

# Records of dragonflies from kabupaten Merauke, Papua, Indonesia collected in 2007 and 2008 (Odonata)

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**Abstract:** Odonata were collected in the period 9 July to 4 August 2007 and 4 to 16 June 2008 in the surroundings of Merauke, Papua province, Indonesia. In total 37 species were recorded during the fieldwork bringing the number of species known for the area to 42. It is estimated, that this is about half of the species present in the area. Of the 42 species recorded from the Merauke area 38 belong to the families of Coenagrionidae and Libellulidae. None of the genera endemic to New Guinea were recorded during the fieldwork and only one (*Hemicordulia silvarum* Ris, 1913) of the recorded species is endemic to New Guinea. The results seem to suggest that —compared to the central mountain range or the area in the north of New Guinea— the southern parts of New Guinea have an impoverished fauna. Further fieldwork in the area should be held in different seasons and should try to sample along running waters.

**Ikhtisar:** Odonata dikoleksi dari 9 Juli sampai dengan 4 Agustus 2007 dan dari 4 sampai dengan 16 Juni 2008 di sekitar Merauke, Provinsi Papua, Indonesia. Jumlah spesies yang ditangkap selama dua perjalanan ke lapangan sebanyak 37 spesies, meningkatkan jumlah spesies yang diketahui dari daerah itu menjadi 42 spesies, yang diperkirakan merupakan setengah dari jumlah spesies yang hadir di situ. Dari 42 spesies yang ditangkap di daerah Merauke 38 termasuk dalam famili Coenagrionidae dan Libellulidae. Dalam kerja di lapangan tersebut tidak ditangkap spesies dari genus yang endemik di New Guinea dan hanya satu (*Hemicordulia silvarum* Ris, 1913) dari spesies yang ditangkap merupakan spesies endemik di New Guinea. Hasil memberikan kesan bahwa —dibandingkan dengan pegunungan tengah atau wilayah utara New Guinea— bagian-bagian selatan dari New Guinea mempunyai fauna yang menjadi miskin. Kerja lapangan lanjut di wilayah ini sebaiknya diadakan pada semua musim dan terfokus pada kali dan sungai yang mengalir.

**Keywords:** Zygoptera, Anisoptera, New Guinea, diversity, freshwater

## Introduction

New Guinea south of the central mountains range consists of a large, relatively flat area. The northern two-thirds of this area are largely covered with lowland rainforest while the southern third has a more open savannah-like landscape. Information on dragonflies occurring in this area is scarce and details on the composition of the fauna and habitat choice of the species are almost absent. In their review of freshwater biogeography Polhemus and Allen (2007) do not recognise a difference in aquatic fauna between the rainforest area and the savannah-like area and included both in the same Area of freshwater endemism. They however did suggest that there is a difference between the area roughly east of the Mappi river (the Arafura Coastal Lowlands) and the area to the east of this (the Trans-Fly Coastal Lowlands). For the difference between these two areas they refer to the higher percentage of swamp areas in the Arafura Coastal Lowlands which 'appears to support a slightly different fauna'. The information on the distribution of dragonflies in south New Guinea is still too scant to test this hypothesis. It would also be interesting to have a more detailed knowledge on the distribution of the endemic New Guinean genera in the south. Many of the endemic New Guinean genera are widespread in the central mountain range and in the areas to north of this. It is however not clear how commonly they occur in the southern expanse and how far south they reach. Most records of dragonflies from southern New Guinea have been published in papers on taxonomy and there are no papers giving complete lists of species observed at a single site or area. The present article reports on a collection of dragonflies made in the surroundings of Merauke in 2007 and 2008 and must be seen as a small step in order to get a better knowledge on the distribution of dragonflies in southern New Guinea.

Most of the published material of dragonflies from southern New Guinea was collected prior to 1950. Relatively much of the material of the Indonesian parts of this area originates from localities along the coast or along the Lorentz River. The latter due to the fact that this river was used by the three South New Guinea Expeditions (1907-1913) which were focussed on reaching Mt Wilhelmina (now Mt Trikora). Records from the surroundings of Merauke were published by Lieftinck (1942, 1949, 1960) and Asahina (1967). All these publications are based on material collected in 1904 by Dr. J.W.R. Koch during his stay in Merauke preceding the South-western New Guinea Expedition (1904-1905) and material collected in 1939 by R.G. Wind a professional collector who soled his entomological collection to several museums. Thus far records of only twelve species have been published for the Merauke area: *Agrionemis pygmaea*, *Agrionoptera insignis*, *Anax gibbosulus*, *Austroagrion exclamationis*, *Ceragrion aeruginosum*, *Hemicordulia silvarum*, *Ichnura*

*heterosticta* (as *I. torresiana*), *Lestes lundquisti*, *Lestes risi*, *Rhyothemis phyllis*, *Rhyothemis princeps* and *Tramea loewi*. Most of the specimens on which these records are based are probably in the Nationaal Natuurhistorisch Museum Naturalis, Leiden (RMNH).

## Methods

The first author collected dragonflies from 9 July to 4 August 2007 during an expedition of the Kelompok Entomologi Papua (KEP) and Universitas Cenderawasih, Jayapura (UNCEN). Rinto Mambrasar and Henk van Mastrigt collected additional material from 4 to 16 June 2008. Table 1 gives a list of localities visited. Most material was collected at standing waters. The voucher specimens are stored in the KSP (Koleksi Serangga Papua, Jayapura) and identified by the second author during a visit to this collection in October to November 2008. Table 1 gives a list of species encountered per location.

## Results

In total 355 specimens belonging to 37 species were collected bringing the total number of species for the Merauke area on 42. Table 1 gives a list of species encountered per location. Five of the species (*Agriocnemis pygmaea*, *Anax gibbosulus*, *Austroagrion exclamationis*, *Lestes lundquisti* and *Lestes risi*) mentioned in earlier publications were not found in 2007 or 2008.

## Discussion

The present fieldwork was mainly done at sites with standing water and took place during the period June - August. Without doubt more fieldwork at sites with running water and fieldwork in other (including wetter) periods would strongly increase the list of species. We estimate that the area holds between 70 and 90 species. The 42 species known from the surroundings of Merauke belong to five families and 28 genera. It is interesting to compare this with the results from fieldwork conducted in 2006 in Borneo, which lies at a height of about a 1000 meter in the Star mountains (Kalkman, 2008). In this area 37 species belonging to 28 genera and 13 families were found. This gives a clear indication that the diversity of families is much lower in the Merauke area than it is in the central mountain range. The main reason for this is that species of many families are largely depended on smaller brooks and rivers with relatively clear and rapid running water. In the Merauke area permanent running water is confined to larger rivers that are muddy in times of high rainfall. For this reason the families Calopterygidae, Chlorocyphidae,

Isostictidae, Megapodagrionidae, Platystictidae, Platycnemididae and Protoneuridae are probably poorly represented in the savannah-like region of southern New Guinea. Of the 42 species recorded from the Merauke area 38 belong to the families of Coenagrionidae and Libellulidae. These are world wide the two largest families and dominate the dragonfly fauna of standing water in every continent. A high percentage of the species of these families have a large distributional range. This is also true for the species found at Merauke. Almost all of them occur also in Australia or occur to the west in other parts of Indonesia. The only species endemic to New Guinean collected at Merauke is *Hemicordulia silvarum*, which belongs to the Cordullidae. The Merauke region is close to Australia with Cape York Peninsula at less than 250 km and the top end of Northern Territory at less than 600 km distance. Yet these regions harbour a large number of species and even complete genera absent from New Guinea. Examples of these are several species of *Nososticta*, *Pseudagrion* and *Hemicordulia* and the genera *Antipodogomphus*, *Austroaeschna*, *Austrocordulia*, *Austroepigomphus*, *Austrogomphus*, *Austrolestes*, *Austrosticta*, *Choristhemis*, *Eurysticta*, *Hemigomphus*, *Lithosticta*, *Micromidia*, *Oristicta*, *Pentathemis*, *Petalura* and *Rhadinosticta*. The here presented data on the Merauke area increases the evidence that these species and genera are really absent in New Guinea. The relatively large differences between the fauna of the southern part of New Guinea and the northern parts of Australia is remarkable especially when considering the fact these areas were connected by land for a long period during past glacial periods. The large differences in the composition of the Odonata fauna are caused the geological history of the region and present day environmental factors. Our understanding of the relative importance of these factors is however very scant.

The results of the fieldwork in the Merauke area give room for the following preliminary conclusions on the fauna of the savannah-like region of southern New Guinea:

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

Further fieldwork in the Merauke area should concentrate on finding and sampling small but permanent brooks and sampling along one of the larger rivers.

## Literature

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Fig. 1. *Rhyothermis resplendens*



Fig. 2. *Ectinogomphus australis*

Table 1: List of dragonflies recorded during fieldwork in 2007 and 2008 in Kabupaten Merauke, Papua Province, Indonesia.

Family	Species	1	2	3	4	5	6	7	8	
Coenagrionidae	<i>Aciagrion fragile</i> (Tillyard, 1906)	X			X	X				
	<i>Agriocnemis</i> spec			X						
	<i>Archibasis mimetes</i> (Tillyard, 1913)		X				X			
	<i>Agriocnemis rubescens</i> Selys, 1877		X	X						
	<i>Ceriagrion aeruginosum</i> (Brauer, 1869)					X				
	<i>Ischnura heterosticta</i> (Burmeister, 1839)		X	X	X			X		
	<i>Ischnura pruinescens</i> (Tillyard, 1906)				X					
	<i>Pseudagrion microcephalum</i> (Rambur, 1842)		X			X		X		
	<i>Teinobasis rufithorax</i> (Selys, 1877)	X	X	X		X				
	<i>Xiphiagrion cyanomelas</i> (Selys, 1876)				X	X	X			
	Corduliidae	<i>Hemicordulia silvarum</i> Ris, 1913			X					
	Libellulidae	<i>Agrioptera insignis</i> (Rambur, 1842)	X		X					
		<i>Brachydiplax denticauda</i> (Brauer, 1867)		X	X	X	X		X	
		<i>Diplacodes bipunctata</i> (Brauer, 1865)		X	X	X		X	X	
<i>Diplacodes nebulosa</i> (Fabricius, 1793)				X		X		X		
<i>Diplacodes trivialis</i> (Rambur, 1842)				X		X				
<i>Hydrobasileus brevistylus</i> (Brauer, 1865)		X		X			X	X		
<i>Lathrecista asiatica</i> (Fabricius, 1798)		X	X	X	X					
<i>Macrodiplax cora</i> Brauer, 1868				X					X	
<i>Nesoxenia mysis</i> (Selys, 1878)		X	X				X			
<i>Neurothemis decora</i> (Brauer, 1866)		X			X	X		X		
<i>Neurothemis oligoneura</i> Brauer, 1867		X	X	X	X	X		X		
<i>Neurothemis ramburii</i> (Brauer, 1866)		X		X	X	X				
<i>Neurothemis stigmatizans</i> (Fabricius, 1775)		X	X	X	X	X				
<i>Orthetrum sabina</i> (Drury, 1773)		X	X	X	X	X		X		
<i>Orthetrum serapia</i> Watson, 1984		X		X	X					
<i>Orthetrum villosivittatum</i> (Brauer, 1868)							X			
<i>Pantala flavescens</i> (Fabricius, 1798)		X	X	X	X					
<i>Rhodothemis rufa</i> (Rambur, 1842)		X	X							
<i>Rhyothemis graphiptera</i> (Rambur, 1842)					X			X		
<i>Rhyothemis phyllis</i> (Sulzer, 1776)		X	X	X	X			X		
<i>Rhyothemis princeps</i> Kirby, 1894 / <i>regia</i> (Brauer, 1867)		X	X	X	X	X		X		
<i>Tholymis tillarga</i> (Fabricius, 1798)				X		X	X			
<i>Tamea</i> spec 1				X	X					
<i>Tamea</i> spec 2		X		X			X		X	
<i>Zyxomma elgneri</i> (Ris, 1913)							X			
<i>Zyxomma petiolatum</i> Rambur, 1842							X			

Explanation of numbers on top of columns:

1. Kab. Merauke, Sota: S 08° 25,925; E 141° 00,54; 9-14 July 2007; leg. KEP & Mhs UNCEN
2. Kab. Merauke, Salor: S 08° 16,962; E 140° 21,912; 15-19 July 2007; leg. KEP & Mhs UNCEN
3. Kab. Merauke, Ndilir: S 08° 29,832; E 140° 01,423; 20-24 July 2007; leg. KEP & Mhs UNCEN
4. Kab. Merauke, Erom: S 08° 15,207; E 140° 46,020; 25-29 July 2007; leg. KEP & Mhs UNCEN
5. Kab. Merauke, Rawa Biru: S 08° 39,645; E 140° 50,440; 30 July-3 August 2007; leg. KEP & Mhs UNCEN
6. Kab. Merauke, Buti Payum: S 08° 31,627; E 140° 24,338; 4-8 August, 2007; leg. KEP & Mhs UNCEN
7. Kab. Merauke, Ndilir: S 08° 29,832; E 141° 01,423; 14-16 June 2008; leg. Mambrasar, R. & H. v. Mastrigt
8. Kab. Merauke, Buti Payum: S 08° 31,627; E 140° 24,338; 4-8 June 2008; leg. Mambrasar, R. & H. v. Mastrigt