1860)	✓				✓
52	* <i>Prodasineura</i> sp.					✓
Family Aeshnidae						
53	* <i>Gynacantha basiguttata</i> Selys, 1882	✓				✓
54	* <i>Gynacantha limbalis</i> Karsch, 1892					✓
Family Gomphidae						
55	<i>Burmogomphus arthuri</i> Lieftinck, 1953		✓			✓
56	* <i>Burmogomphus williamsoni</i> Forster, 1914				✓	
57	* <i>Burmogomphus insularis</i> Laidlaw, 1914					✓
58	<i>Burmogomphus plagiatus</i> Lieftinck, 1964			✓		✓
59	<i>Gomphidia abbotti</i> Williamson, 1907			✓		
60	* <i>Gomphidictinus perakensis</i> (Laidlaw, 1902)					✓
61	* <i>Ictinogomphus decoratus melaenops</i> (Selys, 1858)				✓	
62	<i>Macrogomphus parallelogramma albardae</i> Selys, 1878			✓		✓
63	<i>Megalogomphus sumatranus</i> (Kruger, 1899)			✓		
64	* <i>Microgomphus chelififer</i> Selys, 1858					✓
Family Libellulidae						
65	* <i>Acisoma panorpoides</i> Rambur, 1842	✓			#	✓
66	* <i>Aethriamanta brevipennis</i> (Rambur, 1842)					✓
67	* <i>Aethriamanta gracilis</i> (Brauer, 1878)	✓				
68	* <i>Agrionoptera insignis</i> (Rambur, 1842)					✓
69	<i>Brachydiptax chalybea</i> Brauer, 1868			✓		
70	<i>Brachydiptax farinosa</i> Kruger, 1902			✓		✓
71	* <i>Brachygonia oculata</i> (Brauer, 1878)			✓		
72	* <i>Brachythemis contaminata</i> (Fabricius, 1793)			✓		✓
73	* <i>Cratilla metallica</i> (Brauer, 1878)					✓
74	* <i>Hydrobasileus croceus</i> (Brauer, 1867)					✓
75	* <i>Indothemis limbata</i> (Selys, 1891)					✓
76	* <i>Lathrecista asiatica</i> (Fabricius, 1798)					✓
77	* <i>Lyriothemis biappendiculata</i> (Selys, 1878)			✓		✓
78	<i>Neurothemis fluctuans</i> (Fabricius, 1793)			✓		✓
79	* <i>Neurothemis fulvia</i> (Drury, 1773)			✓		✓
80	* <i>Neurothemis ramburri</i> (Brauer, 1866)			✓		✓
81	* <i>Onychothemis coccinea</i> Lieftinck, 1953					✓
82	* <i>Onychothemis culminicola</i> Forster, 1904					✓

83	* <i>Orchithemis pruinans</i> (Selys, 1878)						✓
84	* <i>Orchithemis pulcherrima</i> Brauer, 1878	✓		✓			
85	* <i>Orithetrum chrysis</i> (Selys, 1891)	✓			#		#
86	<i>Orithetrum glaucum</i> (Brauer, 1865)		✓				
87	* <i>Orithetrum luzonicum</i> (Brauer, 1868)	✓			#		
88	<i>Orithetrum sabina</i> (Drury, 1770)	✓		✓			
89	<i>Orithetrum testaceum</i> (Burmeister, 1839)	✓		✓			#
90	* <i>Pantala flavescens</i> (Fabricius, 1798)				#		
91	* <i>Rhodothemis rufa</i> (Rambur, 1842)				#		
92	<i>Rhyothemis plutionia</i> Selys, 1883	✓			✓		
93	* <i>Rhyothemis triangularis</i> Kirby, 1889				✓		
94	* <i>Risioptlebia dohrni</i> (Kruger, 1902)						✓
95	* <i>Tetrathemis irregularis hyalina</i> Kirby, 1889					✓	
96	<i>Trithemis aurora</i> (Burmeister, 1839)	✓		✓			
97	<i>Trithemis festiva</i> (Rambur, 1842)	✓			#		
98	* <i>Tyriobapta torrida</i> Kirby, 1889				✓		✓
99	* <i>Urothemis signata insignitata</i> (Selys, 1872)					✓	
100	<i>Zygonyx iris malayanus</i> (Laidlaw, 1902)	✓					✓
101	<i>Zyxomma obtusum</i> Albarida, 1881		✓				
102	* <i>Zyxomma petiolatum</i> Rambur, 1842			✓			✓

δ A – records from Norma-Rashid *et al.* (1996); B – records from Halamainen (2000); C – sampling done on 23-25 October 2007 at Kuala Gandah and IBD; D – sampling done on 21-22 August 2013 at Kuala Lompat Pos; E – sampling done on 23 August 2013 at Sg Pian; F – sampling done on 24 and 21 August 2013 at IBD; G – sampling done on 25-27 August 2013 at Sg Teris; and H – sampling done on 22-26 September 2013 at Sg Serlok.

* New records for KWR

observed