AGRION
NEWSLETTER OF THE WORLDWIDE DRAGONFLY ASSOCIATION

AGRION is the Worldwide Dragonfly Association’s (WDA’s) newsletter, published twice a year, in January and July. The WDA aims to advance public education and awareness by the promotion of the study and conservation of dragonflies (Odonata) and their natural habitats in all parts of the world. AGRION covers all aspects of WDA’s activities; it communicates facts and knowledge related to the study and conservation of dragonflies and is a forum for news and information exchange for members. AGRION is freely available for downloading from the WDA website at http://ecoevo.uvigo.es/WDA/dragonfly.htm. WDA is a Registered Charity (Not-for-Profit Organization), Charity No. 1066039/0.

Editorial
Keith Wilson [kdpwilson@gmail.com]

New printing arrangements for IJO and Sponsored Membership
There are new arrangements in place for the publication and printing of the International Journal of Odonatology (IJO). Taylor & Francis will now publish IJO starting in 2011. Taylor & Francis will collect dues for all personal and institutional subscriptions and will ship the Journals by airmail to subscribers. Any inquiries should be addressed to [victoria.gardner@tandf.co.uk]. If your membership includes a subscription to our IJO and your membership fees are paid up to date you will receive the first issue published by Taylor & Francis in the next few weeks.

WDA Board members have unanimously approved the Chair of the Sponsored Membership Committee, Dennis Paulson’s proposal to extend sponsored membership for the seven sponsored members we have to date. Sponsored members receive a free copy of the IJO. In total there are 12 sponsored memberships available, and five sponsorships are yet to be awarded. Suggestions for possible recipients of sponsored memberships may be made by any WDA member. Proposals should be sent to the Secretary, accompanied by a brief statement of the reasons for the proposal. For further information see Guidelines to offering Sponsored Membership to odonatists on page 105 and at WDA webpage (see http://ecoevo.uvigo.es/WDA/wda_008.htm).

Postponement of the 2011 International Congress of Odonatology
The Organizing Committee has decided to postpone the 2011 International Congress of Odonatology, originally scheduled to be held at the Kanagawa Prefectural Museum of Natural History in Odawara City, Kanagawa, Japan from 31st July to 5th August 2011, in view of the current circumstances in Japan, with the existence of negative ‘travel advisories’ in some countries, and with negative perceptions of possible radiation levels in the north of the country. The WDA Board of Trustees has suggested that either the 2015 Congress could be held in Japan under the direction of the current Committee or, if external conditions are expected to return quickly to normal, that the Committee consider the plausibility of holding the 2011 Congress in 2012, perhaps at Odawara, or an alternative place in Japan where there is no alert of earthquake or of tsunami, no fear of radiation leakages from reactors, and no plan of rolling blackouts. For further information consult the WDA web pages at http://ecoevo.uvigo.es/WDA/.

There is a good mix of articles from around the World in this issue of AGRION with two articles on South American odonates, six from Asia (including Vietnam, Indo-Burma and two each from Sarawak and Sri Lanka), two from Australia and a book review on ‘Dragonflies from Eastern Europe and Caucasus’. This issue also contains an obituary for Dr. Syoziro Asahina, who passed away, aged 97, on 28th November, 2010; also included are a list of Dr. Asahina’s very extensive odonate publications and a list of his species descriptions.

For those members who have not yet renewed their membership for 2011 and any prospective new members there is a Membership renewal/application form on page 107 at the end of this issue of AGRION.

For the next issue of AGRION, to be published at the beginning of January 2011, please send your contributions to Keith Wilson [kdpwilson@gmail.com] or Graham Reels [gtreels@gmail.com]. All articles, information and news items related to dragonflies or of interest to WDA members are most welcome and will be considered for publication. Please send a Word file by email (preferably) or on disk by post. Please do not forward any original artwork but send a soft copy, ideally in a compressed format e.g. ‘jpeg’ or ‘gif’, or as a file on disk if sent by post.

In keeping with the practice adopted for WDA’s official organ, the International Journal of Odonatology a dragonfly photo now appears on the front cover of each issue of AGRION. If you have a photo illustrating any rarely observed aspect of dragonfly biology, or an unusual species, or simply a stunning dragonfly shot, please submit it for consideration for publication in AGRION.

Cover photo: Megaloprepus caeruleus Credit: Ingemar Hedström. See article page 47.

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Addendum

Diversity and Distribution of Dragonflies (Insecta: Odonata:) in Obafemi Awolowo University, Ile-Ife, Southwestern Nigeria [AGRION 15(1):24-31]

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The authors have received additional information since the original publication of AGRION on 1st January 2011. Please note the following:-

1. Orthetrum stemmale was recorded at Ikom in the present Cross River State of Nigeria (Pinhey 1961). The record in this paper should be viewed as the second record rather than a new record.
2. Pantala flavescens has also been recorded previously in Nigeria. It was recorded at Kubani, Bagauda and Samaru Lakes in Kaduna State (Parr 1977, Parr and Parr 1974).
3. Please also note that Heliaeschna longfieldae is a junior synonym of Heliaeschna sembe (Dijkstra, 2007).

References
We provide here a preliminary list of the odonates from the Tiputini Biodiversity Station (0°38'S, 76°9'W, 220 m). This 650 hectare area is located in the Amazonia of Orellana Province, eastern Ecuador on the north bank of the Tiputini River, a tributary of the Napo River, adjacent to the Yasuní Biosphere Reserve. Our inventory is based on specimens we collected and photographed during our visit from 10 to 21 January 2009 under research permit DPO-MA N° 0029 -2010, as well as on records we gathered from examination of collections from other visitors to this area and records from the literature. Collections were made using entomological nets along primary forest terra firme (upland) trails, varzea (seasonally-flooded forest), swamps, and streams. In order to reflect the relative abundance of species in the field a rank was assigned to each one of them as follows: 1-3 specimens = R (rare species), 4-20 specimens = F (frequent species), 21-50 specimens = C (common species).

We found 34 species in 23 genera during our Tiputini visit, indicated as ©. Species marked with an L correspond to records from the literature and other entomological collections made previously in the Tiputini and Yasuní areas, and the total number of odonates recorded from the area so defined is of 71 species in 38 genera and 11 families.

Preliminary inventory of the odonates from Tiputini and Yasuní

**Zygoptera**

**Calopterygidae**

I. *Hetaerina caja caja* (Drury, 1973)
I. *Hetaerina sanguinea* Selys, 1853
© *Mnesarete drepane* Garrison, 2006 [F]; in sunny patches on marginal vegetation along small forest streams
I. *Mnesarete fulgida* Selys, 1879
I. *Mnesarete metallica* Selys, 1869

**Coenagrionidae**

© *Acanthagrion apicale* Selys, 1876 [F]; along small forest streams, black water streams, and *Mauritia* palm swamps
I. *Acanthagrion lancea* Selys, 1876
I. *Acanthagrion obsolenum* Förster, 1914
I. *Acanthagrion peruvianum* Leonard, 1977
© *Argia difficilis* Selys, 1865 [F]; along small forest streams and black water streams
I. *Argia euphorbia* Fraser, 1946
© *Argia indicatrix* Calvert, 1902 [F]; in open forest clearings, grassy swampy areas, and *Mauritia* palm swamps
© *Argia kokama* Calvert, 1909 [F]; in open forest clearings, grassy swampy areas, and *Mauritia* palm swamps
© *Argia sp.* [F]; in sunny patches on marginal vegetation along small forest streams, and black water streams
I. *Bromeliagrion rehni* Garrison, 2006
© *Metaleptobasis mauffrayi* Daigle, 2000 [C]; on bushes and low vegetation along forest clearings, and grassy swampy areas
I. *Phoenicagrion paulsoni* von Ellenrieder, 2008
I. *Telebasis griffini* (Martin, 1896)
I. *Telebasis rubricauda* Bick & Bick, 1995
I. *Telebasis versicolor* Fraser, 1946

**Dicteriidae**

I. *Heliocharis amazona* Selys, 1853

**Megapodagrionidae**

© *Heteragrion bickorum* Daigle, 2005 [C]; along small forest streams
© *Heteragrion inca* Calvert, 1909 [C]; along small forest streams
© *Philogenia minteri* Dunkle, 1986 [F]; on low vegetation along forest trails
I. *Philogenia redunca* Cook, 1989

**Perilestidae**

I. *Perilestes kahli* Williamson, 1924
© *Perissolestes romulus* Kennedy, 1941 [R]; on marginal vegetation along small shaded forest streams
**Polythoridae**

© *Polythore derivata* (MacLachlan, 1881) [R]; on low vegetation along forest streams

© *Polythore mutata* (MacLachlan, 1881) [F]; in sunny patches on marginal vegetation along small forest streams
PROTONEURIDAE

1. *Amazoneura ephippigera* (Selys, 1886) © *Amazoneura westfalli* Machado, 2001 [F]; on bushes and low vegetation along forest clearings, and grassy swampy areas
© *Protoneura klugi* Cowley, 1941 [F]; along small forest streams

COENAGRIONIDAE

Female *Argio* sp. Credit: NvE.

MEGAPODAGRIONIDAE

Male *Heteragrion bickorum* Daigle, 2005. Credit: NvE.

PERLIDIDAE

Male *Perissoscelis novalus* Kennedy, 1941. Credit: NvE.

POLYTHORIDAE

Male *Polythore deritata* (McLachlan, 1881). Credit: RWG.
POLYTHORIDAE

Male *Polystigma nitidum* (Mclachlan, 1881), photographed by NeE

POLYTHORIDAE

Female *Polystigma nitidum* (Mclachlan, 1881), photographed by RW

PROTONEURIDAE

Male *Amazoneura vestali* Machado, 2001. Credit RWG.

PROTONEURIDAE

Male of *Protoneura klugi* Cowley, 1941. Credit RWG.

PROTONEURIDAE

Male *Protoneura wyzkowskii* Gloyd, 1930. Credit NeE.

PROTONEURIDAE

Female *Protoneura wyzkowskii* Gloyd, 1930. Credit NeE.

PSEUDOSTIGMATIDAE

Male *Protoneura tenassima* (Selys, 1886). Credit NeE.

PSEUDOSTIGMATIDAE

Female *Microstigma rotundatum* Selys, 1860. Credit RWG.
© Protoneura woytkowskii Gloyd, 1939 [F]; along small forest streams
© Paioneura tenuissima (Selys, 1886) [F]; on bushes and low vegetation along forest clearings, and grassy swampy areas

Pseudostigmatidae

© Anomisma abnorme MacLachlan, 1877 [F]; in sunny patches of forest clearings
© Mecistogaster linearis (Fabricius, 1776) [R]; in sunny patches of forest clearings
© Mecistogaster lucretia (Drury, 1773) [R]; in sunny patches of forest clearings
© Microstigma rotundatum Selys, 1860 [F]; in sunny patches of forest clearings

Anisoptera

Aeshnidae
L Gynacantha gracilis (Burmeister, 1839)
L Gynacantha interioris Williamson, 1923
© Gynacantha membranalis Karsch, 1891 [F]; on vegetation along shaded forest trails

Gomphidae
L Aphylla boliviana Belle, 1972
L Phyllogomphoides Belle, 1970

Libellulidae
© Cannaphila vibex Hagen, 1861 [F]; in open forest clearings, swampy grassy areas, and Mauritia palm swamps
© Dasystemis esmeralda Ris, 1910 [R]; Mauritia palm swamps
L Erythemis haematogaster (Burmeister, 1839)
© Erythrodiplax basalis Kirby, 1897 [R]; in open forest clearings and swampy grassy areas
© Erythrodiplax castanea (Burmeister, 1839) [F]; in open forest clearings and swampy grassy areas
© Erythrodiplax fusca (Rambur, 1842) [F]; in open forest clearings and swampy grassy areas
© Erythrodiplax kimminsi Borror, 1942 [F]; in open forest clearings and swampy grassy areas © Erythrodiplax umbra (Linnaeus, 1758) [F]; in open forest clearings and swampy grassy areas
L Erythrodiplax tenuis Borror, 1942
L Fylgia amazonica Kirby, 1889
L Micrathyria dictyna Ris, 1919

Female of Mecistogaster lucretia
(Drury, 1773), photo by RWG
**Aeshnidae**

Male *Gynacantha membranalis* Karsch, 1891, photographed by RWG.

**Libellulidae**

Male *Cannaphila vihel* Hagen, 1861, photographed by NvE.

**Libellulidae**

Male *Erythrodiplax santanae* (Burmeister, 1839). Credit RWG.

Male *Erythrodiplax kimminsii* Borror, 1942. Credit RWG.

**Libellulidae**

Male *Orthemis discolor* (Burmeister, 1839). Credit RWG.

Male *Orthemis fastigata* (Burmeister, 1839). Credit NvE.

**Libellulidae**

Male *Perithemis thyris* Kirby, 1889. Credit NvE.

Male *Perithemis cornelia* Ris, 1910. Credit NvE.
L. *Micrathyria occipita* Westfall, 1992
© *Libellula herculea* Karsch, 1889 [F]; in open forest clearings and swampy grassy areas
L. *Nephepeltia phryne* (Perty, 1834)
L. *Orthemis biolleyi* Calvert, 1906
L. *Orthemis cultriformis* Calvert, 1899
© *Orthemis discolor* (Burmeister, 1839) [F]; in open forest clearings and swampy grassy areas
L. *Orthemis schmidti* Buchholz, 1950
© *Perithemis cornelia* Ris, 1910 [F]; along black water streams and larger forest streams
L. *Perithemis electra* Ris, 1930
L. *Perithemis parzefalli* Hoffmann, 1991
© *Perithemis thais* Kirby, 1889 [F]; along black water streams and larger forest streams
© *Uracis fastigiata* (Burmeister, 1839) [C]; in forest clearings and low vegetation along forest trails
© *Uracis imbuta* (Burmeister, 1839) [C]; in forest clearings and low vegetation along forest trails
L. *Zenithoptera fasciata* (Linnaeus, 1758)

Acknowledgments

We thank Leo Zurita, David Romo, Consuelo Romo, Kelly Swing, and Diego Mosquera for arranging permits and logistics during our visit to the Tiputini Station, as well as the staff of the station for their friendly assistance during our stay, and the Dirección Nacional de Biodiversidad Áreas Protegidas y Vida Silvestre, Ministerio del Ambiente, from Ecuador for issuing collecting and export permits.
I refer to the article in *AGRION* (Wilson, 2009) concerning the common question of the largest living dragonflies. I note that it’s author cited Hedström & Sahlén (2001) regarding the maximum body length of *Mecistogaster linearis*, the world’s broadest winged odonate.

Following several years of research on *Megaloprepus caerulatus* (in Costa Rica), I report the following finding (see below) made on the 12 April 2002, very close to the Quebrada Gonzalez Ranger Station within the Braulio Carillo National Park, Limon Province, Costa Rica. The total wingspan measurement exceeds the previously cited maximum for this species.

After careful measurement of the specimen in question, I let it go free, because it would have been almost like killing a small, beautiful bird. I just wasn’t able to do that, so I let it fly!

Here is my data: *Megaloprepus caerulatus*, male: hindwing: 9.8 cm, total wingspan length: 19.6 cm, total abdomen length: 11.3 cm.

**Reference**

Stephen Stone anak Singki and 
new records of *Linaeschna polli* Martin from Sarawak

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When people such as myself write articles for publications such as *Agrion*, we tend to concentrate on the Odonata, or the habitat in which we find them, or on ourselves and our scientific colleagues. Frequently we are assisted by people from the country in which we are working, and, at least in my case and in Sarawak, often these people become my friends. However they are typically treated at best as peripheral characters in accounts of our travels, which seems rather unfair to me. Their names may become immortalised in a minor way as “leg. so and so” in lists of specimens in taxonomic publications; I have often seen such names and found myself wondering who this person was. So here I will tell the tale of the odonatological exploits of Stephen Stone anak Singki, and leave the Odonata as peripheral characters.

Stephen is employed as a field assistant by the Conservation Office of Grand Perfect (GP) Sendirian Berhad, a plantation company in Bintulu Division, Sarawak. He is an Iban, the largest native group in Sarawak, and was born on the 16th of June 1956 at Rumah Guna Sungai Besai, Selanjan, Sri Aman division. He served in the Malaysian army from 1976 until 1986, with postings in Sibu, Johor and Melakka. After that he worked as a scaffolder, then a security guard, before joining GP Conservation on 1 December 2005. He regards the last job as the best, which is immediately obvious on a visit to his house, where the walls hold many photographs of the people he has worked with while with GP Conservation. He is married to his second wife Mesah anak Wang; they have three children.

We first met in 2006, on my first trip to the area now known as the Sarawak Planted Forest Project, when he accompanied me to Binyo Penyilam, a low pH swamp forest area (see Dow & Unggang 2010 for more information on Binyo). On that trip I don’t think Stephen swung a net once, but he suffered for Odonatology: at Binyo one has to collect from boats much of the time, and because the channels are narrow and winding, the boats have to be short, making it dangerous for anyone sitting in them whilst someone is trying to swing a net – I hit Stephen hard in the head twice on the trip, and to make matters worse, I did not even realise that I had done it the first time! Luckily he is a tough guy, and thankfully he forgave me.

I put a net in his hands for the first time in 2007, in the Tubau area of Bintulu division. I hope he will not mind me saying that his first attempts to catch dragonflies gave no hint of what was to come later. On that trip he suffered as well – something bit or stung him on one of his hands, which swelled up to the point where I had to insist we go back to Bintulu early so that he could get medical assistance; he did not want to go back.

By 2009 Stephen had developed into a good catcher, taking particular delight in the capture of large dragonflies. That August Stephen, Ollince Tateh (a very able project officer with GP Conservation) and I made our first visit to an area known as “Camp C” in Kakus district in the south of Bintulu division. It was on a stream in this area that Stephen made his most remarkable catch. The stream runs through a buffer of disturbed kerangas forest; beyond the buffer, everything has been cleared for plantation, except for a water catchment area on a hill on one side. The streambed is mostly sandy, but in some sections it consists of sheets of rock. We were working on one of the rocky sections and I had got ahead of Ollince and Stephen. As it was late in the day I decided to turn back. As I came into sight of my companions I saw that they were excited and that Stephen was holding a

Aside from doubling the number of specimens of *L. polli* known, other notable catches of Stephen’s include: the first record of *Helaeachna bartelsi* Lieftinck, 1940 from Sarawak; several *Tetragonagayna plagiata* (Waterhouse, 1877), including the elusive and hard to catch male (I have never even seen a male in life); *Anax panybeus* Hagen, 1867; and *Dysphaea lugens* (Selys, 1873), a species that seems to be very scarce in Sarawak. Stephen might be retiring this year, but I hope not; apart from the dragonflies I would like to drink more of his
tuak (rice wine) and lose more money to him at cards.

References


Fig. 1: Stephen enjoying a new hat.  
Fig. 2: Stephen holding his second *Linaeschna polli* in 2010.  
Fig. 3: The beast itself: *Linaeschna polli*. 
Odonata from a remnant patch of disturbed peatswamp forest on the outskirts of Kuching, west Sarawak

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Before large-scale human alterations began, much of the surroundings of what is now Kuching, the state capital of Sarawak, consisted of various types of swamp forest, including much peatswamp forest. Later, rubber was planted in parts of this swamp forest. M.A. Lieftinck (1953: 236), under the description of Podolestes harrissoni, gave an incomplete list of species collected in “an old rubber garden” on the Matang Road outside of Kuching, on September 22, 1950. This list included a number of apparently very scarce species (e.g. Amphicnemis madeleinae, Nannophyopsis chalcosoma and Pseudagrionoptera diotoma). Since Lieftinck’s day Kuching has expanded considerably and there has been extensive development along the Matang Road, so that most of the peatswamp/old rubber habitat has gone. However, one patch remains, although probably not for much longer. Indeed, it may already have been bulldozed; we last passed the site in July 2010, when building work was occurring immediately adjacent to it.

We first visited this site in January 2006, and made return visits in 2008 and 2010. The site is small, consisting of disturbed peatswamp with many old rubber trees that are still being tapped (on his last visit, RAD was ordered out of the site by machete-wielding rubber tappers). This site is at least near to Lieftinck’s site, but remarkably we have collected a number of species not found by Lieftinck, illustrating the biodiversity of this kind of habitat in west Sarawak, and the extreme localisation of some species.

Most notable of our discoveries at the Matang road was Pachycypha sp cf aurea. P. aurea, a tiny chlorocyphid, was described from the south of Kalimantan, and remains the only named species in the genus, which has not been recorded outside of Kalimantan until now. Despite the small size of the Matang Road site, it was not until May 2010 that we found this minute taxon, along one short section of a tiny stream. Both sexes descended from the canopy only in full sunlight, typically perching high. They were at low densities, and no interactions were observed between the sexes. They typically returned to the canopy almost immediately after the sun became obscured by clouds.

A full list of the 26 species we have collected at the site is given below. Most of them were not listed by Lieftinck, but probably a number of these were actually collected by him; six species (at least) collected by Lieftinck were not collected by us. At least two of the species listed here are as yet unnamed; descriptions of both are being prepared by RAD.
Zygoptera
Chlorocyphidae

Megapodagrionidae

Protoneuridae
6. *Prodasineura dorsalis* (Selys, 1860) – 2 ♂♂, 30 v 2010, RAD.

Coenagrionidae
8. *Amphicnemis madeleinae* Laidlaw, 1913 – In May 2010 a female was collected whilst it was eating a teneral male. ♂, 22 i 2006, GTR; ♂, ♀ (in tandem), 22 i 2006, RAD; 2 ♀♀, 23 i 2006, GTR; ♂, 2 ♀♀, 23 i 2006, GTR; ♂, 23 i 2006, RAD; 2 ♂♂, 2 ♀♀, 28 v 2010; 4 ♂♂, ♀, 30 v 2010, RAD.
12. *Ceriagrion cerinorubellum* (Brauer, 1865) – ♂, 28 v 2010, GTR.
13. *Mortonagrion* new species – Material will be listed elsewhere.

Platycnemidae
14. *Coeliccia* new species – Material will be listed elsewhere.
15. *Copera vittata* (Selys, 1863) – 2 ♂♂, 27 x 2009, RAD.

Anisoptera
Aeshnidae
16. *Helisaeschna idae* (Brauer, 1865) – ♂, 30 v 2010, RAD.

Macromiidae

Libellulidae
18. *Brachygonia oculata* (Brauer, 1878) – ♀, 22 i 2006, GTR;
20. *Orchithemis pruinans* (Selys, 1878) – ♂, 27 x 2009, RAD; ♂, 28 v 2010, GTR.
23. *Orthetrum sabina* (Drury, 1773) – ♀, 5 vi 2010, RAD.
25. *Tholymis tillarga* (Fabricius, 1798) – ♂, 27 x 2009, RAD.

Reference
There are only two reports of *Palpopleura s. sexmaculata* in Sri Lanka (formerly Ceylon). Fraser (1919) reports its distribution as “…Shillong, Pusa, Ceylon, Malabar, …”. Fraser (1936) reports its distribution as “From Ceylon and Western India to Tibet and throughout Malaysia and Indo-China to China” and further states that he has specimens from Ceylon. No other worker, Hagen (1858, 1859), Kirby (1891, 1894, 1905), Ris (1910), Laidlaw (1924, 1951), or Lieftinck (1940, 1955, 1971), has listed *P. s. sexmaculata* as being from Sri Lanka or has reported any specimen from Sri Lanka. Neither Fraser (1919) nor Fraser (1936) provide any information about the existence of a specimen other than Fraser’s statement that he has some.

De Fonseka (2000) included *P. s. sexmaculata* in his list and said it was “a wide ranging insect but apparently not very common in Sri Lanka,” though no actual records or specimens are listed. He further stated that “Fraser says he has specimens from Sri Lanka but neither other recent workers nor the Museum collection lists the species”. *P. s. sexmaculata* is listed in Bedjanić et. al. (2007) with the note that “…no localities or specimens in collections are known to date.” Several recent workers (M. Bedjanić, K. Conniff, S. Gunasinghe & N. van der Poorten, pers. comm.) have not reported *P. s. sexmaculata* despite widespread, fairly continuous monitoring of the odonates in Sri Lanka since at least 1995. *P. s. sexmaculata* is quite distinctive and is not likely to have been overlooked by workers in Sri Lanka, particularly recently.

In Thailand, *P. s. sexmaculata* is found locally on mountains and uplands in the northern and central parts of the country from May to February (Hämäläinen & Pinratana 1999). In Hong Kong, it is found in or adjacent to marshy areas where it perches on isolated grass stems and bushes (Wilson 1995). In India, *P. s. sexmaculata* is usually found in marshes associated with bamboo groves (Subramanian 2009). It has recently been reported for the first time from Goa in India (Rangnekar et. al. 2010) but no habitat information was given. It was reported in Bhutan at streams and marshy ponds in September at elevations between 1300 m and 2000 m asl (Mitra 2006). It is also found in China, Laos, Nepal, Vietnam, Burma, and Afghanistan (Wilson 1995). Fraser (1936) reported that it is found in large colonies, usually in bamboo jungles where they breed. Its flight has been described as ‘slow and circling’ (Subramanian 2009), ‘low, circling and unsustained’ (Fraser 1936) and ‘short [and] rapid’ (Wilson 1995).

A recent search of the specimens in the NHM London did not reveal any specimens of *P. s. sexmaculata* labelled from Ceylon/Sri Lanka (M. Bedjanić in 2007, pers. comm. and N. van der Poorten in 2010). A search by the author of the collections in the Sri Lanka National Museum in December 2010 did not reveal any specimens of *P. s. sexmaculata*.

It is clear that there are no actual specimens of *P. s. sexmaculata* from Ceylon and *P. s. sexmaculata* is deleted from the checklist of Sri Lankan Odonates.

**Acknowledgments**

Matti Hämäläinen for information and a critical review of the manuscript. Matjaz Bedjanić for a critical review of the manuscript and information. Manori Nandasena-Gunatillake of the Sri Lanka National Museum for assistance with the odonate collection. David Googder of the Natural History Museum in London England for assistance with the odonate collection. Karen Conniff & Sampath Gunasinghe for information.

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Wilson, K. D. P., 1995. Hong Kong Dragonflies. Urban Council of Hong Kong, Hong Kong.

Palpapleura sexmaculata sexmaculata, Hong Kong. Photo credit: Keith DP Wilson.
Dragonflies of Phu Quoc Island, South Vietnam

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Introduction
The first publication on the dragonfly fauna of Phu Quoc Island was a photographic list in Vietnamese in 2008 by the second author, resulting from a biodiversity survey from 2007 to 2008 carried out by Wildlife At Risk. According to that publication, the dragonfly fauna of the island comprises about 20% of the total number of species known from the whole country.

Later, confused by the photos of two species, Elattoneura sp. and Coeliccia yamashakii from Bui Huu Manh’s book (2008), the first author proposed a re-survey of the dragonflies on the island. The field trip was carried out from 1 to 9 March 2011, by all three authors.

Phu Quoc Island


Phu Quoc is the largest in an archipelago of 14 islands in the south of Vietnam, with a national park situated in the north-east of the island. The topography of the national park is hilly, although not particularly steep. The highest point in the national park is Mount Chua at 630m altitude. Phu Quoc island supports various habitat types, including lowland evergreen forest distributed at an elevation lower than 600m, coastal sand, off-shore, limestone forests, scrub and anthropogenic habitats.

Additional notes on dragonflies of Phu Quoc Island
This survey updates five species records for the Phu Quoc Island dragonfly fauna. Additionally, the species
Rhinagrion mima (Karsch, 1891) and Acisoma panorpoides Rambur, 1842 were recorded by the third author in 2009. R. mima was a new record for the Vietnamese fauna at that time.

A coenagrionid damselfly, which was recorded as an unknown species in 2009 by Nguyen, is confirmed as Amphiencemis gracilis Krüger, 1898, a new record for the Vietnamese fauna.

The species Elatoneura sp. in Bui (2008) is probably an undescribed species, and will possibly be described as a species of Prodasineura.

The species ?Platylestes heterostylus Lieftinck, 1932 in Bui (2008) is confirmed as Lestes elatus Hagen in Selys, 1862 and this species is also a new record for the Vietnamese fauna.

In this survey, the species Coelicia yamasakii Asahina, 1984, previously only known from Thailand, was recorded in Phu Quoc Island, hence it is now truly recorded for Vietnamese fauna. This species has a pair of black inferior appendages, as compared to C. scutellum (C. tommakuri Asahina, 1997 is considered to be a junior synonym of C. scutellum), which has similar thoracic markings and was misidentified by Do, 2007. The species that was named as C. yamasakii from photos taken in June 2007 (Bui, 2008) seems be an undescribed species because the marking on the synthorax is remarkably different from that of true C. yamasakii.

In his notes, Bui (2008) mentioned a species of Microgopomphus; however, according to the description of the second author, it seems be a species of Burmagopomphus.

The species Hydrobasileus croceus (Brauer, 1867) was added to the Phu Quoc fauna.

Updated checklist of dragonflies of Phu Quoc Island

**ZYGOPTERA**

**Calopterygidae**
1. Neurobasis chinensis (Linnaeus, 1758)
2. Vestalis gracilis (Rambur, 1842)

**Chlorocyphidae**
3. Heliocypha bifonata (Selys, 1859)
4. Libellago hyalina (Selys, 1859)

**Euphaeidae**
5. Euphaea ochracea Selys, 1859

**Lestidae**
6. Lestes elatus Hagen in Selys, 1862

**Coenagrionidae**
7. Aciaigrion borneense Ris, 1911
8. Agriocnemis pygmaea (Rambur, 1842)
9. Amphicnemis gracilis Krüger, 1898
10. Archibasis viola Lieftinck, 1948
11. Ceriagrion auranticum Fraser, 1922
12. Ceriagrion cerinorubellum (Brauer, 1865)
13. Ischnura senegalensis (Rambur, 1842)
14. Onychargia atrocyana Selys, 1865

15. *Pseudagrion williamsoni* Fraser, 1922
16. *Pseudagrion microcephalum* (Rambur, 1842)
17. *Pseudagrion pruinosum* (Burmeister, 1839)
18. *Pseudagrion rubriceps* Selys, 1876

**Platycnemididae**
19. *Coeliccia yamasakii* Asahina, 1984
20. *Coeliccia* sp.
21. *Copera marginipes* (Rambur, 1842)

**Protoneuridae**
22. *Prodasineura* sp.

**Megapodagrionidae**
23. *Rhinagrion mima* (Karsch, 1891)

**Anisoptera**

**Gomphidae**
24. *Ictinogomphus decoratus* (Selys, 1858)
25. Gen.? spec.?

**Aeshnidae**
26. *Anax guttatus* (Burmeister, 1839)

**Corduliidae**
27. *Idionyx* sp.

**Libellulidae**
28. *Acisoma panorpoides* Rambur, 1842
29. *Brachygonia oculata* (Brauer, 1878)
30. *Brachythemis contaminata* (Fabricius, 1793)
31. *Cratila lineata* (Brauer, 1878)
32. *Crocothemis servilia* (Drury, 1770)
33. *Diplacodes nebulosa* (Fabricius, 1793)
34. *Diplacodes trivialis* (Rambur, 1842)
35. *Hydrobasileus croceus* (Brauer, 1867)
36. *Lathrecista asiatica* (Fabricius, 1798)
37. *Lithrothemis mortoni* Ris, 1919
38. *Nannophya pygmaea* Rambur, 1842
39. *Neurothemis fluctuans* (Fabricius, 1793)
40. *Neurothemis fulvia* (Drury, 1773)
41. *Neurothemis tullia* (Drury, 1773)
42. *Onychothemis testacea* Laüllaw, 1902
43. *Orchithemis pulcherrima* Brauer, 1878
44. *Orthetrum chrysis* (Selys, 1891)
45. *Orthetrum glaucum* (Brauer, 1865)
46. *Orthetrum sabina* (Drury, 1770)
47. *Pantala flavescens* (Fabricius, 1798)
48. *Potamarcha congener* (Rambur, 1842)
49. *Rhyothemis obsolescens* Kirby, 1889
50. *Rhyothemis phyllis* (Sulzer, 1776)
51. *Rhyothemis triangularis* Kirby, 1889
52. *Rhyothemis variegata* (Linnaeus, 1763)
53. *Tetrameris irregularis* Brauer, 1868
54. *Tetrameris platyptera* Selys, 1878
55. *Tholymis tillaga* (Fabricius, 1798)
56. *Trithemis aurora* (Burmeister, 1839)
57. *Trithemis festiva* (Rambur, 1842)
58. *Trithemis pallidinervis* (Kirby, 1889)


59. *Urothemis signata* (Selys, 1872)
60. *Zygonix iris* Selys, 1869

**Conclusion**
The research updated five species of dragonflies for the Phu Quoc fauna, three of which are new records for Vietnam (*Amphicnemis gracilis*, *Coeliccia yamasakii* and *Lestes elatus*). The species named as “*Coeliccia yamasakii*” and *Elatoneura sp.* in Bui (2008) are probably undescribed species. *Lestes elatus* is a new record for the Vietnam fauna and it is considered misidentified by Bui (2008) as *Platylestes heterostylus*. Further study of dragonflies on the island is needed to understand fully the fauna of the area.

**Acknowledgements**
This survey was supported by a part of Wildlife At Risk Biodiversity and Conservation Program in 2011, and we thank the organisation for this help. We also thank Direction Board of Phu Quoc National Park for helping us in the field. And we thank Graham Reels who reviewed this manuscript.

**References**


Photo 8. *Hydrobasileus croceus* (Brauer, 1867). Credit: Do, M.C. 2011

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Last year, I received an email message from David Allen, the programme officer of Freshwater Biodiversity Unit of IUCN Species Programme, inviting me to participate in the IUCN Indo-Burma Freshwater Biodiversity Assessment Review Workshop, held early this year (17-22 January 2011) in Vientiane, Lao PDR. I was totally overwhelmed, because I knew that I was going to meet for the very first time many renowned regional odonatologists whom I have admired so much, and furthermore this would be the first time I set foot in the beautiful country of Lao PDR.

The workshop was held at Vasana Hotel not far from the Vientiane city centre, located by the riverbank of the spectacular Mekong River. Lao PDR was still experiencing the dry season in January. The Mekong River had almost dried up in Vientiane, and kids were seen playing on the dried sandy river bed in the evening. The river bed was even not spared from the racing activity of four-wheel drive vehicles. My mind went wild imagining how the river in front of me would look during the months of the wet season – it must be roaring in its most glorious form, I guess. I could not ignore my curiosity to go down to the dried river looking for dragonflies at some small water pools, and I spotted a good number of Ischnura senegalensis and Brachythemis contaminata. I later learnt that some of the workshop participants from the Odonata group arrived 12- days earlier, and took the opportunity to venture into nearby villages for odonate hunting.

The aim of the workshop was to review threat assessments written for selected groups of freshwater organisms. The workshop was conducted in four working groups - Odonata, molluscs, fishes and aquatic plants. The assessment area effectively covers eastern Myanmar, Yunnan in China, Thailand, Lao PDR, Vietnam, Cambodia and north western Peninsular Malaysia. However the threat assessments themselves are global, e.g. the assessment for Orthetrum testaceum considers the whole distribution of that species, not just populations within the project region. The Odonata group was facilitated by Emma Brook (an officer of IUCN Species Programme).
and comprised 10 regional odonate workers namely Do Manh Cuong (Vietnam), Phan Quoc Toan (Vietnam), Rory A. Dow (the Netherlands), Keith D.P. Wilson (UAE), Graham T. Reels (Hong Kong), Matti Hämäläinen (Finland), Haomiao Zhang (China), Xin Yu (China), Xiaoli Tong (China) and Chee Yen Choong (Malaysia). It was really pleasant to see some young faces in the Odonata group, and these young bloods will be important odonate workers for many years to come.

A total of over 160 odonate species assessments were reviewed in the workshop. About six percent of the assessed species were under threatened categories (Critical, Endangered and Vulnerable). On the other hand, over 30% of the assessed species were categorised as data deficient, and this definitely confirms the urgency of more ground work on data collecting in the future. The participants were of the opinion that one of the significant threats to odonate species in the Indo-Burma region is the construction of many small-scale hydro-electric dams in the Mekong basin.

The participants of the Odonata group were slaving away in the workshop, trying to assess all the assigned odonate species. The discussion and assessment work started at 8.30am and finished at 6.00pm daily. It was definitely too many species being assessed on too little time, and we had to concentrate on the Data Deficient and high threat category species, plus some for which no assessment had been written before the workshop. However,
it was quite refreshing to hear the announcement from David Allen that all the participants of the workshop (Odonata, molluscs, fishes and aquatic plants) would be treated to a boat ride in the evening on January 20, 2011. We were taken to a tributary of the Mekong River not too far from Vientiane city for the boat ride. We all very much enjoyed the evening with dinner on the boat, with a Laotian menu.

This technical workshop was wound up with short presentations from each working group on the progress of the assessment work done in the short six days. The Odonata group was doing quite well with over 90% of the assigned species being assessed. The assessment on the remaining odonate species would be done through email communication.

Gratitude is due to David Allen on the effort to organise this workshop in Lao PDR. On a personal note, I would like thank Rory A. Dow for recommending me to David Allen for the workshop.

Photo 5. Workshop participants enjoying a boat trip on a tributary of the Mekong River. Photo credit: C.Y. Choong.
Book review

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The Dragonflies of Eastern Europe and Caucasus: an illustrated guide


This is a bilingual, Russian and English, guide for Odonata found in the territory that was once the European part of the USSR, comprising about half of Europe, but which was traditionally ignored in any guide pretending to be European and published in the West. That ignorance was not due to some specific indifference of the westernese towards Russian communists but merely because of the fatal lack of information.

In the case of Odonata, the lack of information was not a consequence of the notorious iron veil but resulted from quite an unusual circumstance, in that Odonata have been well investigated in the Asian part of the USSR but remained surprisingly underexplored in its otherwise much better known European part. While more or less complete faunal checklists did exist, this vast territory remained virtually terra incognita as to the actual distribution of species even for Russian odonatologists, who in the second half of the twentieth century mostly inhabited Siberia and were few in number.

Things are getting much better nowadays, as witnessed by the appearance of this unique book, which includes a detailed introduction, identification keys illustrated by small drawings throughout, a systematic consideration of species illustrated by more comprehensive drawings, distributional maps, a list of new records and indices. All the text is bilingual and all drawings were nicely done, in pencil, specially for this book. Hence the book presents the most up-to-date knowledge within its scope to both the Russian public, who have badly missed such a guide for identifying species, and to international odonatologists, most of whom have so far had no idea of what happens in that enormous part of Europe. Its author, Dr. Vladimir Skvortsov, was well known for his excellent, ‘smart’ and also well illustrated, guide of the vascular plants of the forest zone of the European part of Russia, published by Greenpeace. Few knew he was also an odonatologist until, supported by an IDF grant, he took on the labour of compiling and updating all the existing information on Odonata of the European part of Russia and the new European states formerly included in the USSR; a labour which took several years.

The book is not free from errors, from typographical to non-critical inclusions of some species into the Caucasian fauna. These errors resulted from the author’s working alone; they have been well reviewed by Asmus Schröter in Odonatological Abstract Service 30 (2010), p. 57-60. Maybe the distribution maps, the most important part of the book for some of us, are based on an awkward conformal projection, and the accepted system of shading and dotting looks too complicated as well. Nevertheless, we now have a solid benchmark of our knowledge of the East European Odonata, to be built upon and to go ahead from.
During routine monitoring by the New South Wales Department of Environment, Climate Change and Water (DECCW), now Office of Environment and Heritage (OEH), a male of the tiny stonefly *Austrocercella autumnalis* was collected in late autumn in the Kanangra Boyd National Park, mountainous country ca 100 km west of Sydney, Australia. This species was described and until recently only known from a few localities in the alpine region (Snowy Mountains National Park, ca 400 km SW of Sydney) where it was collected in early autumn (late March to late April) (Theischinger 1984). The distance between the now known numerous alpine records and the recent more northerly record of *A. autumnalis* is approximately 300 km, the altitude of the alpine sites is up to 1800 m, the altitude of the Kanangra-Boyd locality is ca 1100 m. As the dispersal ability of stoneflies is quite low and accordingly the geographical ranges of many species are small, the new record came as a big surprise.

A distribution similar to what is indicated by the described situation, however, is known for two odonate species. The almost exclusively alpine/southern dragonflies *Austroaeschna inermis* (Fig. 1) and *Austroargiolestes calcaris* (Fig. 2) range north to about Canberra and are then known only from Kanangra-Boyd NP but not from lower altitude country in between, nor from the Blue Mountains or from north of Kanangra-Boyd (Figs 3, 4) (Theischinger 1982, Theischinger & O’Farrell 1986, Peters & Theischinger 2007, Theischinger & Endersby 2009).

Whereas there are several *Austroaeschna* species (e.g. *A. atrata, A. flavomaculata, A. ingrid, A. multipunctata*) restricted to the mountainous areas south from about Canberra, Kanangra-Boyd NP is known as at least part of a very effective corridor between the northern and southern highlands (in both directions), even for a number of easily detectable species of southern origin (e.g. *A. subapicalis, A. parvistigma, Griseargiolestes eboracus*). The telephlebiid dragonfly *A. inermis*, the megapodagrionid damselly *A. calcaris*, the notonemourid stonefly *A. autumnalis* and probably other species, however, seem to have their northernmost outlier population at Kanangra-Boyd and are probably just hanging on there. As opposed to the tiny stonefly *A. autumnalis*, the large
dragonfly *A. inermis* has a very powerful flight which may enable it to avoid passive dispersal (stay put). Pleistocene climatic changes may be the reason for their present distribution including the isolation of their populations.

The described circumstances and the presence of Blue Mountains species and more regional Sydney species (e.g. *A. pulchna, A. obscura, A. unicornis, G. griseus*), make up for a rather high and interesting biodiversity of certain groups of aquatic macroinvertebrates in Kanangra-Boyd NP. This national park, which is part of the Greater Blue Mountains World Heritage area, protects a wide range of habitats at elevations ranging from 150 m to 1334 m above sea level. While the habitats of disjunct populations of numerous species are protected from direct human impact by the NSW national park reserve system, their seeming dependence on the habitat conditions of high altitudes may render them susceptible to the effects of climate change.

This would suggest that high elevation areas of the Snowy Mountains and Kanangra Boyd National Parks are locations where studies on the effect of climate change on aquatic macroinvertebrates, particularly dragonflies, could be worthwhile.

**References**


Fig. 3: Recorded distribution of *Austroaeschna inermis*. Map: Ian Endersby.

Fig. 4: Recorded distribution of *Austroargiolestes calcaris*. Map: Ian Endersby.
Archaeophya adamsi Fraser (Odonata, Gomphomacromiidae): not in Queensland, but safe in New South Wales?

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Abstract
New records are presented for the endangered Archaeophya adamsi (Odonata) from two sites near Sydney, Australia. Its ecology, distribution, morphology, systematic position, taxonomic status and relationship to its sister species, A. magnifica, are discussed. Data suggest that A. adamsi was incorrectly described from northern Queensland, and that it is restricted to Hawkesbury Sandstone habitats near Sydney, New South Wales where its survival appears secure.

Introduction
During recent coastal SRA (Sustainable Rivers Audit) monitoring by the Office of Environment and Heritage in New South Wales Department of Premier and Cabinet, we found larvae of Archaeophya adamsi (Horned Urfly/Adams Emerald) in two of 76 sampled sites. As finding A. adamsi is a rare event, we report it below and provide ecological information gathered at the sites. We also take this opportunity to discuss and update some significant and interesting details regarding distribution, ecology, morphology, systematic position, conservation status and future of this enigmatic Australian species.

Recent records of Archaeophya adamsi
The rather rare dragonfly species Archaeophya adamsi was recently collected at two sites in New South Wales:

(1) Reedy Creek at Kedumba Valley Rd, Kings Tableland, Blue Mountains National Park (33.826335°S/150.37164°E), ca 150 m asl: 1 F-?3 larva, 11-05-2011, G. Theischinger & M. Krogh.

The site was a 100 m reach of a 1-2.5 m wide stream in a steep valley. Water level, shading, and bank steepness were moderate and the riparian zone included largely Leptospermum, Lomandra, Gleichenia, small trees, large trees and bare ground. Water quality readings at 10:35 am were: temperature 10.6°C, pH 7.15, conductivity 0.093 mS/cm, turbidity 0.7 NTU, dissolved O₂ 8.7 mg/L, alkalinity <10 mg/L. The habitat where A. adamsi was found was 10 m of a 100-300 mm deep riffle section immediately downstream of an unsealed road. The natural substrate was recorded as 5% bedrock, 20% boulder, 50% cobble, 20% pebble, 3% gravel and 2% sand.

Odonate larvae identified as Archaeophya adamsi, Austroaeschna pulchra, Austroaeschna unicornis, Hemigomphus heteroclytus/gouldii and Nannophlebia risi were collected in the riffle; and Synlestes sp., Adversaeschna brevistyla and
Rhadinosticta simplex in a nearby 10 m length of edge water.

(2) Little Wheeny Ck at service track, Wollemi National Park (33.49510°S/150.63312°E), ca 50 m asl: 1 F-22 instar larva, 23-06-2011, G. Theischinger & S. Jacobs.

The site was a 100 m reach of a 3-10 m wide stream in a steep valley. Water level, shading, and bank steepness were moderate and the riparian zone included ferns, shrubs, small trees, large trees and bare ground. Water quality readings at 2:40 pm were: temperature 9.68°C, pH 6.39, conductivity 0.209 mS/cm, turbidity 0 NTU, dissolved O₂ 8.3 mg/L, alkalinity 12 mg/L. The habitat where A. adamsi was found was 10 m of a 50-150 mm deep riffle section immediately downstream of a service track. The natural substrate was recorded as 30% boulder, 50% cobble, 10% pebble, 5% gravel and 5% sand.

**Discussion**

**Distribution and Ecology**

Fraser (1959) described Archaeophya adamsi from a unique somewhat teneral female, labelled “North Queensland, Edungala, 28.xii.1953, E. Adams”. Its male was discovered in 1968 along Berowra Creek at Galston Gorge about 5 km northwest of Hornsby, New South Wales. Since then, A. adamsi larvae identified as Archaeophya adamsi, Diphlebia lestoides/nymphoodes, Austroaeschna pulchra and Hemigomphus heteroclytus/gouldii were collected in the riffle; and Synlestes sp., Austroargiolestes (icteromelas) sp., Teleplebiidae (Telephlebia) sp. and Synthemistidae (Eusynthemis) sp. in a nearby 10 m length of edge water.
Adamsia has become known from additional New South Wales localities: Bedford Creek and Tunks Creek near Galston Gorge, Floods Creek at Somersby Falls, Hungryway Creek in Wollemi National Park, the foothills of the Blue Mountains, several creeks near Jamison and from Cedar Creek at Hayes Crossing (Theischinger & Watson 1978, 1984; Hawking & Theischinger 1999, 2004; Theischinger & Endersby 2009). To these records can now be added: Cabbage Tree Creek nr Gross Vale, 6 km south of Kurrajong (1 specimen preserved in the Collection of the Agricultural Scientific Collections Unit, Industry and Investment NSW, Orange); and the two most recent records from Reedy Creek at Kedumba Valley Rd in the Blue Mountains and from Little Wheeny Creek in Wollemi National Park.

Owing to the fact that the type locality of *A. adamsi* was given as Edungalba (23.71667˚S/149.85˚E) in North Queensland and that all other records come from an area no more than 100 km distant from Sydney, New South Wales (no records are available from northern New South Wales or elsewhere in Queensland), Theischinger (2010) has already cast doubt about the type locality of *A. adamsi*. In addition, we know that the unique female of *A. adamsi* came into Fraser’s hand as a loan from R. Dobson, an avid dragonfly collector who lived at Wahroonga not far from Galston Gorge where most subsequent records of the species have come from. We can also present a potentially complete list of dragonflies collected in Edungalba (Table 1).

It is important to discuss the fauna of northern Queensland where *A. adamsi* was supposedly first collected. Below we present a fairly complete list of dragonflies collected at Edungalba, the purported type locality of this species (Table 1).

**Table 1: List of Odonata species recorded from Edungalba, Queensland (collected almost exclusively by E. Adams and R. Dobson and lodged in the collection of Entomology CSIRO, Canberra).**

<table>
<thead>
<tr>
<th>Austrolestes leda</th>
<th>Xanthagron erythroneurum</th>
<th>Diplocodes bipunctata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lestes concinnus</td>
<td>Anax papuensis</td>
<td>Diplocodes haematodes</td>
</tr>
<tr>
<td>Rhamnosticta simplex</td>
<td>Astrogynacantha heterogena</td>
<td>Nannophlebia risi</td>
</tr>
<tr>
<td>Nososticta solida</td>
<td>Antipodogomphus acolythus</td>
<td>Orthetrum caledonicum</td>
</tr>
<tr>
<td>Agriocnemis pygmaea</td>
<td>Antipodogomphus proselythus</td>
<td>Orthetrum villosovittatum</td>
</tr>
<tr>
<td>Angiocnemis rubescens</td>
<td>Astrocygophomphus praeruptus</td>
<td>Pantala flavescens</td>
</tr>
<tr>
<td>Austroagron watsoni</td>
<td>Austrocygophomphus arbusorum</td>
<td>Potamarcha congener</td>
</tr>
<tr>
<td>Austrocnemis splendidula</td>
<td>Ictinogomphus australis</td>
<td>Rhodolestes lieftincki</td>
</tr>
<tr>
<td>Ischnura aurora</td>
<td>Parasynthemis regina</td>
<td>Rhyothemis graphiptera</td>
</tr>
<tr>
<td>Ischnura heterosticta</td>
<td>Archaeophya adamsi</td>
<td>Tholymis tillarga</td>
</tr>
<tr>
<td>Pseudagrion aureofrons</td>
<td>Macromia tillyardi</td>
<td>Zyxomma elgneri</td>
</tr>
<tr>
<td>Pseudagrion cingillum</td>
<td>Hemicordulia australiae</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hemicordulia intermedia</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6. Recorded distribution of *Archaeophya adamsi*. Map: Ian Endersby. (The single black square indicating the type locality in Queensland appears doubtful.)

Figure 7. *Archaeophya magnifica* map.
Hemicordulia tau

This list of 37 species includes, except for A. adamsi, only species with northern affinities and/or species associated with slow flowing streams and rivers or pools. There are also some more generalised inland, migratory, and vagrant species. On the other hand, species with southern affinities were found overwhelmingly to coexist with A. adamsi at all New South Wales sites. These sites are often gorges with densely vegetated riffle sections, including patches of rain forest and closed canopy.

For the above reasons, habitat affinity, abundance of specimens, and the origin of the holotype from a Sydney-based collector, it appears likely that the type locality of A. adamsi is incorrect and that the species does not occur in Queensland. Based on known records, the extensive collecting of dragonflies in New South Wales and Queensland and the ongoing monitoring of New South Wales streams, its range seems to be small and to include only the coastal mountains and the western slopes of the Great Dividing Range in the area around Sydney (mostly Hawkesbury catchment) and to lie well west of 150˚E, south of 33˚S and north of 34˚30’S. We hope, however, that the above conclusions are taken as encouragement to confirm that A. adamsi occurs in Queensland and to continue the search for it in northern New South Wales.

Morphology

A second Archaeophya species, A. magnifica Theischinger & Watson, lives in rainforest streams in tropical Queensland in situations similar to the habitats of A. adamsi. The larvae of both species stand out from all other Australian dragonflies by their tank-like appearance. They are stout and particularly strongly sclerotised and have large legs, well-developed wing-like pronotal lobes and a massive shovel-like frontal plate. All these attributes appear to be adaptations as tools for a long, possibly very flexible life-history in habitats that can change from torrents into ephemeral riffle. Whereas the larvae of the two Archaeophya species are almost indistinguishable, there is an obvious structural difference between the adults that deserves attention. A. adamsi has a horn-like tooth each side of the prothorax in both sexes, absent in A. magnifica. This character is of particular interest as differences of the prothorax between closely related Australian Anisoptera species are otherwise unknown. Differences in prothorax morphology are, however, common between many closely related Zygoptera species and often developed only in the females. This is because the female prothorax is involved in the initiation of copulation in Zygoptera but not in Anisoptera, where the female occiput is seized by the anal appendages of the male. The unusual prothoracic structure of A. adamsi is reflected in the common name “Horned Urfly” (Hawking & Theischinger 2003). This name, however, is used much less commonly than “Adams Emerald” which may - if Dobson, not Adams, collected the original female (see above under Distribution and Ecology) - not be entirely justified.

Systematic position

When describing Archaeophya adamsi and in his book on Australasian dragonflies, Fraser (1959, 1960) classified the species as a corduliid. Theischinger & Watson (1978, 1984) and Watson et al. (1991) included it in the subfamily Gomphomacromiinae of the family Corduliidae, commenting on the close affinity of Archaeophya with the Synthemis group of genera (then Synthemistinae, later Synthemistidae). Hawking & Theischinger (1999), Theischinger (2001), Theischinger & Hawking (2006) and Theischinger & Endersby (2009), in accordance with Carle (1995) and Bechly (1996), listed Archaeophya as a gomphomacromiid even though Ware et al. (2007) had included it in the GSI-clade (GSI stands for Gomphomacromia Synthemis Idionyx) and consequently in a greatly extended Synthemistidae, a classification apparently already more widely accepted (Kalkman et al. 2010).

Conservation Status and Future

According to Hawking (1999) Archaeophya adamsi, as “possibly Australia’s rarest dragonfly”, fitted the IUCN category “Critically Endangered”. Based on its restricted distribution, rarity, long life-history and the threat to some populations by urban development the species was listed in 1999 as a Vulnerable Species in the NSW Fisheries Management Act 1994. Based on the reduction of its distribution by continuing impact in some localities and on the lack of protection even in reserves it was in 2006 upgraded to Endangered Species status. The A. adamsi populations at Somersby Falls and at Hungryway Creek occur in reserves, as do the most recently established populations in Kings Tableland and in Wollemi National Park.

The fact that both recent records (Reedy Creek in the Blue Mountains and Little Wheeny Creek in Wollemi National Park) come from the immediate vicinity of tracks crossing the inhabited streams gives reason to hope that A. adamsi may be present in more sites of the same and other streams of these national parks, and possibly also in other national parks, and that the future of the species in New South Wales is reasonably secure at the present.

Acknowledgements

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References


Preliminary report on the Odonata of the Northern Province including the Jaffna Peninsula and its islands in Sri Lanka.

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Introduction
The island of Sri Lanka (previously Ceylon) lies off the southeast corner of India. It is geologically and zoogeographically considered part of the Indian subcontinent. Its Odonate fauna has been reasonably well-studied though new species are still being discovered. At last count, there were 118 species, 46 of which are endemic plus eight species endemic at the subspecies level with three additional species in the process of being described.

From the early 1800s to the early 1900s, several workers studied the odonate fauna in Sri Lanka including Robert Templeton, J. Nietner, J. W. Yerbury and E. E. Green (de Fonseka 2000). H. A. Hagen published the first records of the odonates of Sri Lanka in 1858 & 1859 based in part on some of these collections. F. F. Laidlaw published several papers based on the collections of others. F. C. Fraser collected in Sri Lanka up to the 1930s and authored The Fauna of British India, Ceylon and Burma: Odonata (3 volumes) (1933, 1934, 1936) as well as numerous papers. M. A. Lieftinck also collected in Sri Lanka and published several important papers in 1940, 1955 and 1971. However most workers did not travel to the Northern province or the Jaffna area, a situation that has continued.

Since about 1981, travel to the Northern province was very restricted by the civil war, which ended in 2009. Travel restrictions have eased somewhat since then though the presence of land mines in many areas poses a great risk, many other areas are still off-limits to the general public, and the roads are often in poor repair.

The Northern province has two distinct geographical areas: the Jaffna peninsula and the Vanni. The Jaffna peninsula is flat and has no streams but many lagoons and wetlands which are important bird migration areas (see Photos 1 & 2). The Vanni is also quite flat but has many perennial rivers that feed numerous irrigation tanks that also support much wildlife. Most of the Northern province is in the dry zone, where rainfall is less than 75 inches per year while an area around Mannar is in the arid zone, where rainfall is less than 50 inches per year. The dry zone covers almost two-thirds of the island (the north, north-east and south-east), and the arid zone is also found in a small strip of land on the south-east coast (Sri Lanka, Ministry of Forestry and Environment, 1999) (see Figure 1). The Northern province has five administrative districts: Jaffna, Kilinochchi, Mannar, Mullaitivu and Vavuniya (see Figure 2).

Odonatological literature sources for the Northern province of Sri Lanka are...
very scarce. Kirby (1894) reported on eight species collected by Yerbury in Andankulam; Kirby (1905) added two species from Jaffna collected by E. E. Green. Laidlaw (1924) added six species from the collection of E. E. Green. Fraser (1933) added one new species from his field work. Lief tinck (1955) added three species to the list from the results of F. Kaiser’s field work and Lief tinck (1971) added four species to the list in his report on the odonate results for the Lund University (Sweden) Ceylon Expedition in 1962. An additional 14 species are supported by specimens in various collections as catalogued in Bedjanić et al. (2011). In summary, prior to 1981, 38 species were recorded from the Northern Province (21 species from Jaffna district, seven species from Mullaitivu district; 29 species from Mannar district, 18 from Vavuniya district and no species from Kilinochchi district). Since 1981, seven new species have been added to the provincial total (Libellago adami, Paracercion malayanum, Pseudagrion decorum, Pseudagrion microcephalum, Hydrobasileus croceus, Aethriamanta brevipennis brevipennis, Tholymis tillanga); 10 new species have been added to the Jaffna district list, no new species to the Mullaitivu district list, seven new species to the Mannar district list, five new species to the Vavuniya district list and one new species to Kilinochchi district list (Appendix A). The lack of records in Kilinochchi district is due to lack of field trips there. Mannar district was still accessible for much of the time since 1981 even though the other four districts were not.

The results of the author’s fieldwork carried out in November 2009, December 2010 and February 2011 are presented. Additionally, the author has examined and confirmed the identification of some specimens in the University of Jaffna Student Collection (February 2011) and some specimens in the collection at the Sri Lanka National Museum (SLNM) (ongoing); these results are included here as well. Information from de Fonseka (1990) is included only where the identification of the specimen has been verified by the author as de Fonseka’s list was only a compilation without confirmation of identification. Based on this data and data from the odonatological database for The Distribution Atlas of the Dragonflies of Sri Lanka (Bedjanić et al., 2011), a list of species hereto known from the Northern Province of Sri Lanka has been compiled and is presented.

Annotated species list
All post-1981 records are by the author for the period February 17-20, 2011 unless stated otherwise. Distributions have been given only for the dry and arid zones based on the author’s field experiences.

Family Chlorocyphidae

Family Lestidae
Lestes elatus Hagen, 1862 – a common tank species in the dry zone. Records pre-1981: Cheddikulam (Bedjanić et al., 2011), Per Aru (Lief tinck 1971), Vavuniya (specimen in SLNM) (Vavuniya district); Elephant Pass (Bedjanić et al., 2011) and Jaffna (specimen in SLNM) (Jaffna district); Kundachchi (Bedjanić et al., 2011) and Marichchukkaddi (specimen in SLNM) (Mannar district). Records post-1981: Additional records for the Jaffna district: home garden in Jaffna town; road AB20 (Chunnakam to Puttur) at km 22; and road B75 at milepost 13. Additional records for the Mannar district: Giant’s Tank on December 18, 2010; and Arippu on December 18,
Lestes malabaricus Fraser, 1929 – Records pre-1981: There is only one record of this species in Sri Lanka. The author and her colleague Karen Conniff were able to confirm this record by examining the specimen which is in the Sri Lanka National Museum. The label reads “Lestes malabarica – Det. by Fraser – Jaffna 28-31 Dec 1932”. Note that the original description (Fraser 1929) appears to record an incorrect size for the male. Fraser wrote that the male abdomen is 24-25 mm and that of the female is 32-33 mm. The specimen of the male in the SLNM was measured as having an abdomen of 34 mm. This apparently incorrect information has been repeated by others. Confirmation of the actual length of *L. malabaricus* in India is pending (Subramanian, pers. comm.). *L. malabaricus* is very similar to *L. elatus* and *L. praemosus* but males can be separated by the pattern of the thorax and the anal appendages. Records post-1981: None.

Family Coenagrionidae

Agriocnemis cf femina (Brauer, 1868) – status uncertain in the dry and arid zones. Records pre-1981: the only record from the Northern province is a record from Mullaitivu (Lieftinck 1971) which was listed as *A. femina femina*. However, the taxon is given here as *Agriocnemis cf. femina* since the (sub)specific status of populations from Sri Lanka is not clear and these populations show differences in comparison to topotypical populations (Bedjanić 2002). Records post-1981: None.

Agriocnemis pygmaea (Rambur, 1842) – a common species of the dry and arid zones. Records pre-1981: several reports from the Jaffna district, Mannar district and Vavuniya district (Bedjanić et al., 2011). Records post-1981: Additional records for the Jaffna district: Kayts Island (road AB31 just past the turn off to Nagadeepa); road B75 at milepost 13; Iyakkachchi (3 km north of Elephant Pass); AB20 (Puttur to Chunnakam), at km 22; and road B417 near the turnoff from road AB20 near km 23. Additional records for the Mannar district: Giant’s tank, November 29, 2009 & December 18, 2010; and Arippu on December 18, 2010 (dozens of individuals at each location). Additional record for the Vavuniya district: Iratperiyakulam Tank, south of Vavuniya.


Ischnura aurora aurora Brauer, 1865 – a common tank species in the dry zone. Records pre-1981: Andankulam (Mannar district) (Kirby 1924); Jaffna (Jaffna district) (Bedjanić et al., 2011); Mankulam (Vavuniya district) (Bedjanić et al., 2011); 7 mi east of Mankulam (Mullaitivu district) (Lieftinck 1971). Records post-1981: Additional records for the Jaffna district: several individuals seen on Kayts island (road AB31); and at Chavakachcheri (km 307 on road A9). Additional records for the Mannar district: several hundred individuals at Giant’s Tank on November 29, 2009 & December 18, 2010; and Arippu on December 18, 2010.

Ischnura senegalensis (Rambur, 1842) – a common species in the dry zone. Records pre-1981: Paraâyanalankulum (Vavuniya district) Lieftinck (1971); Nay Aru (Mannar district) (Lieftinck 1971); Jaffna (Jaffna district) (Bedjanić et al., 2011). Records post-1981: Additional records for the Jaffna district: Kayts Island (road AB31 just past the turn off to Nagadeepa); road B417 near the turn off from road AB20; road B75 at milepost 13; km 300 on the A9 at the Jaffna city entrance; and at Iyakkachchi (3 km north of Elephant Pass). Additional records for the Mannar district: several hundred individuals at Giant’s Tank on November 29, 2009 & December 18, 2010; and Arippu on December 18, 2010.

Ceriagrion coromandelianum (Fabricius, 1798) – a very common species of the dry zone. Records pre-1981: Jaffna (Jaffna district) (Laidlaw 1924); Cheddikulam (Vavuniya district) & Silvaturai (Mannar district) (Bedjanić et al., 2011). Records post-1981: Additional record for the Jaffna district: road AB20 (Puttur to Chunnakam) at km 22. Additional record for the Vavuniya district: Iratperiyakulam Tank, south of Vavuniya.

Pseudagrion decorum (Rambur, 1842) – a rare species in Sri Lanka though widespread in India. Records pre-1981: There are no historical records in the Northern province or any other province. Records post-1981: New record for the province and the Mannar district: Giant’s Tank, April 2006 (by G. de Silva Wijeyeratne) (Bedjanić et al., 2007).
**Pseudagrion malabaricum** Fraser, 1924 – a not uncommon tank species in the dry zone. Records pre-1981: de Fonseka (1990) lists a specimen in the SLNM from Mannar (Mannar district) but we have not yet been able to examine this specimen to authenticate this record. Records post-1981: none. It is somewhat difficult to separate from *P. microcephalum* without a close look. Though de Fonseka (2000) says that these two species can be separated by the dorsal markings on segment 2, this is incorrect; the dorsal markings on segment 2 of these two species is similar. However, the dorsal marking on *P. decorum* is significantly different.


**Pseudagrion rubriceps ceylonicum** (Kirby, 1891) – endemic at the subspecies level; uncommon in the dry zone. Records pre-1981: Jaffna (Jaffna district) (Kirby 1905); de Fonseka (1990) lists a specimen in the SLNM from Cheddikulam (Vavuniya district) but we have not yet been able to examine this specimen to authenticate this record. Records post-1981: none.

Family Platycnemididae


Family Protoneuridae

*Prodasineura sita* (Kirby, 1894) – endemic, uncommon in the dry zone. Records pre-1981: de Fonseka (1990) lists a specimen in the SLNM from Cheddikulam (Vavuniya district) but we have not yet been able to examine this specimen to authenticate this record. Records post-1981: none.

Family Aeshnidae

*Anax guttatus* and *Anax indicus*: previously these two species were confused and *A. indicus* was erected by Lieftinck only in 1942. Though they are fairly readily separated in the field, museum specimens need more careful examination.

*Anax guttatus* (Burmeister, 1839) – not uncommon in the dry zone. Records pre-1981: The single historical report of *Anax guttatus* in the Northern province is supported by a specimen from the Mannar district in the SLNM that was recently confirmed by the author and her colleague, Karen Conniff. The label information reads: “Pearl Banks (at sea), Ceylon, xi-[19]24, Det. Laidlaw, (#35)”. Records post-1981: New for the Jaffna district: a specimen in the University of Jaffna Student Collection (labeled “Jaffna, May 11, 2010”).


Family Gomphidae

*Macrogomphus lankanensis* Fraser, 1933 – endemic. An uncommon gomphid, more usually found in the wet zone. Records pre-1981: There are two historical records from the Northern province: Murunkan (Mannar district) in 1922 (Fraser, 1933), and Vavuniya (Vavuniya district) in 1970 (Bedjanić et al., 2011). Records post-1981: none.

*Ictinogomphus rapax* (Rambur, 1842) – a common tank species of the dry zone. Records pre-1981: Cheddikulam (Vavuniya district) and Mannar (Mannar district) (Bedjanić et al., 2011). Records post-1981: new record for the Jaffna district: road AB20 (Chunnakam to Puttur) at km 22.

Family Libellulidae


Orthetrum sabina sabina (Drury, 1773) – a common, widespread species in the dry zone. Records pre-1981: Kondachchi, Mannar and Silvaturai (Mannar district) (Bedjanić et. al., 2011). Records post-1981: New records for the Jaffna district: road B75 at milepost 5 & 13; Kopayonkirai Tank off road A9 near Jaffna; road AB20 (Puttur to Chunnakam) at km 22; Kayts Island (road AB31); road B417 near the turnoff from road AB20 near km 23; and Palaly Road near the Jaffna University. Additional record for the Mannar district: Giant’s Tank, November 29, 2009.


Brachythemis contaminata (Fabricius, 1793) - a common species of the dry zone. Records pre-1981: Elephant Pass (Jaffna district) (Bedjanić et. al. 2011); Andankulam (Kirby 1894), Giant’s Tank (Lieftinck 1971) (Mannar district); 7 miles east of Mankulam (Mullaitivu district) (Bedjanić et. al. 2011); Paraiyanalankulam (Vavuniya district) (Lieftinck 1971); Jaffna (Jaffna district) (Bedjanić et. al. 2011). Records post-1981: Additional records for the Jaffna district: Kayts Island (road AB31 & opposite Kayts Hospital); Kopayonkirai Tank off road A9 near Jaffna. Additional records for the Mannar district: Giant’s Tank, November 29, 2009 & December 18, 2010; Arippu on December 18, 2010; and stream at km 57 on road A14 on December 18, 2010. Additional records for the Vavuniya district: Iratperiyakulam Tank, south of Vavuniya.


Crocothemis servilia servilia (Drury, 1770) – a common tank species of the dry zone. Records pre-1981: Jaffna (Jaffna district) (Laidlaw 1924); Andankulam (Kirby 1894) & Mannar (Bedjanić et al., 2011) (Mannar district); Cheddikulam (Vavuniya district) (Bedjanić et al., 2011). Records post-1981: Additional records for the Jaffna district: Kayts Island (road AB31 & field opposite Kayts hospital), road B417 near km 23 of road AB20; road B75 at milepost 5 & 13; Jaffna city limits on road A9; Kopayonkirai Kulam tank off road A9. Additional records for the Mannar district: Giant’s Tank, November 29, 2009 & December 18, 2010; Arippu on December 18, 2010; and stream at km 57 on road A14, December 18, 2010.


Diplacodes trivialis (Rambur, 1842) – a very common species in the dry zone. Records pre-1981: Mullaitivu (Mullaitivu district) (Lieftinck 1924); Cheddikulam (Vavuniya district) (Bedjanić et al., 2011); Jaffna (Jaffna district) (Kirby 1905, Laidlaw 1924); Silvaturai (Bedjanić et al., 2011), Giant’s Tank & Nay Aru (Lieftinck 1971) (Mannar district). Records post-1981: Additional records for the Jaffna district: Kayts Island (road AB31) & road B417 near km 23 of road AB20; road B75 at milepost 5 & 13; Jaffna city limits on road A9; Kopayonkirai Kulam tank off road A9. Additional records for the Mannar district: Giant’s Tank, November 29, 2009 & December 18, 2010; Arippu on December 18, 2010; and stream at km 57 on road A14, December 18, 2010.

Indothemis carnatica (Fabricius, 1798) – an uncommon tank species in the dry zone. Records pre-1981: Jaffna (Jaffna district) (Laidlaw 1924); Mannar (Mannar district) (Lief tinck 1955). Records post-1981: Additional records for the Jaffna district: a specimen in the Student collection at the University of Jaffna (labeled “Jaffna, 2007”); and the field record of one individual on the roadside of road B417 near the turnoff from road AB20 near km 23. Additional records for the Mannar district: female at Giant’s Tank, December 18, 2010.


Trithemis aurora (Burmeister, 1839) – a very common tank species in the dry zone. Records pre-1981: Cheddikulam (Vavuniya district); Mannar (Mannar district) (Bedjanić et. al., 2011); and an unconfirmed specimen in the SLNM from Jaffna (de Fonseka 1990). Records post-1981: additional record for the Mannar district: stream at km 57 on road A14, December 18, 2010. Additional record for the Jaffna district: a specimen in the Student collection at the University of Jaffna (labeled “Jaffna, February 23, 2010”).

Trithemis pallidinervis (Kirby, 1889) – an uncommon tank species in the dry zone. Records pre-1981: Jaffna (Jaffna district) and Mannar (Mannar district) (Bedjanić et. al., 2011). Records post-1981: Additional records for the Jaffna district: tank-wetland area on road B75 at milepost 13; and at Chavakachcheri (km 307 on road A9). Additional record for the Mannar district: Giant’s Tank, November 29, 2009 & December 18, 2010; and Arippu, December 18, 2010.

Rhyothemis variegata variegata (Linnaeus, 1763) – a very common tank species in the dry zone. Records pre-1981: Giant’s Tank (Mannar district) (Bedjanić et. al., 2011). Records post-1981: New records for the Jaffna district: a specimen in the Student collection at the University of Jaffna (labeled “Jaffna, 2007”; several field locations: Jaffna town; road B75 at milepost 5 and 13; Kopayonkirai Kulam tank off road A9 near Jaffna; near Jaffna University on the Palaly Road; road AB20 (Puttur to Chunnakam road) at km 22; Kayts Island (road AB31).

Hydrobasileus croceus (Brauer, 1867) – an uncommon species in the dry zone. Probably more common than reported as it tends to fly very high and spends little time at water unless mating and ovipositing. Records pre-1981: none. Records post-1981: first record from the Northern province was at Per Aru, Puthukkulam (Vavuniya district) on February 24, 2011 (sighting and photo by C. Asela; determined by the author).

Pantala flavescens (Fabricius, 1798) – seasonally very common over most of the island. Records pre-1981: Jaffna (Laidlaw 1924), Elephant Pass (Jaffna district) (Bedjanić et. al., 2011); Marichchukkudi (Mannar district) (Bedjanić et. al., 2011). Records post-1981: New records for the Vavuniya district: road A9 at Omanthi; and road A30 at km 29, November 28, 2009. New record for the Kilinochchi district: at km 233 on road A9, flying over the road. Additional records for the Jaffna district: Kopayonkirai Kulam tank off road A9 near Jaffna; 9.5 km from Jaffna on the Kankesanturai road; road B75 at milepost 13. Additional records for the Mannar district: Giant’s Tank, November 29, 2009 and December 18, 2010; Arippu, December 18, 2010; and stream at km 57 on road A14, December 18, 2010.


Tramea limbata (Desjardin, 1832) – a common tank species in the dry zone. Records pre-1981: Elephant Pass (Jaffna district) and Mannar (Mannar district) (Lief tinck 1955). Records post-1981: New record for the Vavuniya district: Iratperiyakulam Tank, south of Vavuniya. Additional records for the Jaffna district: a specimen in the Student collection at the University of Jaffna (labeled “Jaffna, 2007”); field records from Kayts Island (road AB31); Jaffna town; and road AB20 (Puttur to Chunnakam). Additional records for the Mannar district: the Navy headquarters in Mannar and along the Talaimannar Road, Mannar on November 29, 2009.


Aethriamanta brevipennis brevipennis (Rambur 1842) – until recently, the status of this species in Sri Lanka was
doubtful (de Fonseka 2000; Fraser 1936). However, since 1996, it has been reported from 19 localities on the west coast (Bedjanić et. al., 2011) and can be quite common locally though it is not usually seen near water. Records pre-1981: None. Records post-1981: Mannar (Mannar district), April 2003 by G. de Silva Wijeyeratne (pers.comm.).

**Macrodiplax cora** (Kaup, 1867) – This species has been recorded along the western, eastern and south-eastern coasts. Records pre-1981: Mannar (Mannar district) (Bedjanić et. al., 2011). Records post-1981: New records for the Jaffna district: roadside near Jaffna city limits on road A9; road B75 at milepost 5 & 13; Kopayankirai Tank off road A9 near Jaffna; road AB20 (Puttur to Chunnakam) at km 22. It was fairly common in all locations.


There are now many people travelling to the Northern province and it is to be hoped that more records can be made of the Odonate fauna there. Though the fauna is fairly typical of the lowland dry zone, there are some uncommon species found there and other species that are to be expected but that have not yet been recorded.

**Acknowledgements**

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Obituary

Dr. Syoziro Asahina
(Tokyo 10 June 1913 - Tokyo 28 November 2010)

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After a long life devoted to the study of insects, Dr. Syoziro Asahina passed away in Tokyo on 28 November 2010. Although he was a medical entomologist at the National Institute of Health in Tokyo by profession, Dr Asahina will be remembered by many as a specialist of odonates. Actually, most of his publications are on this insect order, although he also published on other insect groups, mainly cockroaches (Blattaria).

His life was rather extensively described in an autobiography with photographs, published with his bibliography on the occasion of his 70th birthday (Asahina 1984). As a boy of six years old, he moved with his family to the Takadanobaba region of Tokyo, where he lived the rest of his life, although the area changed dramatically during the 20th century. I had the opportunity to visit Asahina myself at his home in 1993. Skyscrapers now dominate the area, although the modest house still had a garden. Old photographs on the wall illustrated how the surroundings had changed since the early 1900s from a more or less rural area into a city centre.

Although he had a sincere interest in all groups of insects as a boy, his focus on odonates started early in the 1930s. His first paper was published in 1928, and his long series of papers in Kontyû, the journal of the Tokyo Entomological Society, started as early as 1929. During the 1930s, he studied the behaviour of Epiophlebia superstes, and travelled with his father to South Sachalin (1932), Taiwan (1933-34) and Korea (1934). He was taught German, so that he could read the papers of several European correspondents, including F. Ris and Erich Schmidt. His lifelong correspondence with Maurits A. Lieftinck started 3 July 1935 (copy in Asahina 1985: 44). The first letter I found in the Lieftinck archives is a copy of a letter in German written by Lieftinck to Asahina on 14 January 1939, apparently after interrupted previous correspondence.

Asahina read zoology at the university of Tokyo from 1935 to the late 1930s, when he entered civil service mainly spent in Manchuria from 1940 to 1945. He was unemployed until May 1950, when he entered the National Institute of Health as a researcher. One of the advantages was the opportunity to visit foreign countries, first as education, later during international congresses. His first visit was to Europe (England) on a grant of the Scientific and Technological Administration Committee for most of 1953. Apparently he took full advantage of his trip, meeting, for instance, Cesare Nielsen at the harbour of Bologna to visit the Museo Civico di Storia Naturale at Genoa to study the Fea collection from Burma.

He was based at the Natural History Museum (British Museum (Natural History) at the time), but visited numerous other institutions in Britain. Of course, he did not forget to study the odonate collections thoroughly, and he met Philip S. Corbet, Cynthia Longfield, Elliot Pinhey and F.C. Fraser. His autobiography provides details of numerous meetings with time schedules and persons who he met. During his first trip to Europe he also visited Copenhagen, Bonn, Frankfurt, Brussels, and Paris, again mainly to study odonate collections. From England he went to the USA, where he studied the collections of most of the larger museums, returning to Japan on 14 February 1954. While in England, he obtained his PhD in 1953. This thesis on Epiophlebia superstes was published by the Japan Society for the Promotion of Science (Asahina 1954). During later travelling, he (re)visited odonatological collections, such as Bonn and Leiden in September 1959; Brussels, London and Leiden in...

Initially, his fieldwork was concentrated on northeastern Asia, mainly Japan, including the Ryukyu islands and then Japanese Micronesia (Marianna, Palau, Caroline and Marshall islands), but later on other areas of Asia were investigated, e.g., the Philippines, Thailand, Nepal, and Malaysia. These trips usually initiated a series of papers describing the results. These publications were all well documented, and they frequently integrated the study of recent material and that of type specimens, sometimes carried out many years before in European or American collections. He not only prepared descriptions of types, but also made many photographs, of which numerous have been used in his later publications. Many of Asahina's papers, however, are based on specimens entrusted to him by Japanese professional and amateur entomologists. Most of these areas, including the main islands of Japan, were then poorly accessible and thus poorly known for odonates. Asahina introduced not less than 164 new nominal taxa in Odonata.

Syozo Asahina evidently belonged to a family of scientists. His father was a professor of pharmacology (Inoue & Eda 1984). Although many Japanese scientists felt uncomfortable with communication in foreign languages for most of the 20th century, Asahina corresponded in English and German from early in his career. His first publications are in Japanese, but all have a translated English title. He started publishing in English (1937) and German (1939), where he showed that he knew the European literature well. Japanese scientific publications on odonates were still limited at the time. Only Matsumura, Okumura and Oguma had previously described Japanese dragonfly species, and Asahina knew their collections. The first paper I have been able to examine was published in Kontyû in July 1933, on 'Dragonflies from Kwantung Province (S. Manchuria) (number 24 = 1933a in Asahina 1984). Although I cannot read the text, it is immediately clear that this is the work of somebody who knew how to write a scientific paper. The illustrations are well prepared as well, including a remarkably detailed drawing of the penis of Ischnura elegans. They are executed in the same style as Asahina adhered to for the rest of his life. Asahina published his first description of a new species in 1938, Aeshna taiyal from Taiwan. The specimens were collected by himself in 1936. Unfortunately, the name appeared to be a synonym of Aeshna petalura Martin.

Asahina was a taxonomist and entomologist pur sang. He had a keen interest in faunistics, especially of Japanese odonates. He identified many specimens from collections made by Japanese entomologists, or available in European and American collections. Another important
source for his studies was the collection of Erich Schmidt, donated to Asahina. Among his most important contributions to odonatology, I consider the following facts:

1. His considerable contribution to the knowledge of Japanese odonates. His descriptions of new taxa, and the identification works he published all have contributed to our understanding of this very interesting fauna.
2. His series of papers of the odonate faunas of Taiwan and Thailand have enlarged our knowledge of these faunas; a similar approach to the fauna of Vietnam was not finished when he concluded his scientific activities. These were all major projects, since many species were only known from very few specimens, and poorly described when he started his work.
3. He has named various species that play a key role in phylogenetic studies, e.g., Schmidtiphaea schmidi and Noguchiphaea yoshikoae. His study of the morphology of Epiophlebia superes is also unsurpassed.
4. He has tried to understand the morphological variation of two very difficult groups in Japan including the southern islands, viz. the genera Rhipidolestes Ris and Mnais Selys. Although these publications are based on the study of an innumerable number of specimens, it seems that these revisions suffer from a too rigorous typological species concept. His conclusions certainly need re-evaluation.

Asahina named many taxa on the level of subspecies. Quite a number of these taxa were upgraded by later authors, including myself, to full species rank. He also adhered strictly to the use of the spelling Aeschna for Aeschna, and used Agrion where nearly everybody used Calopteryx for many years.

Finally, Syoziro Asahina, with Dr. Eda, was the driver behind Tombo, which started in 1958 as the journal of the Society of Odonatology, Tokyo. It was the only journal on Odonata for many years, and has published a long series of important papers, together with many rather informal articles on faunistics. It seems that such an initiative could only emerge in Japan, where tombo are so popular.

My personal recollections of Syoziro Asahina started on 17 September 1985, when I sent him a letter...
announcing my interest in odonates of Southeast Asia, especially Sulawesi. In his answer he immediately offered his help. In the early 1990s I also became interested in the fauna of Vietnam, based on a collection made by Frank Rozendaal in 1988. It was absolutely clear to me that many new species were represented in this collection, but I needed the opinion of Asahina for some difficult taxa. The odonatological congress in Osaka was a fine opportunity for me to discuss these specimens with Asahina, and to compare them with specimens in his collection. I still treasure both the opportunity to work in Asahina's collection, and the hospitality of Mr and Mrs Asahina. The small pot of jam made by Mrs Asahina from the prunes of the tree in her central Tokyo garden, was definitely one of the most memorable presents I ever brought home for my wife.

References


This bibliography includes publications on Odonata only. It is partly based on the bibliography published in Odonatologica in 1984. Titles after 1984 mainly taken from original publications. Titles of Japanese publications after 1984 were translated by Ubukata and Sasamoto. Titles with an original translation in English are given in brackets, translated titles are given in square brackets. A complete bibliography was published in Tombo 53 (2011): 38-58.

Asahina, S., 1939. Dragonflies from Miyake island, with a table of the Odonata known from the Izu islands (Western North Pacific). — Kontyū, 13 (4): 144-147, figs. 1, tables 1.


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Asahina, S., 1976. An illustrated key to the dragonflies found in the paddy fields of Thailand. — International Association biological Control Rice Stem Borers News [check], no. 4: 3-10.


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Asahina, S., 1985. Illustrated common dragonflies of Southeast Asia, IV. — Chô Chô, 8 (9): 31-33, figs. 29-41.


Asahina, S., 1986. (Descriptions of two Axiajophus species from Assam-Burma and Burma-Thailand areas (Odonata, Gomphidae)). [In Japanese]. — Gekkan-Mushi, no. 185: 9-14, figs. 1-35.


Asahina, S., 1996. Records of the northern Vietnamese Odonata taken by the expedition members from the National Science Museum, Tokyo. 4. Libellaginidae, Euphaeidae, Calopterygidae and


Species described by Syoziro Asahina (1913-2010)
Compiled by Jan van Tol [jan.vantol@ncbnaturalis.nl]

Names arranged by species group name.

29. Hemiscanda eric Ahsa, 1940. — Present status: Hemiscanda eric Ahsa, 1940. [Corduliaeidae].

37. *Hemiscordula haluou* Asahina, 1940. — Present status: *Hemiscordula haluou* Asahina, 1940. [Cordulidae].


63. *Hemicordula ilicola* Asahina, 1940. — Present status: *Hemicordula ilicola* Asahina, 1940. [Cordulidae].


Rhyothemis fuliginosa forma noshime Asahina, 1982. — Present status: not available. [Libellulidae].


Mnais pruinosa costalis forma ogumai Asahina, 1976. — Present status: not available. [Calopterygidae].


Coelicia ryukyuicus Asahina, 1951. — Present status: Coelicia macrotymia Laidlaw, 1918. [Platycnemididae].


Mnais pruinosa nanai forma satou Asahina 1976. — Present status: not available. [Calopterygidae].


Mnais prunum prunum forma shirozuki Asahina, 1976. — Present status: not available. [Calopterygidae].


Mnais prunum nani forma tokarei Asahina, 1976. — Present status: not available. [Calopterygidae].


Guidelines for offering Sponsored Membership to odonatists

1. Bylaw 8 (a) (iii) refers to a programme that will enable individuals who may find it difficult to join or to remain in the WDA due to currency or other restrictions to have their membership fully or partially supported by the Association or by its members.

2. Such individuals will generally fulfil either (i) or (ii) AND either (iii) or (iv) of the following criteria:

(i) odonatists of considerable standing, including those whose membership of WDA would benefit the Association or its aims;

(ii) odonatists, recommended by a WDA member, who are engaged in active research or in dragonfly conservation, including students who have been recommended by their faculty;

(iii) odonatists residing in countries where currency restrictions are such that payment of subscriptions is virtually impossible;

(iv) odonatists whose financial circumstances make the normal WDA subscription beyond their reach.

3. Suggestions for possible recipients of sponsored memberships may be made by any WDA member. Proposals should be sent to the Secretary, accompanied by a brief statement of the reasons for the proposal.

4. Sponsored membership should be offered only with the unanimous agreement of the Trustees or, at least, with none against the proposal.

5. Individual WDA members may wish to sponsor a particular individual personally. In such cases, the agreement of the Board is unnecessary but the Treasurer must be informed. In all but exceptional circumstances such sponsored membership will be accepted. The full single WDA subscription of the Sponsored Member will be paid by the sponsoring member.

6. The Sponsored Member Fund is at present financed by those members of the Editorial Board who donate their Journal subscription to the Association. It must be remembered that the Fund is not large and that further contributions will always be very welcome.

7. Should a sponsored member’s circumstances improve or change in any way, he/she should inform the Treasurer as soon as possible. As funds are limited, each sponsored member should request renewal of sponsored membership each year, to establish that such membership is still justified.

WDA’s policy on student membership

Since its inception four and a half years ago, student members of WDA have enjoyed a substantially reduced annual subscription. Student membership was one of the cornerstones upon which WDA was built. Proof of studentship is requested but there are no other strings attached, although we would of course appreciate copies of students’ published material.

Another cornerstone was that it would be possible to become a member of the new Association without having to pay for its scientific journal.

And a third was that if two members of a family, both of whom were interested in Odonata, wished to join the Association, they could do so as a family instead of being forced to take out two separate memberships.
## Membership Updates 2011

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<td>Dzervenu iela 3-31, Sigulda, Siguldas novads, LV-2150, Latvia</td>
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### Change of Address

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Natalia von Ellenrieder - WDA Secretary
**Worldwide Dragonfly Association**  
Membership Application Form 2011  
*(please fill in and send to WDA Secretary natalia.ellenreder@gmail.com)*

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