1st June 2019

Puzzling watercolours of Odonata from the collection of Edmond de Selys Longchamps

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Abstract. Nineteen watercolours of Odonata which until now have remained unidentified were studied in order to establish their identity. They form part of the 1 256 watercolours of the collection of Edmond de Selys Longchamps housed in the Royal Belgian Institute for Natural Sciences (RBINS). Selys wrote on each watercolour either no, partial or full species names that were never published. We examined previously published literature, specimens in the RBINS and consulted with various experts in hopes of associating these watercolours with current species names. We were able to associate ten watercolours with current species names and four only with genera, while four watercolours remain unidentified. In one watercolour the male is identified on the species level and the female on the generic level. We have thus far been able to associate 96 % of the entire odonate watercolour collection with current species names.

Further key words. Damselfly dragonfly, Zygoptera, Anisoptera, taxonomy, 19th century, Severin

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Phenology of the Odonata assemblage in a Mediterranean stream in the north-eastern Iberian Peninsula

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Abstract. We investigated the Odonata species composition of larvae, final instar (F-0) exuviae, and adults occurring in a sequence of two different mesohabitats – pool and riffle – in a short stretch of a Mediterranean stream running down the Catalan Pre-Coastal Range (north-eastern Iberian Peninsula). We sampled them during the period 2017–2018 and recorded adults of 26 taxa and confirmed by the presence of final instar exuviae that at least 21 were breeding successfully in that environment. We describe, for the first time for this region and habitat type, larval growth patterns, timings of adult emergence, and flight periods of the most abundant species and characterize the life cycles of some of them. These life cycles can be classified into three types: i) univoltine with overwintering in the larval stage and emergence taking place in spring or summer of the following year (*Coenagrion mercuriale*, *C. puella*, *Ceriagrion tenellum*, and *Pyrrhosoma nymphula*); ii) predominantly univoltine of the previous type with a small fraction of the population being semivoltine (*Anax imperator* and *Orthetrum coerulescens*, tentative conclusion); and iii) univoltine with overwintering in the egg stage, a short larval growth period in the following spring, emergence in early summer, a long maturation period, and reproduction postponed until late summer or early autumn (*Chalcolestes viridis* and *Sympetrum striolatum*). Our results may contribute to fill in gaps in the knowledge of voltinism and phenology of the life cycles of Odonata in correlation with latitude, geographical area, and habitat type.

Further key words. Dragonfly, damselfly, dragonfly community, larval growth, timings of adult emergence, flight periods, life cycle, voltinism

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Check-list of Odonata of the Russian Federation

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Abstract. A check-list of 152 species and 168 subspecies of Odonata known from the territory of Russian Federation and their occurrence in its seven main eco-geographical regions (European part, Caucasus, Ural, West Siberian Lowland, South Siberia, North-East Asia and southern Far East) is presented in tabular form. First reliable reports of particular species for particular regions made after latest summarising monographic publications referring to those regions are referenced. Dubious reports are not mentioned. Taxonomically and otherwise complicated cases are commented. The highest diversity of 91 species (59.9 % of the fauna) is found in southern Far East of Russia; Caucasus, European part, South Siberia and Ural show moderately rich faunas of 81, 80, 75 and 74 species, respectively; the fauna of West Siberian Plain is poor (56 species) and that of North-East Asia very poor (39 species).

Further key words. Dragonfly, damselfly, Europe, Asia, Caucasus, Siberia, Ural

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Demography and territorial behaviour of three species of the genus *Hetaerina* along three tropical stream ecosystems (Odonata: Calopterygidae)

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Abstract. We studied the demography and territorial behaviour of three species of the damselfly genus *Hetaerina*, *H. aurora, H. caja* and *H. fuscoguttata*, along three lowland streams in western Ecuador: Tabuga, Buenaventura and Moromoro. We measured recapture rates of marked individuals and estimated survival, longevity, sex ratio and population size of the most abundant species at each location. We found male-biased sex ratios in two out of three populations and high recapture rates of *H. fuscoguttata* on the Tabuga river and *H. aurora* at the Moromoro stream. We recorded male territorial behaviour and reproductive behaviour of the three *Hetaerina* species by direct observation. At all study sites we recorded few reproductive events. Conversely, we registered a high number of male-male agonistic interactions confirming that all species behaved in a territorial manner. We identified three clear behavioural strategies in males: territoriality, site fidelity and non-territoriality. However, we found no phenotypic correlates of males' strategies.

Further key words. Dragonfly, damselfly, Zygoptera, mark-recapture, Neotropics, Ecuador

1st June 2019

Cytogenetic report on *Cordulegaster brevistigma* and *Watanabeopetalia atkinsoni* (Odonata: Cordulegastridae, Chlorogomphidae)

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Abstract. Live adult male specimens of *C. brevistigma* and *W. atkinsoni* have been collected from Shimla, Himachal Pradesh (India). Male germ cell chromosomes of the species are described on the basis of conventional staining, C-banding, silver nitrate staining and sequence specific staining. Both the species possesses 2n = 25m, as a diploid chromosome number and XO (♂)/XX (♀) type sex determination. In both the species, dark terminal C-bands are present on all the autosomal bivalents and X chromosome is C-positive throughout the length. Terminal light/dark NORs (Nucleolar Organizer Regions) are present on all autosomal bivalents, while X chromosome also possesses terminal NORs. During sequence specific staining, all the autosomal bivalents show prominent terminal DAPI (4',6-diamidino-2-phenylindole) and CMA_3 (Chromomycin A_3) bright regions and X chromosome also possesses both DAPI and CMA_3 signals. In addition, a brief review of the size of X element in the allied families Cordulegastridae, Corduliidae and Macromiidae is given.

Further key words. Dragonfly, Anisoptera, chromosomes, conventional staining, C-banding, silver nitrate staining, sequence specific staining, India

1st June 2019

A new species of *Ischnura* from the Colombian Central Andes (Odonata: Coenagrionidae)

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Abstract. Eight species of *Ischnura* are known from Colombia; five of them are Andean endemics, four from the Eastern Cordillera and one from the Central Cordillera. Here, we describe a new species thus far known only from the Central Cordillera, *Ischnura solitaria* sp. nov. (Holotype ♂ from Belmira, Antioquia, Colombia, 6.711305°N, 75.628503°W, 2 615 m a.s.l.). Despite several searching efforts close to this locality, it has only been found at this wetlands site with few individuals. Due to the low population density of less than 50 individuals and the lack of action to protect the extremely small area where the species occurs, it matches the IUCN requirements to be considered »Critically Endangered«. A taxonomic key to males of *Ischnura* spp. in Colombia, a discussion on the type locality for the rare *I. indivisa* and the presence of *I. fluviatilis* in Colombia are included.

Further key words. Dragonfly, damselfly, Zygoptera, Ischnurinae, *Ischnura solitaria* sp. nov., Antioquia, endangered species, color ontogeny

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The final instar exuviae of the genus *Urothemis* in Africa (Odonata: Libellulidae)

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Abstract. Four of the five species of the final instar exuviae of the genus *Urothemis* found in the Ethiopian Region are illustrated and described here, with *U. venata* being described for the first time. In addition, comparison is provided with the common Asian species *U. signata.* The feature which best defines the species within the genus is the variation in eye shape. As to the African species, colour and patterning are variable but distinctive and can be used in identification. As to structural differences, *U. assignata* and *U. edwardsii* are similar in that they have strong lateral and dorsal abdominal spines. The remaining two species, *U. thomasi* and *U. venata*, have much smaller spines. The exuviae of the remaining species, *U. luciana,* is unknown. On the evidence of exuviae, *U. thomasi* is quite distinct from the Asian *U. signata* of which it is thought to be a subspecies.

Further key words. Dragonfly, Anisoptera, *U. assignata*, *U. edwardsii*, *U. signata*, *U. thomasi*, *U. venata*, larvae

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Agyrtacantha picta sp. nov., a new dragonfly from southern Papua New Guinea (Odonata: Aeshnidae)

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Abstract. A new species of *Agyrtacantha* is described from the Purari River basin in Gulf Province, Papua New Guinea. The new species is most similar to *A. dirupta*, a species widespread in the Papuan region, but differs from that species and other known congeners by the unique colour pattern on the front and sides of the synthorax and the particularly long and slender anal appendages. Both sexes are described and illustrated, and the species is compared with its most similar congeners.

Further key words. Anisoptera, taxonomy, new species, Melanesia, Purari River basin