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Previously unpublished Odonata records from Sarawak, Borneo, part VIII: New records from Kapit Division

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Abstract

Odonata recorded during two brief sampling trips to the Kapit Town area in Kapit Division, Sarawak in 2020 are reported on. Seventy nine species were recorded, of which at least six (*Onychargia atrocyana* Selys, 1865, *Ischnura senegalensis* (Rambur, 1842), *Pseudagrion lalakense* Orr & van Tol, 2001, *Megalogomphus borneensis* (Laidlaw, 1914), *Agrionoptera insignis* (Rambur, 1842) and *Hydrobasileus croceus* (Brauer, 1867)) are first records for the division, bringing the total number of Odonata known from the division to 160. Notable records include *Coeliccia kenyah* Dow, 2010, *Teinobasis laidlawi* Kimmins, 1936, *Burmagomphus insularis* Laidlaw, 1914, *Leptogomphus* sp. cf *coomansi* Laidlaw, 1936 and *Macromia callisto* Laidlaw, 1922. Remarks are made on the habitat preferences of *Agrionoptera insignis* and *Camacinia gigantea* (Brauer, 1867). A highly atypical population of *Neurothemis* Brauer, 1867 (species unclear at present) is reported.

Keywords: Odonata, *Agrionoptera*, *Camacinia*, *Neurothemis*, Borneo, Sarawak, Kapit.

Introduction

In 2020 I was able to make two trips to Kapit Town, in the administrative division of the same name, in Sarawak. The first was funded by the Mohamed bin Zayed Species Conservation Fund (MBZSCF), the second by MBZSCF and the International Dragonfly Fund (IDF) and the primary goal of both was to search for several damselfly species as part of an MBZSCF funded project, in particular *Drepanosticta sbong* Dow, 2010, which was originally discovered near to Kapit Town. Unfortunately the first trip, in March, was cut short by the advent of movement restrictions etc. in response to the covid 19 pandemic, resulting in a hasty and difficult exit from Kapit and an extremely stressful and difficult journey back to Kuching. One day was also lost due to a violently upset stomach on my part, probably the result of accidently ingesting some river water on the previous day. The second was in June/July and although only of six days duration, was more successful, although frustratingly none of the target species were found in the area. Additionally since many long houses had by that time stopped allowing outsiders into their lands, some promising looking locations could not be investigated. I had hoped to make additional trips to the area in 2021, and for this reason held off from reporting on the 2020 trips, but the pandemic situation rendered additional surveys impossible. Therefore the results of the 2020 surveys are reported here.

Locations

Fig. 1 shows the location of Kapit in Borneo. Fig. 2 shows an overview of the 2020 sampling locations.

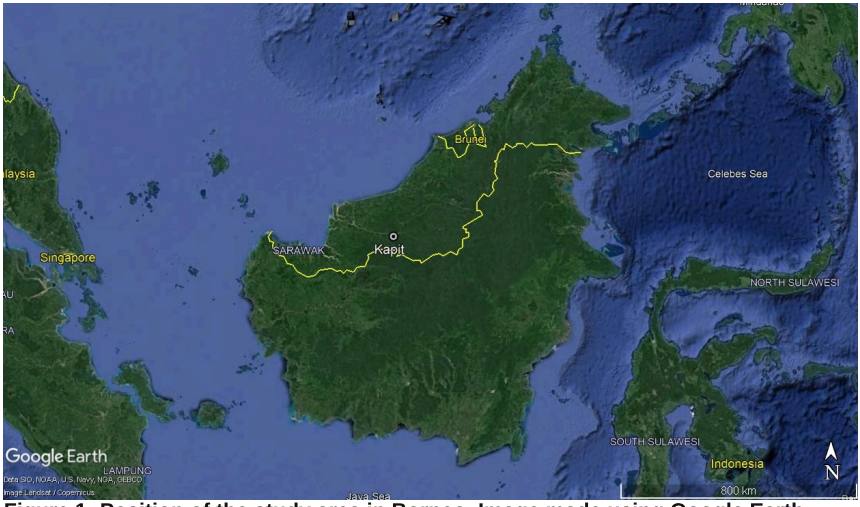

Figure 1: Position of the study area in Borneo. Image made using Google Earth.

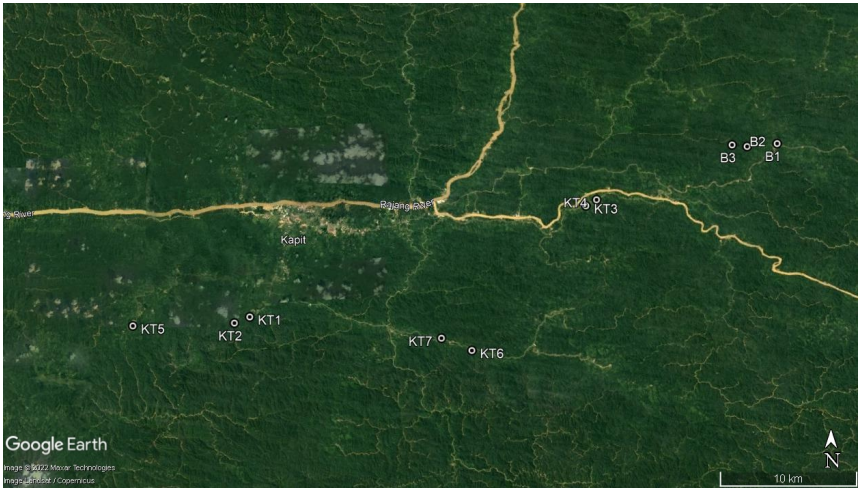

Figure 2: Overview of 2020 sampling sites. Image made using Google Earth.

Kapit Town area locations:

KT1. Sebabei Recreational Park, near Kapit Town. This location was reported on as K2 in Dow, Reels & Ngiam (2015).

a. Sungai Sebabei, sampled between 1.945N, 112.905E and 1.941N, 112.909E, ca. 80-125m a.s.l. This is a clear running stream, disturbed downstream (more so than it

was on previous visits, now some areas around the stream have been cleared for small farms), good quality, mostly old growth forest dominating upstream.

b. Tributaries to Sungai Sebabei

KT2. Sungai Kapit above Rumah Bundong, the last longhouse on the stream. This stream was visited in 2007 (K3 in Dow, Reels & Ngiam (2015)), when water levels were relatively high and the water turbid, and the weather was overcast, the sampled part of the mainstream (all fairly near to the longhouse) was relatively open at the time but is far less so now with a good second growth filling in the gaps. Further upstream there is logged old growth forest. When visited in 2020 weather conditions were good early in the morning and the stream was only slightly turbid and mostly shallow.

a. Mainstream, sampled from 1.947N, 112.903E to 1.941N, 112.895E, ca. 70-100m a.s.l.

b. Tributaries.

KT3. Sungai Sepako, a stream crossed by the road leading to the bridge over the Baleh River. Smaller than Sungai Kapit, second growth and disturbed old growth forest. It appears that this is actually the same stream referred to as Sungai Sbong (and which should have been Sebong, a confusion caused by the almost silent “e” and my lack of any knowledge of the Iban language at the time I first visited the site) in Dow (2010), Dow, Reels & Ngiam (2015) and some other taxonomic publications. I have coordinates taken in 2007 that are between 1-2 km from any taken in 2020 but I strongly suspect this is a problem with the 2007 coordinates, especially since I could find no stream at all coinciding with my 2007 coordinates. Moreover the place where Sungai Sepako is crossed by the road fits with my memory of Sungai Sebong, although there are now some buildings there. The person who took Graham Reels and myself to the site in 2007 was not originally from the area and it seems likely that he had confused the names of streams, someone at the longhouse whose land the stream runs through told my driver that Sungai Sebong is a tributary far upstream on Sungai Sepako.

a. Mainstream and its major left (going upstream) branch, sampled from 2.018N, 113.126E to 2.013N, 113.129E, ca. 40-80m a.s.l.

b. Smaller tributaries on the left branch.

KT4. A pond by the road, open facing the road but otherwise surrounded by forest, only sampled in the late afternoon, not far from location KT3 (2.022N, 113.133E, 49m a.s.l.)

KT5. The Ulu Yong area. This area was sampled in 2009 and 2010 (location K5 in Dow, Reels & Ngiam (2015)) when the water in Sungai Yong was turbid (but clear in the sampled tributaries), in 2020 the water was almost completely clear. Second growth and disturbed old growth forest. Fig. 3 shows a low gradient section of one of the tributaries here.

a. Sungai Yong, sampled from 1.939N, 112.828E to 1.933N, 112.822E, ca. 70-95m a.s.l.

b. Tributaries.

KT6. Sungai Pinih in Ulu Sut area. Disturbed old growth forest.

a. Mainstream, sampled from 1.923N, 113.051E to 1.913N, 113.044E, ca. 70-190m a.s.l.

b. Tributaries.

KT7. Sungai Ngau Mit in Ulu Sut area. Disturbed old growth forest becoming almost pristine upstream, canopy almost entirely closed, very few sunny areas.

a. Mainstream, sampled from 1.931N, 113.031E to 1.939N, 113.033E, ca. 60-95m a.s.l.

Figure 3: A low gradient section of a tributary of Sungai Yong.

b. Tributaries.

Other side of the Baleh from Kapit Town. These locations were visited on a day when the weather was very poor in the morning, and although potentially interesting stream sites were present in the same area, it was decided that these pond sites would be more productive given the weather conditions.

B1. Rumah Nawin area on other side of the Baleh River from Kapit Town:

a. Ponds at longhouse (2.059N, 113.252E, ca. 39m a.s.l.)

b. Pond in forest on road to longhouse, fed by tiny stream (2.057N, 113.232E, ca. 108m a.s.l.)

c. Forest edge ponds on road to longhouse (2.058N, 113.222E, ca. 99m a.s.l.)

d. Other ponds, formed by dammed streams, on road to longhouse, largely open but with some shady marshy areas at rear on one of them, coordinates not recorded.

Species recorded

In March 2020 all specimens were collected by myself, in June-July 2020 specimens were collected by my driver/field assistant Duncan Jemut and myself. An * after the species authority indicates a first record from Kapit Division.

Zygoptera

Platystictidae

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

KT1b – ♂, ♀, 4.vii.2020. **KT3b** – ♀, 18.iii.2020. **KT6b** – ♂, ♀♀, 1.vii.2020; ♀, 2.vii.2020.

2. *Drepanosticta dulitensis* Kimmins, 1936

KT6b – ♂♂, 1.vii.2020.

3. *Drepanosticta rufostigma* (Selys, 1886)

KT1b – ♂, 4.vii.2020. **KT3b** – ♂♂, 18.iii.2020. **KT5b** – ♂, 29.vi.2020. **KT6b** – ♂♂, ♀, 1.vii.2020; ♂♂, 2.vii.2020. **KT7b** – ♂♂, 3.vii.2020.

4. *Drepanosticta versicolor* (Laidlaw, 1913)

KT1b – ♂♂, ♀, 4.vii.2020. **KT3b** – ♂♂, 18.iii.2020. **KT5b** – ♂♂, 29.vi.2020. **KT6b** – ♂♂, ♀, 1.vii.2020; ♂, 2.vii.2020. **KT7b** – ♂♂, 3.vii.2020.

5. *Telosticta longigaster* Dow & Orr, 2012

KT1b – ♂♂, ♂+♀, 4.vii.2020. **KT3b** – ♂♂, 18.iiii.2020. **KT6b** – ♂♂, ♀, 1.vii.2020; ♂♂, ♀, 2.vii.2020. **KT7b** – ♂♂, ♀♀, 3.vii.2020.

Euphaeidae

6. *Dysphaea dimidiata* Selys, 1853

KT2a – ♂, 16.iii.2020. **KT5a** – ♂, 29.vi.2020.

7. *Dysphaea ulu* Hämäläinen, Dow & Stokvis, 2015

KT1a – ♂, 4.vii.2020. **KT7a** – ♂, 3.vii.2020.

8. *Euphaea impar* Selys, 1859

KT1a – ♂, 4.vii.2020. **KT2b** – ♂♂, 16.iii.2020. **KT3a** – ♂, 18.iii.2020. **KT6b** – ♂, 1.vii.2020; ♂, 2.vii.2020. **KT7b** – ♂, 3.vii.2020.

9. *Euphaea subcostalis* Selys, 1873

KT1a – ♂, 4.vii.2020. **KT2b** – ♂♂, 16.iii.2020. **KT3a** – ♂♂, 18.iii.2020. **KT5a** – ♂, 29.vi.2020. **KT6a** – ♂♂, 1.vii.2020. **KT7a** – ♂, 3.vii.2020.

10. *Euphaea tricolor* Selys, 1859

KT2a – ♂♂, 16.iii.2020. **KT6a** – ♀, 1.vii.2020; ♂, 2.vii.2020.

Devadattidae

11. *Devadatta somoh* Dow, Hämäläinen & Stokvis, 2015

KT3b – ♂, 18.iii.2020. **KT5b** – ♂, 29.vi.2020. **KT6b** – ♂♂, 1.vii.2020; ♂, 2.vii.2020.

Philosinidae

12. *Rhinagrion borneense* (Selys, 1886)

KT1a – ♂♂, 4.vii.2020. **KT3a** – ♂, 18.iii.2020. **KT7a** – ♂♂, 3.vii.2020. **B1b** – ♂, 30.vi.2020.

Argiolestidae

13. *Podolestes orientalis* Selys, 1862

KT1a – ♂ (rock pool beside stream), 4.vii.2020. **KT2a** – ♂♂ (pools beside stream), 16.iii.2020. **KT3a** – ♂ (pool beside stream), 18.iii.2020.

Calopterygidae

14. *Neurobasis longipes* Hagen, 1887

KT1a – ♂, 4.vii.2020. **KT2a** – ♂, 16.iii.2020. **KT3a** – ♂, 18.iii.2020. **KT5a** – ♂, ♀, 29.vi.2020. **KT6a** – ♂, ♀♀, 1.vii.2020; ♂, ♀, 2.vii.2020. **KT7a** – ♂, ♀♀, 3.vii.2020.

15. *Vestalis amaryllis* Lieftinck, 1965

KT2b – ♂♂, 16.iii.2020. **KT5b** – ♂, 29.vi.2020.

16. *Vestalis amoena* Hagen in Selys, 1853

KT1a – ♂♂, 4.vii.2020. **KT2a** – ♂♂, 16.iii.2020. **KT2b** – ♂♂, 16.iii.2020. **KT3a** – ♂♂, 18.iii.2020. **KT5a** – ♂♂, 29.vi.2020. **KT6a** – ♂♂, 1.vii.2020. **KT7a** – ♂♂, 3.vii.2020.

17. *Vestalis atropha* Lieftinck, 1965

KT1a – ♂♂, 4.vii.2020. **KT6b** – ♂, 1.vii.2020.

18. *Vestalis beryllae* Laidlaw, 1915

KT5b – ♂, 29.vi.2020.

Chlorocyphidae

19. *Heliocypha biseriata* (Selys, 1859)

KT1b – ♂, 4.vii.2020. **KT2a** – ♂♂, 16.iii.2020. **KT2b** – ♂♂, 16.iii.2020. **KT3a** – ♂♂, 18.iii.2020. **KT5a** – ♂♂, 29.vi.2020. **KT6a** – ♂♂, 1.vii.2020; ♀, 2.vii.2020. **KT7a** – ♂♂, 3.vii.2020.

20. *Libellago stictica* (Selys, 1859)

KT6a – ♂♂, 2.vii.2020.

21. *Rhinocypha aurofulgens* Laidlaw, 1931

KT5a – ♂♂, 29.vi.2020. **KT6a** – ♂♂, 1.vii.2020; ♂, 2.vii.2020.

Platycnemididae

22. *Coeliccia borneensis* (Selys, 1886)

KT1b – ♂♂, ♀, 4.vii.2020. **KT2b** – ♂♂, 16.iii.2020. **KT3b** – ♂♂, 18.iii.2020. **KT6b** – ♂, ♀, 2.vii.2020. **KT7b** – ♂♂, 3.vii.2020.

23. *Coeliccia cyaneothorax* Kimmins, 1936

KT6a – ♂♂, ♂+♀, 1.vii.2020. **KT6b** – ♀, 1.vii.2020. **KT7a** – ♂, 3.vii.2020.

24. *Coeliccia kenyah* Dow, 2010

KT7b – ♂, 3.vii.2020.

25. *Coeliccia nigrohamata* Laidlaw, 1918

KT1b – ♂, 4.vii.2020. **KT2b** – ♂♂ (pools beside tributary), 16.iii.2020. **KT3b** – ♂♂, 18.iii.2020. **KT5b** – ♂♂, 29.vi.2020. **KT6b** – ♂, 1.vii.2020; ♂, 2.vii.2020. **KT7a** – ♂♂ (at rock pools beside stream), 3.vii.2020. **B1b** – ♂♂, 30.vi.2020.

26. *Copera vittata* (Selys, 1863)

    KT2b – ♂ (pool beside stream), 16.iii.2020. **B1b** – ♂♂, ♂+♀, 30.vi.2020.

27. *Onychargia atrocyana* Selys, 1865*

    B1d – ♂, 30.vi.2020.

28. *Prodasineura dorsalis* (Selys, 1860)

    KT2b – ♂, ♂+♀, 16.iii.2020. **KT3b** – ♂, 18.iii.2020. **KT6b** – ♀, 2.vii.2020.

29. *Prodasineura hosei* (Laidlaw, 1913)

    KT3a – ♂♂, 18.iii.2020. **KT6b** – ♂, ♀, 2.vii.2020. **KT7a** – ♂♂, 3.vii.2020.

30. *Prodasineura hyperythra* (Selys, 1886)

    KT2b – ♂ (pool beside stream), 16.iii.2020. **KT7b** – ♂, 3.vii.2020.

31. *Prodasineura verticalis* (Selys, 1860)

    KT2a – ♂, 16.iii.2020. **KT5a** – ♂♂, 29.vi.2020. **KT6a** – ♀, 1.vii.2020; ♂, 2.vii.2020.

Coenagrionidae

32. *Agriocnemis femina* (Brauer, 1868)

    B1a – ♂♂, 30.vi.2020.

33. *Argiocnemis* sp.

    KT5a – ♀, 29.vi.2020. **B1c** – ♂, 30.vi.2020.

34. *Ceriagrion cerinorubellum* (Brauer, 1865)

    KT4 – ♂, 18.iii.2020.

35. *Ischnura senegalensis* (Rambur, 1842)*

    B1a – ♀, 30.vi.2020.

36. *Pseudagrion lalakense* Orr & van Tol, 2001*

    B1d – ♂♂, ♂+♀, 30.vi.2020.

37. *Pseudagrion perfuscatum* Lieftinck, 1937

    KT2a – ♂, 16.iii.2020. **KT3a** – ♂, 18.iii.2020. **KT5a** – ♂, 29.vi.2020.

38. *Stenagrion dubium* (Laidlaw, 1912)

    KT1b – ♂♂, 4.vii.2020. **KT3b** – ♂, 18.iii.2020. **KT6b** – ♂♂, 1.vii.2020; ♂, 2.vii.2020. **KT7b** – ♀, 3.vii.2020.

39. *Teinobasis laidlawi* Kimmins, 1936

    B1b – ♂♂, 30.vi.2020.

40. *Xiphiagrion cyanomelas* Selys, 1876 A

    See Dow et al. (2021) for comments on the two forms currently treated as *X. cyanomelas*

in Sarawak. Only the commoner, lowland form (form A) was found in the Kapit Town area in 2021.

B1d – ♂♂, ♀, ♂+♀, 30.vi.2020.

Anisoptera

Aeshnidae

41. *Indaeschna grubaueri* (Förster, 1904)

KT2b – ♂ (pool beside stream), 16.iii.2020.

Gomphidae

42. *Burmagomphus insularis* Laidlaw, 1914

The male from location **KT2b** (an atypically small stream for the species in my experience) was extracted, still alive, from a spider's web strung across the stream.

KT2b – ♂, 16.iii.2020. **KT7a** – ♂, 2.vii.2020.

43. *Gomphidia maclachlani* Selys, 1873

KT2a – ♂, 16.iii.2020.

44. *Ictinogomphus decoratus melaenops* (Selys, 1858)

B1a – ♂♂, 30.vi.2020. **B1d** – ♂, 30.vi.2020.

45. *Leptogomphus* sp. cf *coomansi* Laidlaw, 1936

KT3a – ♂ (teneral), 18.iii.2020.

46. *Megalogomphus borneensis* (Laidlaw, 1914)*

KT5a – ♂, 29.vi.2020.

Macromiidae

47. *Epophthalmia vittigera* (Rambur, 1842)

B1a – ♂, 30.vi.2020. **B1c** – ♂, 30.vi.2020.

48. *Macromia callisto* Laidlaw, 1922

KT5a – ♂, 29.vi.2020.

49. *Macromia ?corycia* Laidlaw, 1922

A single female, differing in some respects from typical *M. corycia* females.

KT2a – ♀, 16.iii.2020.

50. *Macromia cydippe* Laidlaw, 1922

KT5a – ♂, 29.vi.2020.

Libellulidae

51. *Aethriamanta gracilis* (Brauer, 1878)

KT4 – ♂, 18.iii.2020. **B1a** – ♂♂, 30.vi.2020.

52. *Agrionoptera insignis* (Rambur, 1842)*

As noted in Dow et al. (2021) this species is sometimes abundant at forest edge ponds in the interior of Sarawak, this was the case at location B1c reported here. It is interesting to note that Lieftinck (1954) stated “A littoral species, very abundant in the mangrove scrub and coastal swamps; rarely found inland.” My own experience increasingly contradicts Lieftinck’s ideas on the habitat of this species, which I find at least as often, and sometimes more abundant, inland than at the coast. In part this might be due to differences in habitat between Bornean populations and those in Java which Lieftinck would have been most familiar with, but it is also likely that simple “sampling error” and jumping to conclusions based on limited data played a large role and is a good illustration of how much data is needed (at least in some cases) before definitive statements on habitat requirements can be made. Of course an argument could be made that Lieftinck’s statement is basically sound but that this species has spread inland close to major rivers (which is the case with the sites reported here) in the low lying parts where there is, or was, much swampy habitat in the flood plain of the river, spreading from this swampy habitat to ponds where there is sufficient shade to provide similar conditions. Personally I find such arguments somewhat contrived, and the fact that the species has been found in areas such as Long Banga in the upper Baram (Dow et al. 2021), far above the point where the rapids start to appear on the major rivers, militates against such an argument, but even now there is insufficient data from the deep interior of Borneo to sensibly perform any analysis that might be able to completely settle the issue. It is worth noting that my own experiences with this species outside of Borneo do as much to contradict to support Lieftinck’s statement as they do to support it.

B1a – ♂, 30.vi.2020. **B1b** – ♂♂, 30.vi.2020. **B1c** – ♂♂, 30.vi.2020.

53. *Brachydiplax chalybea* Brauer, 1868

KT4 – ♂, 18.iii.2020. **B1a** – ♂, 30.vi.2020. **B1c** – ♂♂, 30.vi.2020.

54. *Camacinia gigantea* (Brauer, 1867)

Similarly to *Agrionoptera insignis* discussed above, Lieftinck (1954) states “Chiefly a littoral species, breeding in mangrove swamps, shady lagoons and ponds. … but rarely found inland.” As with *A. insignis*, my own data and experience increasingly contradict Lieftinck’s statement, although in this case my earlier experiences with the species actually seemed to support it, in fieldwork in Sarawak from 2005 to 2008 I found this species at only three sites, at two of which, both coastal, it was common and at the third (inland) only a single female was found. This data gave me no reason to doubt Lieftinck’s statement. From 2009-2017 I only found the species at low densities (one or two individuals per site) at three additional locations, although these were all inland sites rather little work was done near the coast in these years and given the low densities at the inland sites the data still did not seem terribly at odds with Lieftinck’s statement. It has only been since 2018 that I have found the species frequently, mostly at inland sites and abundant at many of these sites (it is noteworthy that even in 2021, a year in which the covid 19 pandemic had an even greater impact on field work in Sarawak than in 2020, so that little could be done, I found the species at five sites

in central and northeastern Sarawak, four of which are decidedly inland). It could be argued that the species has become more common in Sarawak in recent years but I suspect that in this case the increase in number of records is largely an artefact of sampling effort and location choice.

KT4 – ♂, 18.iii.2020. **B1c** – ♂♂, 30.vi.2020.

55. *Cratilla metallica* (Brauer, 1878)

KT1a – ♂ (rock pool beside stream), 4.vii.2020. **KT6a** – ♀, 1.vii.2020.

56. *Diplacodes trivialis* (Rambur, 1842)

B1a – ♂♂, 30.vi.2020.

57. *Hydrobasileus croceus* (Brauer, 1867)*

B1a – ♂, 30.vi.2020.

58. *Lyriothemis biappendiculata* (Selys, 1878)

KT7b – ♂ (in muddy seepage), 3.vii.2020.

59. *Neurothemis fluctuans* (Fabricius, 1793)

B1b – ♂♂, 30.vi.2020. **B1c** – ♂♂, 30.vi.2020. **B1d** – ♂♂, 30.vi.2020.

60. *Neurothemis terminata* Ris, 1911

B1a – ♂, 30.vi.2020.

61. *Neurothemis* sp. (*?)

This was a surprising discovery. Three *Neurothemis* species have been recorded from Sarawak and all but *N. ramburii* (Brauer, 1866) have been recorded from Kapit Division, and all can be consistently distinguished from each other by the pattern of dark marks laterally on the abdomen (see Seehausen & Dow 2016). In 2020 atypical male *Neurothemis* were collected at three of the sites reported on here (with typical *N. terminata* found at one site close to two of those where the atypically red individuals were found, and *N. fluctuans* also present at one of the sites where they were found). These individuals have almost entirely red abdomens, red wing markings reaching to the distal end of the pterostigma at the costa in both pairs of wings (in this respect like most *N. terminata* from Sarawak) but lacking the straight termination of the red in the hindwing typical of *N. terminata*, instead with a slight curve toward the body. The wing markings of *N. ramburii* are variable (which had led to misidentifications in the past) but those of these individuals would be extreme for *N. ramburii* (or *N. fluctuans*) and highly unusual for *N. terminata*. However it is the very reduced black abdominal markings on the abdomen that is most striking in these individuals. It is not yet clear whether these individuals merely represent a local form of one of *N. fluctuans*, *N. ramburii* or *N. terminata* (or even hybrids, although one might ask why hybrids between any of the species known from Sarawak would have such reduced black markings) or are actually an additional species; although the latter possibility seems surprising it cannot be ruled out given how consistent the abdominal markings are in all other populations I have seen in Sarawak (and more widely in Sundaland, but see below). Molecular data are likely to be illuminating in this case, but there is little prospect of obtaining such data for this Kapit form in the short term. It is worth remarking here

that I have a single male *Neurothemis* from southwest Sarawak that also has an almost entirely red abdomen laterally, but that otherwise fits well with *N. ramburii*; I had assumed that this solitary example was simply an abnormal example of *N. ramburii* and unless further such examples are found in the southwest I see no reason to depart from this view in this particular case.

KT4 – ♂, 18.iii.2020. **B1a** – ♂, 30.vi.2020. **B1c** – ♂, 30.vi.2020.

62. *Onychothemis coccinea* Lieftinck, 1953

KT2a – ♂, 16.iii.2020. **KT5a** – ♂, 29.vi.2020. **KT6a** – ♂, 1.vii.2020; ♂, 2.vii.2020.

63. *Orthetrum chrysis* (Selys, 1891)

KT1a – ♂, 4.vii.2020. **KT2b** – ♂, 16.iii.2020. **KT4** – ♂, 18.iii.2020. **B1d** – ♂, 30.vi.2020.

64. *Orthetrum glaucum* (Brauer, 1865)

KT2a – ♂, 16.iii.2020. **KT5a** – ♂, 29.vi.2020. **B1b** – ♂, 30.vi.2020.

65. *Orthetrum pruinosum schneideri* Förster, 1903

KT2a – ♂, 16.iii.2020. **KT5a** – ♂ (pool beside stream), 29.vi.2020. **KT6a** – ♂, 1.vii.2020.

66. *Orthetrum sabina* (Drury, 1773)

B1a – ♂, 30.vi.2020.

67. *Orthetrum testaceum* (Burmeister, 1839)

B1a – ♂, 30.vi.2020. **B1c** – ♂, 30.vi.2020.

68. *Pantala flavescens* (Fabricius, 1798)

B1a – ♂, 30.vi.2020.

69. *Rhodothemis rufa* (Rambur, 1842)

KT4 – ♂, 18.iii.2020.

70. *Rhyothemis triangularis* Kirby, 1889

KT4 – ♂, 18.iii.2020. **B1a** – ♂♂, 30.vi.2020. **B1c** – ♂, 30.vi.2020. **B1d** – ♂, 30.vi.2020.

71. *Tetrathemis hyalina* Kirby, 1889

KT2b – ♂♂ (pool beside stream), 16.iii.2020. **KT5a** – ♂ (pool beside stream), 29.vi.2020. **KT7a** – ♂ (pool beside stream), 3.vii.2020. **B1a** – ♂, 30.vi.2020. **B1b** – ♂, 30.vi.2020. **B1c** – ♂, 30.vi.2020. **B1d** – ♂, 30.vi.2020.

72. *Tholymis tillarga* (Fabricius, 1798)

B1d – ♂, 30.vi.2020.

73. *Tramea transmarina euryale* Selys, 1878

B1c – ♂, 30.vi.2020.

74. *Trithemis aurora* (Burmeister, 1839)

B1a – ♂, 30.vi.2020. **B1d** – ♂, 30.vi.2020.

75. *Trithemis festiva* (Rambur, 1842)

KT1a – ♂, 4.vii.2020. **KT5a** – ♂♂, 29.vi.2020.

76. *Tyriobapta torrida* Kirby, 1889

KT2b – ♂♂ (pool beside stream), 16.iii.2020. **KT7a** – ♂ (pool beside stream), 3.vii.2020. **B1b** – ♂♂, 30.vi.2020.

77. *Zygonyx ida errans* Lieftinck, 1953

KT2a – ♂, 16.iii.2020. KT6 – ♂, ♀, 1.vii.2020.

78. *Zyxomma obtusum* Albarda, 1881

Not collected but seen within Kapit Town on many occasions in both the late afternoon and at dusk during both trips made to the town in 2020.

79. *Zyxomma petiolatum* Rambur, 1842

B1b – ♀, 30.vi.2020. **B1c** – ♂, 30.vi.2020.

Discussion

Dow (2021a), with some corrections in Dow (2021b), summarised the Odonata recorded from Kapit Division. With the corrections from Dow (2021b), 154 species of Odonata had been recorded from the division. With the results reported here this rises to 160 (excluding the *Neurothemis* sp. reported above for the time being at least). Other species already known from Kapit Divison had not been recorded from the Kapit Town area before and in particular for four species these are the first records from Kapit Division outside of the Lanjak Entimau Wildlife Sanctuary (*Teinobasis laidlawi*, *Burmagomphus insularis*, *Leptogomphus* sp. cf *coomansi* and *Macromia callisto*). Also, within Kapit Division, *Coeliccia kenyah* had only been recorded from the Belaga area until now, and the record here is another extension to the known range of this species.

The Kapit Town area is now in a period of rapid change. For most of the time that I have been doing research in Sarawak the town was only reachable by boat or a long 4WD drive journey. By 2020 a sealed road linking the town to Sarawak's main road system was almost complete, so that we were able to travel back from Kapit after the July visit by road, with a long detour through an oil palm plantation to avoid the last unfinished portion of the road. Now the road is complete and bus services are operating on it, major expansion of Kapit Town is likely to follow and the state government is pushing for rapid agricultural development in the area. The bridge used to cross the Baleh River in 2020 is also a relatively recent development, and sealed roads are now appearing on the other side of the river. Although these changes make for easier access to the entire area, they will undoubtedly have negative consequences for the forest dwelling Odonata there, making it important to undertake further surveys sooner rather than later.

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