

In memoriam Ian Endersby (18th April 1941 – 19th April 2024)

Heinrich Fliedner¹, Albert Orr² & Günther Theischinger³

¹Louis-Seegelken-Str. 106, 28717 Bremen, Germany

²Environmental Futures Research Institute, Griffith University,
Nathan, QLD, Australia

³Australian Museum, Entomology, 6 College Street, Sydney, NSW, Australia

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Abstract. A brief biography, recollections and memories of Ian Endersby and his odonatological bibliography are presented.

The Odonata of the Chapada dos Guimarães National Park, Mato Grosso state, Brazil, with an updated species list for the state

Diogo Silva Vilela¹, Adolfo Cordero-Rivera² & Rhainer Guillermo-Ferreira³

¹ Instituto Federal de Educação, Ciência e Tecnologia de Minas Gerais, Inconfidentes Campus, Inconfidentes, Minas Gerais state, Brazil; corresponding author, deeogoo@gmail.com

² Universidade de Vigo, Grupo de Ecoloxía Evolutiva e da Conservación, Departamento de Ecoloxía e Bioloxía Animal, Universidade de Vigo, E.E. Forestal, Campus Universitario, Pontevedra, Spain

³ Lestes Lab, Centro de Pesquisas em Entomologia e Biologia Experimental, Universidade Federal do Triângulo Mineiro (UFTM), Uberaba, Minas Gerais state, Brazil

ORCID:

DSV:  <https://orcid.org/0000-0001-6510-7018>

ACR:  <https://orcid.org/0000-0002-5087-3550>

RGF:  <https://orcid.org/0000-0001-7774-5252>

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Abstract. We present the first comprehensive inventory of the Odonata of the Chapada dos Guimarães National Park, Mato Grosso state, Brazil, established in 1989. In total, we collected 576 specimens from 94 species, 42 genera and nine families, with 25 species representing records new to Mato Grosso state. At least 285 Odonata species are now recorded from the state. Our results highlight the importance of protected areas for species conservation and suggest that additional collections inside and outside the National Park may increase the number of recorded species in that region.

Further key words. Dragonfly, Anisoptera, Zygoptera, *Cerrado*, new species, taxonomy, inventory, Conservation Unit

**Forest dragonfly encounters desert dragonfly:
Aeshna cyanea syntopic with *Orthetrum ransonnetii*
on Fuerteventura, Canary Islands
(Odonata: Aeshnidae)**

Michael Nowak¹ & Florian Weihrauch²

¹Fuchseckstr. 16/1, 73114 Schlat, Germany; Nowak-Schlat@t-online.de

²Osmylus Scientific Publishers, Postfach 1212, 85280 Wolnzach, Germany;
mail@osmylus.com

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Abstract. *Aeshna cyanea* is a new addition to the fauna of Fuerteventura, Canary Islands. In this study the circumstances surrounding the discovery of an emerging female, with exuvia collected, in a permanent pool in arid environment, in the Barranco de Rio Cabras, are described. The breeding record, syntopy with typical desert species (*e.g.*, *Orthetrum ransonnetii*) and potential explanations for this unusual occurrence are discussed.

Further key words. Dragonfly, Anisoptera, Macaronesian Islands, Spain, range expansion, forest species, arid environment

Are the dispersal capabilities of Zygoptera underestimated? A critical review (Odonata)

Nikola Góral

Laboratory of Nature Education and Conservation & Molecular Biology
Techniques Laboratory, Faculty of Biology, Adam Mickiewicz University
in Poznań, Poland; nikola.goral@amu.edu.pl

ORCID:

 <https://orcid.org/0000-0002-1764-1723>

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Abstract. While Anisoptera are more commonly associated with long-distance dispersal, there are notable cases of Zygoptera colonising remote areas such as desert oases and oceanic islands. Despite being generally regarded as less mobile, many Zygoptera species have demonstrated substantial dispersal ability, challenging previous assumptions. However, these findings have had limited impact on the prevailing consensus. Current understanding of species mobility relies heavily on capture-mark-recapture (CMR) studies, which sometimes conflict with direct evidence of species expansion or with the results of molecular analyses. Although tracking species by tagging can provide valuable information, it appears to underestimate long-distance dispersal, and therefore general conclusions should be treated with caution. This paper provides an overview of documented instances of long-distance dispersal in Zygoptera, covering cases ranging from migration events to the expansion of species' ranges and concluding with pioneer species with dispersal incorporated into their life strategy. Additionally, the problems caused by treating Zygoptera as sedentary for odonatological research and species conservation policy are discussed.

Further key words. Dragonfly, damselfly, long-distance dispersal, dispersal capacity, migratory movements, capture-mark-recapture

Trans-Atlantic vagrancy in *Anax junius* (Odonata: Aeshnidae)

Adrian Parr¹ & Michael Schmitz²

¹ 10 Orchard Way, Barrow, Bury St Edmunds, Suffolk IP29 5BX, Great Britain;
adrian.parr@btinternet.com

² Birkenhang 37, 42555 Velbert-Langenberg, Germany; mich.schmitz@gmx.de

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Abstract. Late October 2023 saw an influx of the migratory Nearctic *Anax junius* into both the Isles of Scilly in south-western Britain and the Île d'Ouessant in north-western France, with at least eleven dragonflies being reported and with further sightings likely to involve additional individuals. This species has only been observed in the Western Palaearctic since 1998, and all known records from the region are documented and discussed; such records are currently restricted to the autumn months, and come predominantly from south-western Britain and western France, with at least one sighting also on the Azores. Meteorological conditions preceding arrivals have been dominated at mid latitudes by mobile westerly airflows across the entire Atlantic, and it is thought the dragonflies arrive in Europe via wind-assisted non-stop flights directly across the ocean, with a likely journey time of approximately four days.

Further key words. Dragonfly, Anisoptera, migration, dispersal, Cornwall, Isles of Scilly, Île d'Ouessant, Azores, Corvo

Early effects of forest diseases on the Odonata assemblage of a mountain stream in the southern Iberian Peninsula

Manuel Ferreras-Romero

C/ Gerona 9, 41003 Sevilla, Spain; mferrerasrsp@gmail.com

ORCID:

 <https://orcid.org/0000-0002-6268-3869>

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Abstract. Forest diseases caused by fungi, such as Elm graphiosis and Alder phytophthora, have become a serious problem in the conservation of riparian woodland. Freshwater habitats in the Mediterranean are under diverse anthropogenic pressures; of these, the forest management in the surroundings is among the least analysed. Odonata larvae in a permanent stream in the Sierra Morena were studied for twenty-seven years, recording the changes that occurred in the stream bed and the surrounding forest. Several diversity indices were analysed and apparent differences between years in Odonata species richness were recorded. Our findings show that forest diseases, as a consequence of anthropogenic activities, can initially lead to a higher Odonata diversity in Mediterranean permanent streams. This increase in species richness is a consequence of an increase in the seasonality of the flow and luminosity in the channel from late spring to early autumn. Homogeneity of the stream bed due to the disappearance of alternate riffles and ponds of more than a meter deep, and the appearance of strongly rooted aquatic phanerogams like water-cress also plays an important role. The populations of Anisoptera species with a long life cycle, which previously were the only ones inhabiting the stream and which still are dominant today, will possibly disappear in the long term.

Further key words. Dragonflies, damselflies, voltinism, riparian woodland, pathogenic fungi, tree dieback, Long-term study, habitat change, diversity indices, Mediterranean streams

Repeated copulations in *Libellula quadrimaculata* (Odonata: Libellulidae)

Hansruedi Wildermuth¹, Angelika Borkenstein²,
Asmus Schröter³ & Reinhard Jödicke⁴

¹ Haltbergstr. 43, 8630 Rütli, Switzerland; hansruedi@wildermuth.ch

² Lebensborner Weg 5, 26419 Schortens, Germany;
angelikaborkenstein@t-online.de

³ Tsulukidze street 18, 0190, Tbilisi, Georgia; asmustim@gmx.de.

⁴ Am Liebfrauenbusch 3, 26655 Westerstede, Germany;
reinhard.joedicke@magenta.de

¹ Corresponding author, hansruedi@wildermuth.ch

ORCID:

AS:  <https://orcid.org/0000-0002-3655-2304>

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Abstract. Libellulidae generally adopt a promiscuous reproductive strategy. Males and females mate several times and with several partners during their lives. The males attempt to copulate with as many females as possible, encourage them to lay eggs in their territories and deny rivals access to their females. On the other hand, the females seek to lay as many eggs as possible with good paternal genes in optimal habitats. The behaviour exhibited by both sexes appears to maximise lifetime reproductive success. In this study, we investigated the mating and guarding behaviour of *Libellula quadrimaculata* in small bog ponds. We focused on repeated extrapair and especially intrapair copulations at a given site as well as non-contact guarding when there was little interference by rival males. It was noticed that females were pursued by their partner after egg laying and when attempting to leave the water. Either they mated again, or the male tried to steer his partner back to the water. Two to six additional matings between oviposition bouts occurred during each encounter. A total of 54 intrapair copulations with subsequent oviposition were recorded. Attempts by a male to guide his mate back to his territory and encourage her to continue laying eggs were successful in 33 cases, while in 64 cases the female escaped. Thus, repeated copulations and retrievals are tactics used by a male to maximise laying of eggs he has fertilised by the female with whom he last mated. The costs and benefits of this behaviour are discussed from the perspective of both males and females.

Further key words. Dragonfly, Anisoptera, extrapair and intrapair copulations, oviposition, mate guarding, retrieval, territoriality, sperm competition

Cool season communal roosting of *Cratilla lineata* in a Taiwanese submontane forest (Odonata: Libellulidae)

Chih-Hsuan Cheng¹, Chia-Hsuan Hsu², Kent A. Hatch³, Wenbe Hwang¹,
Szu-Lung Chen⁴ & Yuan-Mou Chang^{1,5}

¹Department of Ecology and Environmental Resources, National University of
Tainan, 33 Su-Lin Street, Section 2, Tainan 700, Taiwan

²Biodiversity Division, National Institute for Environmental Studies,
16-2 Onogawa, Tsukuba, Ibaraki 305-8506, Japan

³Department of Biology, Long Island University – Post, Brookville, NY, USA

⁴Taipei Zoo, 30 Xin Kuang Road, Sec 2 Mu Zha Wen Shan Taipei 116, Taiwan

⁵Corresponding author, changyuanmou@gmail.com

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Abstract. We investigated communal nocturnal roosting aggregations of *Cratilla lineata* in the Chia-Ling Lake area in Tainan, Taiwan. Communal roosting began during the colder months from late October to mid-March. The dragonflies roosted 2–4 m above the ground on slender vines such as *Bauhinia championii*, *Dalbergia benthamii*, *Hiptage benghalensis*, and *Pothos chinensis*, under open canopies along a forest path. The aggregations exhibited a sex ratio predominantly skewed towards males and their numbers were negatively correlated with daily mean temperature, indicating that more dragonflies roost as temperatures decrease. The dragonflies showed fidelity to specific roosts and vines. Roosting began between 15:30 h and 17:00 h CST (UTC+8) when light intensity was high (252–3 607 lux). They departed between 08:50 h and 12:00 h, 2–6 hours after sunrise, with light levels ranging from 1 103 to 9 567 lux. The mechanisms and adaptive value of this behaviour remain open to speculation.

Further key words. Dragonfly, Anisoptera, sex ratio, site fidelity, hanging vines

Description of the final instar larva of *Ischnura saharensis* Aguesse, 1958 (Odonata: Coenagrionidae)

Miguel A. Conesa-García & Arturo Bernal-Sánchez

Sociedad odonatólogica de Andalucía, Málaga, Spain
mconesa@libelulas.es; arturo.libelula@gmail.com

ORCID:

MACG:  <https://orcid.org/0000-0001-8957-3742>

ABS:  <https://orcid.org/0000-0001-6363-3014>

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Abstract. This study describes and illustrates for the first time the final larval instar of *Ischnura saharensis* Aguesse, 1958, based on the analysis of 26 F-0 larvae and 29 exuviae gathered on Gran Canaria and Fuerteventura, Canary Islands, where it is the only species of damselfly present. We examine 16 morphometric traits and analyse the biometric and morphological differences between the females and males. Lastly, we compare the information obtained with corresponding knowledge of sympatric congeneric species distributed throughout the Iberian Peninsula and the Maghreb. *Ischnura saharensis* can be distinguished from other species by the structure of the genitalia, caudal lamellae, and cerci.

Further key words. Dragonfly, damselfly, Zygoptera, larval description, Gran Canaria, Fuerteventura, Canary Islands

**A new *Malgassophlebia* Fraser, 1956,
from Republic of Congo
(Odonata: Libellulidae)**

Violette Dérozier

African Natural History Research Trust (ANHRT), Street Court,
Leominster-Kingsland, HR6 9QA, United Kingdom;
violette.derozier@anhrt.org.uk, violette.derozier@gmail.com

ORCID:

 <https://orcid.org/0009-0003-6998-401X>

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Abstract. A new species of *Malgassophlebia* Fraser, 1956 (*M. baaka* sp. nov.) is described from the Nouabalé-Ndoki National Park, Republic of Congo, based on a single male adult. Diagnostic features and the type locality of the new species are illustrated.

Further key words. Dragonfly, Anisoptera, Afrotropics, Nouabalé-Ndoki National Park, taxonomy

Designation of the lectotype of *Somatochlora sahlbergi* Trybom, 1889 (Odonata: Corduliidae)

Fredrik von Euler¹ & Oleg E. Kosterin²

¹ Bergslagsresan 10, 75755, Uppsala, Sweden

² Institute of Cytology & Genetics SB RAS, Acad. Lavrentyev ave. 10, Novosibirsk, 630090, Russia; corresponding author: kosterin@bionet.nsc.ru

ORCID:

OEK:  0000-0001-5955-4057

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Abstract. In 1889, Filip Trybom described *Somatochlora sahlbergi*, based on three male syntypes and one female syntype, and *S. theeli*, based on two female syntypes, collected on the Swedish expedition to the Yenisey River in 1876. In 1931, K.J. Valle discovered that the type series of *S. sahlbergi* was heterogeneous since the female syntype was in fact another species, *S. alpestris*. At the same time, the two female syntypes of *S. theeli* appeared conspecific with the male syntypes of *S. sahlbergi*. Acting as the First Reviser, Valle chose the name *S. sahlbergi* as valid for the species which was actually new to science, but there remained a formal uncertainty of its sense because of the heterogeneity of the type series. In order to formally justify the use of the established name *S. sahlbergi* for this species, we have designated a male syntype specimen, collected at Dudinskoe village (presently the town of Dudinka) on 30.vii.1876, as the lectotype of *S. sahlbergi*.

Further key words. Dragonfly, Anisoptera, heterogeneous series of syntypes, Swedish Yenisey expedition of 1876, nomenclature