

Records of dragonflies (Odonata) from Kabupaten Asmat and Kabupaten Mappi (Papua, Indonesia)

John Kaize¹ & Vincent J. Kalkman²

¹ d/a Kelompok Entomologi Papua, Kotakpos 1078, Jayapura 99010, INDONESIA
Email: jexluz@yahoo.com

² Nationaal Natuurhistorisch Museum – Naturalis, Postbus 9517, NL-2300 RA Leiden,
THE NETHERLANDS,
Email: vincent.kalkman@ncbnaturalis.nl

Abstract: Records of dragonflies collected at Katan and Senggo (both Kabupaten Mappi) and at Vriendschap River (Kabupaten Asmat) in 2009 are presented. In total 47 species belonging to seven families were collected, the majority of these belong to the Coenagrionidae (14 species) or to Libellulidae (26 species). The collection includes several poorly known species such as *Plagulibasis ciliata* and *Nososticta rangifera*. *Austrocnemis maccullochi* is recorded for Indonesia for the first time. One male of an undescribed *Palaiaargia* is briefly characterized but is not officially described.

Ikhtisar: Hasil survei capung, ditangkap di Katan dan Senggo (Kabupaten Mappi) dan di Sungai Vriendschap (Kabupaten Asmat) pada tahun 2009 disajikan. Seluruhnya 47 spesies mewakili tujuh famili diperoleh, kebanyakannya dari famili Coenagrionidae (14 spesies) atau dari famili Libellulidae (26 spesies). Hasilnya termasuk beberapa spesies yang pengetahuannya miskin seperti *Plagulibasis ciliata* dan *Nososticta rangifera*. *Austrocnemis maccullochi* ditangkap untuk pertama kali di Indonesia. Dari satu jantan dari suatu *Palaiaargia* yang belum dipertelakan diberikan cirri-cirinya secara singkat, tetapi belum resmi diperletakan.

Key-words: New Guinea, distribution.

Introduction

The dragonfly fauna of the southern lowlands of New Guinea is poorly known. Little fieldwork has been conducted in this region and in many cases only the more interesting species have been published. In a recent paper we published information on the dragonflies of Kabupaten Merauke based on material collected in 2007 and 2008 (Kaize & Kalkman, 2009). In that paper the following preliminary conclusions on the dragonfly fauna of the southern lowlands were made:

- The fauna is dominated by species from the families of Coenagrionidae and Libellulidae;

- Compared to other parts of New Guinea the area has probably a lower diversity and holds relatively few endemic species;
- The endemic Australian genera occurring in North Australia are absent from southern New Guinea;
- The genera (largely) endemic for the New Guinean region are rare or absent from southern New Guinea.

In this paper we present new records of dragonflies from three other sites in the southern lowland of New Guinea and compare these with the records from the Merauke area to see if the above mentioned conclusions are valid.

Methods

Fieldwork was conducted by the first author from 12 to 25 July 2009 at Katan and Senggo (both Kabupaten Mappi) and at Vriendschap River (Kabupaten Asmat). Dragonflies were caught using a hand net. Identification of the material was done by the second author. Voucher specimens are stored in the Koleksi Serangga Papua (KSP) with some of the specimens being held in the Nationaal Natuurhistorisch Museum Naturalis, Leiden (RMNH) for further study.

The new records are compared with those from Kabupaten Merauke. All species are divided into three different categories: (1) species also occurring in Australia, (2) species absent from Australia but also occurring outside South New Guinea and (3) species endemic to South New Guinea. Seven species from the genera *Teinobasis*, *Nososticta*, *Palaiargia* and *Papuagrion* were not identified to species level but are tentatively regarded as endemic to South New Guinea as many species of these genera have relatively small distributions.

Results

Table 1 lists the species recorded during the fieldwork. In total 47 species belonging to seven families were collected in Kabupaten Asmat and Mappi. The majority of the species belonged either to the Coenagrionidae (14 species) or to Libellulidae (26 species).

Table 1 also contains records from Merauke as published by Keize & Kalkman, 2009. The material of *Rhyothemis princeps* and *R. regia* from Merauke was not identified to species level and is counted as one species. The *Tramea* sp. from Katan is likely to be one of the two species collected in Merauke but the specimens were not compared. The genus *Tramea* is considered to be represented by two species. This table also shows if a species occurs in Australia, elsewhere in New Guinea or is endemic to South New Guinea.

Notes on selected species

Idiocnemis near *mertoni* – The specimens of *Idiocnemis* closely resemble *I. mertoni* as they have a brown to black body colour, lack pruinosity on thorax and abdomen, have a subtriangular basal protusion on the superior appendages, distal most process of superior appendages more or less acute, median spine between basal and distal process absent, venter of synthorax dark brown and superior appendages pale. In addition to this, the specimens are from the general area where *I. mertoni* occurs. However, the pattern on the dorsum of the synthorax is different with the pale antehumeral stripe about half as wide as the black carinal stripe and abruptly constricted at about two-thirds of the length instead of covering almost the entire dorsum.

Nososticta rangifera – This species was thus far only known from the original description based on material from Ederat along the Digul River by J.M. van Ravenswaay Claasen. In the original description this locality is incorrectly stated to be near Aja Maroe, a locality on the Bird's Head Peninsula, where that collector also did fieldwork. The labels on the type state the specimen to be from 'S. New Guinea, Digoel R., Mapi, Ederat'. The authors have material from both Katan and Vriendschap River and probably this species is widespread in southern New Guinea and probably also occurring in PNG.

Nososticta spec. C – The appendages of the single male are missing. The head is black, with a blue stripe running from eye to eye across the clypeus; the synthorax is black with laterally a blue stripe and a large blue oval spots on dorsum of synthorax bordering mesopleural suture; the wings are hyaline without yellow tinge.

Nososticta spec. A – The face of the male is black with a blue line from eye to eye which is broadly interrupted above the clypeus; the synthorax is black with a blue lateral stripe and a pair of small blue spot on the anterior of the dorsum; the abdomen and the appendages are black; the wings are hyaline without yellow tinge.

Palaiargia spec. nov. – This *Palaiargia* appears to be a distinct new species which can be identified based on the description here provided. The front of face, including labrum, clypeus and anterior part of first segment of antennae, is red as far as the anterior ocelli; the dorsum of the head is black with two large triangular reddish postocular marks; the prothorax and the synthorax are largely black with a reddish antehumeral stripe; the legs, abdomen and appendages are almost completely black; the superior appendages are about half as long as segment 10 and the inferior appendages are about half as long as the superiors.

Plagulibasis ciliata – This monotypic genus is very close to *Teinobasis* and further study might show that it is better to include it in that genus. The species has on the dorsum of the apical half of segment 10 a row of long golden apically directed

hairs, which are placed in such a way that they form a shallow V. This character is unique for damselflies of New Guinea and facilitates an easy identification. Thus far the species was known from three localities in the lowlands of the south of the Indonesian part of New Guinea (Mappi, Najaja and Bivak Island in the Lorentz River). The three new localities show that this species is widespread and is probably also occurs in PNG.

Austrocnemis maccullochi – This species occurs in the south of PNG and in the northern parts of Australia with most records from the Top End of the Northern Territory. In PNG it is only known from the holotype which was collected at the western reach of Lake Murray. The present record is the first for Indonesia. The species of *Austrocnemis* have the habit of resting on floating leaves which makes them difficult to catch. It seems likely that this species is widespread and not uncommon in large parts of South New Guinea.

Discussion

The four preliminary conclusions given by Keize and Kalkman (2009) on the dragonfly fauna of South New Guinea mentioned in the introduction are here discussed separately.

The genera (largely) endemic for the New Guinean region are rare or absent from southern New Guinea

Like the records from Merauke, the new records presented here show that the genera that are largely endemic to New Guinea are poorly represented in South New Guinea. The only genera endemic to New Guinea found during the present study are *Idiocnemis*, *Palaiargia*, *Papuagrion* and *Plagulibasis* with a total of five species. Other endemic genera that in other parts of New Guinea make up a large portion the fauna, such as *Argiolestes*, *Diplacina* and *Huonia*, have not been found. An estimated 55 percent of the approximately 420 described species of New Guinea are dependent on running waters, among which are almost all of the endemic genera and most of the endemic species. The variety of running water habitats in the lowlands of South New Guinea is limited, resulting in a lower diversity of species adapted to running waters and hence a relatively low presence of genera and species endemic to New Guinea.

The fauna is dominated by species from the families of Coenagrionidae and Libellulidae
This statement by Keize & Kalkman (2009) was based on the fact that 36 of the 37 species from the Merauke area belonged to *Coenagrionidae* or *Libellulidae*. Forty of the 47 species recorded from Asmat and Mappi and 54 of 61 species (>85%) when all areas are combined belong to these genera. In the whole of New Guinea only 147 of the 364 species (40%) belong to these families and their relative

proportion in areas outside the lowlands of South New Guinea is in general far lower. The species of these families are mostly found at standing or slowly flowing habitats. Compared with, for instance, the Central Mountain Range, the southern lowlands has a higher diversity of standing waters and a lower diversity of running waters. The first factor results in a higher number of species of Coenagrionidae or Libellulidae while the latter results in a lower number of species of families more adapted to running water. Both result in a relatively high percentage of Coenagrionidae or Libellulidae in South New Guinea.

Compared to other parts of New Guinea the area has probably a lower diversity and holds relatively few endemic species

The absence of species of running water results in a relatively low species richness and, as most endemics depend on running water, a low number of endemics. Some of the species endemic to the south, such as *Plagulibasis ciliata* and *Nososticta rangifera*, seem to be widespread across the lowlands and have been found at several of the sites visited, suggesting that they are not uncommon. The lowlands to the south are more uniform and have fewer natural barriers such as isolated mountain ranges than the lowlands at the northern side of the central mountain range. It could therefore be speculated that endemic species of the southern lowlands have relatively larger ranges than those from the northern lowlands. There is however little information on the dragonflies of the lowlands of PNG and it is not known if, for instance, the three above mentioned species occur also this area.

The endemic Australian genera occurring in North Australia are absent from southern New Guinea

The increasing number of records from the southern lowland make it more likely that the absence of many Australian genera in South New Guinea is not due to lack of research.

References

Kaize, J. & V.J. Kalkman 2009. Records of dragonflies from kabupaten Merauke, Papua, Indonesia collected in 2007 and 2008 (Odonata). *Suara Serangga Papua* 4: 40-45.

Table 1. Species recorded at Kabupaten Asmat and Mappi and species recorded at Kabupaten Merauke.

The locality information is given below. Information for Kabupaten Merauke is based on Kaize & Kalkman 2009.

1. Kab. Mappi, Katan; S06°44.60'; E139°14.87'; 12-14 July 2009; leg. John Kaize, Survey WWF-KEP
2. Kab. Mappi, Senggo; S06°39.10'; E139°13.70'; 19 July 2009; leg. John Kaize, Survey WWF-KEP
3. Kab. Mappi, Vriendschap River; S05°20.20'; E138°52.72'; 21-25 July 2009; leg. John Kaize, Survey WWF-KEP.

No									Number of localities	
	Katan	Vriendschap	Senggo	Sota	Salor	Ndalir	Erom	Rawa Biru Buti Payum		
	Platycnemididae									
1	<i>Idiocnemis near mertoni</i> Ris, 1913	8m, 3f							Endemic to S New Guinea	1
	Protoneuridae									
2	<i>Nososticta rangifera</i>	1m, 2f	2m, 5f						Endemic to S New Guinea	2
3	<i>Nososticta</i> spec. C	1m (1f?)							Endemic to S New Guinea	1
4	<i>Nososticta</i> spec. A		2m, 2f	1m, 5f					Endemic to S New Guinea	2
	Coenagrionidae									
5	<i>Aciagrion fragile</i> (Tillyard, 1906)	1m			x	x	x	x	Also Australia	4
6	<i>Agriocnemis</i> spec.								Also Australia	1
7	<i>Archibasis mimetes</i> (Tillyard, 1913)	1m	4m	1m	x	x		x	Also Australia	5
8	<i>Argriocnemis rubescens</i> Selys, 1877	7m, 5f	4m	2f	x				Also Australia	5
9	<i>Austrocnemis maccullochi</i> (Tillyard, 1926)	3m, 1f							Also Australia	1
10	<i>Ceriagrion aeruginosum</i> (Brauer, 1869)		1m			x		x	Also Australia	2
11	<i>Ischnura heterosticta</i> (Burmeister, 1839)				x	x			Also Australia	3
12	<i>Ischnura pruinescens</i> (Tillyard, 1906)						x		Also Australia	1
13	<i>Palaiargia</i> spec. nov.	1m							Endemic to S New Guinea	1
14	<i>Papuagrion occipitale</i> (Selys, 1877)	1m	1m						Not in Australia, not endemic to S NG	2
15	<i>Papuagrion</i> spec.	1m							Endemic to S New Guinea	1
16	<i>Plagulibasis ciliata</i> (Ris, 1913)	7m, 5f	1m, 1f	2m		x			Endemic to S New Guinea	3
17	<i>Pseudagrion microcephalum</i> (Rambur, 1842)				x			x	Also Australia	3
18	<i>Teinobasis pulverulenta</i> Ris, 1915	2m	3m			x			Endemic to S New Guinea	2
19	<i>Teinobasis rufithorax</i> (Selys, 1877)	1m, 1f	2f		x	x		x	Also Australia	6
20	<i>Teinobasis</i> spec. A	1f							Endemic to S New Guinea	1
21	<i>Teinobasis</i> spec. B			1f					Endemic to S New Guinea	1
22	<i>Teinobasis?</i> spec. C	1f							Endemic to S New Guinea	1
23	<i>Xiphiagrion cyanomelas</i> (Selys, 1876)						x	x	Also Australia	3

No		Katan	Vriendschap	Senggo	Sota	Salor	Ndalir	Erom	Rawa Biru	Buti Payum	Number of localities
	Aeshnidae										
24	<i>Agyrthacantha dirupta</i> (Karsch, 1889)	1f	1m, 4f							Also Australia	2
	Gomphidae										
25	<i>Ictinogomphus australis</i> (Selys, 1873)		1m							Also Australia	1
	Corduliidae										
26	<i>Hemicordulia silvarum</i> Ris, 1913		2m	2f	x					Not in Australia, not endemic to S NG	3
	Libellulidae										
27	<i>Agrionoptera insignis</i> (Rambur, 1842)	1m	2m	1f	x	x				Also Australia	5
28	<i>Brachydiplax denticauda</i> (Brauer, 1867)	1m				x	x	x	x	Also Australia	5
29	<i>Brachydiplax duivenbodei</i> (Brauer, 1866)	1m, 5f	3m	3m						Also Australia	3
30	<i>Diplacodes bipunctata</i> (Brauer, 1865)					x	x	x	x	Also Australia	4
31	<i>Diplacodes haematodes</i> (Burmeister, 1839)	1m, 1f								Also Australia	1
32	<i>Diplacodes nebulosa</i> (Fabricius, 1793)	1f				x	x			Also Australia	2
33	<i>Diplacodes trivialis</i> (Rambur, 1842)			1m			x	x		Also Australia	3
34	<i>Hydrobasileus brevistylus</i> (Brauer, 1865)	1m	1m	1m, 1f	x	x	x	x		Also Australia	6
35	<i>Lathrecista asiatica</i> (Fabricius, 1798)				x	x	x	x		Also Australia	4
36	<i>Lyriothemis meyeri</i> (Selys, 1878)	1m, 1f	1m, 1f	2m, 2f						Not in Australia, not endemic to S NG	3
37	<i>Macrodiplax cora</i> Brauer, 1868						x		x	Also Australia	2
38	<i>Nannophya pygmaea</i> Rambur, 1842	1m, 2f	2m							Not in Australia, not endemic to S NG	2
39	<i>Nesoxenia mysis</i> (Selys, 1878)		2m, 3f	2m, 1f	x	x			x	Also Australia	5
40	<i>Neurothemis decora</i> (Brauer, 1866)		2m, 3f	1m, 2f	x	x	x	x	x	Not in Australia, not endemic to S NG	6
41	<i>Neurothemis oligoneura</i> Brauer, 1867				x	x	x	x	x	Also Australia	5
42	<i>Neurothemis ramburii</i> (Brauer, 1866)				x	x	x	x		Not in Australia, not endemic to S NG	4
43	<i>Neurothemis stigmatizans</i> (Fabricius, 1775)	3m, 2f	2m		x	x	x	x	x	Also Australia	7
44	<i>Orthetrum sabina</i> (Drury, 1773)	1m, 3f			x	x	x	x		Also Australia	6
45	<i>Orthetrum serapia</i> Watson, 1984		1m		x	x	x			Also Australia	4
46	<i>Orthetrum villosovitatum</i> (Brauer, 1868)	4m, 1f		1m					x	Also Australia	3
47	<i>Pantala flavescens</i> (Fabricius, 1798)		1f		x	x	x	x		Also Australia	5
48	<i>Prothemis coronata</i> (Brauer, 1866)	1m								Not in Australia, not endemic to S NG	1
49	<i>Rhodthemis rufa</i> (Rambur, 1842)				x	x				Also Australia	2
50	<i>Rhyothemis graphiptera</i> (Rambur, 1842)						x	x		Also Australia	2
51	<i>Rhyothemis phyllis</i> (Sulzer, 1776)	1f			x	x	x	x		Also Australia	5
52	<i>Rhyothemis princeps</i> Kirby, 1894	1m, 1f	1m, 2f							Also Australia	2
53	<i>Rhyothemis princeps</i> Kirby, 1894 / <i>regia</i> (Brauer, 1867)				x	x	x	x	x	Also Australia	5
54	<i>Rhyothemis resplendens</i> Selys, 1878		2m	2m						Also Australia	2
55	<i>Risioptera risi</i> (Campion, 1915)		1f							Not in Australia, not endemic to S NG	1
56	<i>Tetrathemis irregularis</i> Brauer, 1868	3m								Also Australia	1
57	<i>Tholymis tillarga</i> (Fabricius, 1798)					x		x	x	Also Australia	3
58	<i>Tamea spec.</i>	2m, 1f								Also Australia	1
59	<i>Tamea spec. 1</i>						x	x		Also Australia	2
60	<i>Tamea spec. 2</i>				x		x		x	Also Australia	4
61	<i>Urothemis signata</i> (Rambur, 1842)	1f								Also Australia	2
62	<i>Zyxomma elgneri</i> (Ris, 1913)	1m							x	Also Australia	2
63	<i>Zyxomma petiolatum</i> Rambur, 1842	3m, 1f		1m					x	Also Australia	3



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2



3



4

Figs 1-4. Environment Kepi.



5



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Fig. 5. Senggo; **Figs 6-7.** Vriendschap River; **Fig. 8.** John Kaize at Vriendschap River site.