Check-list of Odonata from French Guiana with notes on their distribution, ecology, and new state records

Paul Rochas¹, Marceau Minot², Nicolas Mézière³, Julien Renoult⁴, Quentin Uriot⁵, Sylvain Uriot⁶, Hugo Foxonet⁷, Axel Cerdan⁸ & Laurent Juillerat⁹

¹Kourou, French Guiana; paul.rochas85@gmail.com
²Rouen, France; m.minot@hotmail.fr
³Moana, Gabon; nicomez@free.fr
⁴Centre d’Ecologie fonctionnelle et evolutive, Univ. Montpellier, CNRS, EPHE, IRD, Univ. Paul-Valery Montpellier 3, Montpellier, France; julien.renoult@cefe.cnrs.fr
⁵Matoury, French Guiana; uriot.quentin@gmail.com
⁶Matoury, French Guiana; uriot.sylvain72@gmail.com
⁷Rémire-Montjoly, French Guiana; hugofox66@gmail.com
⁸Hydreco Guyane, Laboratoire Environnement, Kourou, French Guiana
⁹Chézard-Saint-Martin, Switzerland; juillerat.l@bluewin.ch

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Abstract. This publication documents the diversity of odonates found in French Guiana and discusses their distribution and ecology. The check-list was created by compiling information from available publications and databases. A total of 292 species belonging to 14 families and 94 genera are listed from the territory. Of these, one family, three genera and 48 species are new records. Four species are considered endemic to French Guiana, and seven known species remain undescribed. For species listed, occurrence by municipality, ecoregion, and known aquatic and terrestrial habitats are noted.

Further key words. Dragonfly, damselfly, South America, Guiana Shield
Richness and structure of an Odonata larval assemblage of a cloud forest stream in western Mexico

José Antonio Gómez-Anaya & Rodolfo Novelo-Gutiérrez

Red de Biodiversidad y Sistemática, Instituto de Ecología, A.C., Apartado Postal 63, 91073, Xalapa, Veracruz, México; antonio.gomez@inecol.mx

1 Corresponding author: rodolfo.novelo@inecol.mx

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Abstract. Cloud forest in Mexico is an ecosystem largely fragmented and reduced in recent decades by human influence. In this type of vegetation, ravine streams generally contain a particular odonate species composition. We describe the structure, composition, and temporal changes of the Odonata larval assemblage from El Colorín ravine stream in the cloud forest of Chinicuila-Coalcomán region, Michoacán, based on a bi-seasonal sampling 1-year cycle. The assemblage parameters were related to some physicochemical water properties. In total, 17 species were recorded (9 Zygoptera, 8 Anisoptera). Zygoptera was more diverse at supraspecific level with four families vs two of Anisoptera. Six species of Libellulidae were recorded with four species belonging to Brechmorhoga. However, the dominant species throughout the year was the calopterygid Hetaerina capitalis. Although there were changes in water temperature, pH, conductivity, and oxygen throughout the year, the structural changes of the odonate larval assemblage were more related to seasonality. Also, the Odonata adult assemblage of El Colorín was compared to other adult assemblages from eastern and central Mexico. We propose sub-assemblages of Brechmorhoga, Hetaerina, and Archilestes species as potential indicators of well-conserved conditions of mountain streams.

Further key words. Dragonfly, damselfly, larvae, conservation, diversity, Michoacán

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Biometric differences across three populations of *Boyeria irene* from the southern Iberian Peninsula (Odonata: Aeshnidae)

Jennifer Molina Rodríguez¹, Mª Ángeles Hernández Minguillón² & Manuel Ferreras-Romero³

¹ C/ La Cruz, 1, 04860 Olula del Río, Almería, Spain
² Departamento de Biología Ambiental, Facultad de Ciencias, Universidad de Navarra, 31080 Pamplona, Spain
³ Departamento de Sistemas Físicos, Químicos y Naturales, Universidad Pablo de Olavide, 41013 Sevilla, Spain
³ Corresponding author: mferrom@upo.es

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**Abstract.** *Boyeria irene* is mainly a West Mediterranean species. The instar distribution during winter is that of a ‘summer species’ *sensu* Corbet (1964). Little is known about how the geographical location of the population may affect the biometric peculiarities of *B. irene* larvae. Eight biometric variables were studied in male and female larvae belonging to three southern Iberian populations, with the objective of ascertaining whether there are differences between populations. The southernmost population (Los Alcornocales) shows the largest sizes for most of the variables measured, while the northernmost population (Sierra Madrona) shows the smallest sizes for most of the variables. Winter water temperatures may be the cause of the size divergences, due to a longer arrest in time of larval growth in the northernmost population.

**Further key words.** Dragonfly, Anisoptera, larval stadia, winter water temperature, Andalusia
Reproductive behaviour, phenology, and reproductive lifespan of *Chalcolestes parvidens* at an intermittent stream on a Greek island (Odonata: Lestidae)

Annika Tsalkatis$^{1,2}$ & Andreas Martens$^1$

$^1$ Institute of Biology, University of Education Karlsruhe, Bismarckstr. 10, 76133 Karlsruhe, Germany; tsalkatis@posteo.de; martens@ph-karlsruhe.de

$^2$ Scheffelstr. 9, 79331 Teningen, Germany

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Abstract. At a summer-dry stream on the Aegean island of Lesvos, a population of *Chalcolestes parvidens* (Artobolevski, 1929) was studied during the reproductive period from late August to November 2018. Mediterranean intermittent streams display unique characteristics with a seasonal sequence of abiotic and biotic regulation and provide valuable habitats for *C. parvidens*. Abundance at the breeding water and perching positions on plants of males, females and pairs were recorded, and a mark-recapture study with 412 males was conducted. The damselflies perched mostly on dry plant parts of *Salix fragilis* and *Nerium oleander* that dominated the site. Males perched mainly on exposed twig tips near or over the water and some individuals were quite philopatric. A minimum adult male life span of 30 days after maturation was determined. Oviposition was observed exclusively in branches of *S. fragilis*. Differences in reproductive behaviour between *C. parvidens* and its sister species *C. viridis* appear to be very small or not distinguishable at all.

Further key words. Dragonfly, damselfly, Zygoptera, mark-recapture study, site fidelity, perching sites, oviposition site selection
Notes on *Cordulegaster kalkmani* in East Turkey (Odonata: Cordulegastridae)

Thomas Schneider¹,⁵, Dietmar Ikemeyer², Ole Müller³ & Gert Jan van Pelt⁴

¹ Arnold-Knoblauch-Ring 76, 14109 Berlin-Wannsee, Germany
¹ Voluntary collaborator, Museum für Naturkunde Berlin, Germany
² Billerbecker Str. 6, 48329 Havixbeck, Germany; DKJIkemeyer@t-online.de
³ Birkenweg 6d, 15306 Libbenichen, Germany; mueller.ole@gmail.com
⁴ Naturalis Biodiversity Center, P.O. Box 9517, 2300 RA Leiden, The Netherlands; gpelt@its.jnj.com

⁵ Corresponding author: thomas.rs@gmx.de

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**Abstract.** Populations of *Cordulegaster kalkmani* Schneider et al., 2021 were found in the Kars and Bitlis provinces of East Turkey (i.e., western Armenian Highlands), in July 2022. This species was found at elevations from 1 800 to 2 200 m a.s.l. in six localities. One female, 15 males and one exuvia were collected for closer examination. The special feature of the inferior appendage, which is broader than long so that the distal pointed lobes can be seen from above, was confirmed for all males. Variation in abdominal colour markings, some biometrical data and habitat features are reported. *Cordulegaster kalkmani* seems to be restricted to a geographic region limited by the Anatolian Diagonal in the west, the Pontic Mountains in the north, the Lesser Caucasus in the east, and is roughly confined to the western Armenian Highlands in the centre and the eastern Taurus in the south. This region is characterised by cold winters with significant snow cover.

**Further key words.** Dragonfly, Anisoptera, *Cordulegaster charpentieri*, Anatolian Diagonal, Armenian Highlands, South Caucasus, West Palaearctic
Anax aurantiacus sp. nov., a new dragonfly from mainland Southeast Asia (Odonata: Aeshnidae)

Noppadon Makbun¹, Koraon Wongkamhaeng²,³ & Tosaphol Saetung Keetapithchayakul²,³

¹ 211/5 Moo 4, Takhli, Nakhon Sawan, 60140, Thailand; Noppadon.makbun@gmail.com
² Department of Zoology, Faculty of Science, Kasetsart University, 50 Ngam Wong Wan Rd, Lat Yao, Chatuchak, Bangkok, Thailand
³ Corresponding authors: Koraon@gmail.com; Keetapithchayakul.TS@gmail.com

ORCID:
NM: https://orcid.org/0000-0003-4659-0192
KW: https://orcid.org/0000-0001-7671-8869
TSK: https://orcid.org/0000-0001-7565-4701

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Abstract. A new species of the genus Anax, A. aurantiacus, is described and illustrated based on adults of both sexes and exuviae from Thailand. This new species was previously considered by several authors to be a form of A. immaculifrons Rambur, 1842, but was never officially described. Anax aurantiacus sp. nov. is differentiated from A. immaculifrons based on coloration and morphological differences in the adults and larvae. Two species delimitation analyses (ABGD and bPTP) were also carried out, from which can be inferred that A. aurantiacus and A. immaculifrons were different Molecular Operational Taxonomic Units. Material and images available on internet and literature show the species to be present in Cambodia, Laos, China, Hong Kong, Thailand, and Vietnam, with A. immaculifrons occurring in South Asia and further west. Anax immaculifrons therefore needs to be deleted from the checklists from Cambodia, Laos, China, Hong Kong, Thailand, and Vietnam, replaced by A. aurantiacus sp. nov.

Further key words. Anisoptera, new species, Anax immaculifrons, Thailand, larva, distribution