

Some personal recollections of the late Angelo Barbosa Monteiro Machado (1934 – 2020)

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Abstract. Some personal recollections from 1963 to present are provided, with emphasis on ABMM's manifold work for Odonatologica and the SIO and on his research on human attitude towards jungle/forest in Brazil and in Europe.

Further key words. Dragonfly, Odonata, history of odonatology, human attitude towards jungle/forest

Range, distribution, field identification, behaviour and exuvia description of *Orthetrum ransonnetii* (Odonata: Libellulidae)

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Abstract. Based on numerous records of *Orthetrum ransonnetii* from south-eastern Arabia, the Middle East, the Maghreb and the Canary Islands in recent decades, the range of this species is characterised in relation to climate and habitat parameters. The species is mostly found in hot, arid, rocky environments. Its flight period extends year-round, with an apparent bivoltine cycle at lower elevations and in the southernmost part of its range. The range of its known distribution in certain areas, particularly in the mountains of central and western Morocco, is extended. There it was met with, sometimes as permanent reproductive populations, on the northern slopes of the Moroccan High Atlas, a montane area with a heavy winter snow cover, distinct from most of its previously known Saharo-Arabian-Iranian habitats. The absence of earlier records in some regions may be attributable to both difficulties in identification and confusion with the more common and widespread *O. chryso stigma* and *O. brunneum* and also with *O. brevistylum* and *O. taeniola-tum*, with which *O. ransonnetii* is sympatric in Central Sahara and part of Southwest Asia, respectively. Field identification criteria and the unique behaviour of the species are described. The combination of black antenodal subcostal cross-veins in dorsal view and fully hyaline hind wings is sufficient to differentiate *O. ransonnetii* from all other *Orthetrum* in the Palaearctic area. The species can be distinguished in the field from sympatric conge-

ners, particularly *O. chrysostigma*, if good views or photographs are available, on the basis of several readily observable visual characteristics. The identification of the exuviae is difficult but *O. ransonnetii* is unique among its known West Palaearctic congeners in having more than 10 setae (instead of 3 to 8) at the base of the movable hook on each labial palp of the prementum.

Further key words. Dragonfly, Anisoptera, West Palaearctic, Sahara, Sahel, zoogeography, climate change

Records of lost and associated species of Odonata in Cross River National Park, Nigeria

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Abstract. A number of species of Odonata in south-eastern Nigeria have not been seen for decades, while others have not been recorded since their description. The Mango River in the Oban division of the Cross River National Park (CRNP) in eastern Nigeria was visited three times every month in September 2019, January and March 2020, to survey species of Odonata. The survey was carried out with a view to rediscovering lost species or species that are hitherto not known to occur in the study area. Micrographs of the thorax and wings of specimens suspected to be relict species of Odonata were taken and compared with data in literature to determine their actual identities. A total of 61 individuals of Odonata belonging to 34 species in nine families were collected. Of the 34 species, three, *Africocypha lacuselephantum* (Vulnerable), the relict *Pentaplebia stahli* (Vulnerable) and *Umma purpurea* (Endangered) are new records for Nigeria. This record of rare and common species provides a preliminary baseline data for a checklist of the Odonata fauna in Oban Hills for possible formulation of conservation strategies for threatened species in the area in particular and south-eastern Nigeria at large.

Further key words. Dragonfly, Zygoptera, Anisoptera, Oban Hills, Africa, threatened species, conservation

New data on the distribution of the Italian endemic *Cordulegaster trinacriae* (Odonata: Cordulegastridae)

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Abstract. Data on the northern and eastern limits of the distribution of the Italian endemic *C. trinacriae* are reported, together with further details on the first records for Abruzzo and Puglia, thereby re-defining its known range. The species is common in suitable habitats in central-southern Italy, extending further north along the Adriatic. In contrast to previous reports, along the central Tyrrhenian area *C. boltonii* and its hybrids replace *C. trinacriae* with phenotypically pure specimens only in southern Lazio and northern Campania. The flight period extends from late May to late September. The known altitudinal distribution ranges from 9 to 1639 m a.s.l. We consider the possibility that former records of *C. boltonii* from Abruzzo, Molise and Campania resulted from confusion with *C. trinacriae*. In these regions *C. boltonii* either never occurred or has now been largely replaced by *C. trinacriae* and is extremely localised.

Further key words. Dragonfly, Anisoptera, *Cordulegaster boltonii*, Abruzzo, Puglia

The circumtropical *Pantala flavescens* is a regular visitor to Cyprus and reproducing on the island (Odonata: Libellulidae)

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Abstract. Although considered one of the most widespread dragonflies in the world, *Pantala flavescens* is rarely recorded in Europe and only irregularly observed in the eastern Mediterranean. The first published records of *P. flavescens* from Cyprus date back to 1957. There are no further published records from Cyprus until 2010 when a single individual and a copula were observed. The latter is also the first record of reproductive activity of the species in the eastern Mediterranean. Since the systematic monitoring of Odonata in Cyprus began in 2013, *P. flavescens* has been recorded on the island every year with one to 13 records each year from 2013 to 2017, 45 in 2018, and with a significant increase to 146 records in 2019, giving a total of 237 records. Reproductive behaviour of *P. flavescens* has been observed 19 times on Cyprus and in 2018 we found a larva and a teneral male. Oviposition mode showed high plasticity and was observed in five cases in non-contact guarding behaviour; five times females were ovipositing alone (unguarded oviposition) and oviposition in tandem was seen only once. Our observations are the first proof of successful reproduction of *P. flavescens* in the eastern Mediterranean.

Further key words. Dragonfly, Anisoptera, Mediterranean, range expansion, larva, guarded and unguarded oviposition

Digital records of *Macromia splendens* larvae *in natura* and notes on their micro-habitat (Odonata: Macromiidae)

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Abstract. *Macromia splendens* is a rare species, endemic to southern France and the Iberian Peninsula. Information about its larval ecology is still scarce. For the first time, we have obtained 30 photographic and video records of *M. splendens* larvae *in natura* from three small rivers in southern France and we comment on these observations. Our observations confirm that *M. splendens* larvae live in shady places and hide in a covering of brown detritus, consisting of leaves and sticks, as indicated by previous studies. However, our observations show that larvae are also present in open micro-habitats, exposing them to trampling by bathers or horses.

Further key words. Dragonfly, Anisoptera, insect conservation, new photographic method, water proof camera

Parasitism of Odonata by *Arrenurus* water mites (Acariformes, Hydrachnidia, Arrenuridae) in Western Siberia

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Abstract. The infestation of odonate imagines by water mite larvae was studied in the south of Western Siberia. Data on the rate of infestation, parasite load and the distribution of larvae on the body of dragonflies is presented. Of 24 odonate species studied, parasites were found in 12 species, with Zygoptera and *Sympetrum* species being most affected. Very high parasite loads were observed on *Coenagrion pulchellum* and *Sympetrum flaveolum*, in which the infestation rates of mite larvae exceeded 75%. *Erythromma najas* recorded the highest parasite loads (up to 299 larvae per host). In total, six species of parasitic mites were identified; their occurrence on different species of Odonata varied. *Arrenurus papillator* attacked only *Sympetrum* and *Lestes*, while five other species, among which *A. tricuspikator* and *A. maculator* predominated, were found on species of Coenagrionidae.

Further key words. Dragonfly, damselfly, Zygoptera, Anisoptera, infestation, Russia

The evolutionary history of colour polymorphism in *Ischnura* damselflies (Odonata: Coenagrionidae)

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Abstract. A major challenge in evolutionary biology concerns how genetic and phenotypic variation is created and maintained. In this study, we investigated the origin(s) and evolutionary patterns of the female-limited colour polymorphism in *Ischnura*. This involves the presence of one to three colour morphs: one androchrome morph with coloration that resembles that of the male, and two gynochrome morphs (*infuscans* and *aurantiaca*) with a female-specific coloration. We documented the colour of 44 and mating system of 36 of the 76 species within *Ischnura* to investigate the ancestral state of both traits and the correlated

evolution and to infer directionality of trait-state transitions. The ancestral state reconstructions suggest that the most recent common ancestor of the ischnuran damselflies was most likely polymorphic and polyandrous. Our results give some support to the evolutionary correlation between female-limited colour polymorphism and mating system in *Ischnura*. That correlation is consistent with the idea that sexual selection through sexual conflict over the frequency of matings has selected for polymorphic females to reduce the overall intensity of male mating harassment, and our finding that the same phenotypic morphs have evolved multiple times (convergent evolution) suggests that several species in this genus might be experiencing similar selective pressures.

Further key words. Dragonfly, Zygoptera, ancestral state, correlated evolution, colour polymorphism, mating system

A new species of *Teinobasis* from Bougainville Island, Papua New Guinea, with a key to males of the genus from the Solomon Islands Archipelago (Odonata: Coenagrionidae)

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Abstract. A new species of damselfly, *Teinobasis taripu* sp. nov., is described from Bougainville Island in the Solomon Islands Archipelago. The male most closely resembles *T. bradleyi* Kimmins, 1957, which is known from several islands in the archipelago and occurs in sympatry with the new species on Bougainville. However, the new species can be distinguished from *T. bradleyi* by having a largely metallic black thorax speckled with yellowish brown (*vs* a more discrete pattern of metallic black and light blue), and by having a trilobed (*vs* unilobed) mid-dorsal appendix of abdominal segment 10. The new species is described, illustrated and diagnosed, and a key to the males of all *Teinobasis* species known from the Solomon Islands Archipelago is presented.

Further key words. Dragonfly, damselfly, Zygoptera