

ADDITIONS TO THE DRAGONFLY FAUNA OF YEMEN**H.J. DUMONT**¹ and **M.M. AL-SAFADI**²¹ Institute of Ecology, University of Ghent, Ledeganckstraat 35, B-9000-Ghent, Belgium² Biology Department, Faculty of Science, Sana'a University, P.O. Box 1247, Sana'a, Yemen**Abstract** During June 19-24, 1990, 26 odonate spp. were collected from 5 localities. *Tri-*

themis donaldsoni is an addition to the fauna of the Arabian Peninsula. *Enallagma nigridorsum* is a new record for Yemen. The presence of *Pseudagrion arabicum* in Yemen is confirmed. The South Arabian *Pseudagrion sublacteum* is found to belong to the nominal subspecies, not to ssp. *mortoni*.

Introduction

The systematic study of the dragonflies of Yemen only started in the 1980ies. WATERSTON (1984) published a list of 20 species for the Yemen Arab Republic, and 20 species for the People's Democratic Republic of Yemen. This same list was also given in WATERSTON & PITTAWAY (1991). Combining the lists for both countries, we arrive at 28 species. AL SAFADI (1990) updated the list for the Yemen Arab Republic, now totalling to 28 species.

Since it is clear that this number represents a fragmentary record, we undertook a short but intensive dragonfly collecting trip in Yemen (the former Yemen Arabic Republic), between 19 and 24 June 1990.

List of localities

- (1) Wadi Al-Ahgor: a formerly permanent Wadi, situated at ca 2400 m a.s.l; its waters are now largely tapped for irrigation, and it is composed of a series of near-standing basins, connected by a trickle of running water; 19-VI-1990.
- (2) Sana'a-Ma'arib road, a large rainpool along the road, at ca 80 km from Ma'arib, alt. 1100 m; 20-VI-1990.
- (3) Wadi Ma'arib at the foot of Ma'arib dam: permanent running water, and a series of weedy, slightly saline pools, fringed with belts of *Typha* sp., and with *Ceratophyllum* sp., alt. 1000 m; 19-VI-1990.
- (4) Wadi Warazan: ca 50 km SE of City of Taiz; clear running water, locally fringed by *Phragmites* sp., alt. ca 1000 m.
- (5) Wadi Dhabab: ca 10-15 km S of Taiz City; same type of biotype as loc. 4, alt. ca 1050 m; 24-VI-1990.

List of species recorded

Species marked with an asterisk (*) are first

records for Yemen, and bring the total number of species known from the country to 31.

- (1) *Ischnura evansi* Morton: loc. 3 (common), loc. 4 (rare)
- (2) *Enallagma nigridorsum* (Sel.)*: loc. 1
- (3) *Pseudagrion s. sublacteum* (Karsch): loc. 4, 5; common
- (4) *P. hamoni* Fraser: loc. 4, 5; common
- (5) *P. kersteni* (Gerstaecker): loc. 4, 5; common
- (6) *P. arabicum* (Waterston)*: loc. 1; fairly rare; — listed by SCHNEIDER (1987), but without locality data
- (7) *Ceriagrion glabrum* (Burm.): loc. 3, 4, 5; fairly common
- (8) *Paragomphus genei* (Sel.): loc. 4, 3 ♂
- (9) *Hemianax ephippiger* (Burm.): loc. 4, few specimens, one tandem seen
- (10) *Anax imperator* Leach: loc. 1, 3, 4, 5
- (11) *Orthetrum caffrum* (Burm.): loc. 1, 1 ♂
- (12) *O. chryso stigma* (Burm.): loc. 1, 3, 4, 5; common
- (13) *O. sabina* (Dru.): loc. 3; fairly common
- (14) *Nesciothemis farinosum* (Förster): loc. 4, 5; fairly common
- (15) *Diplacodes lefebvrei* Ramb.: loc. 3; common
- (16) *Crocothemis erythraea* (Brullé): loc. 1, 3, 4, 5; common
- (17) *C. sanguinolenta* (Burm.): loc. 4, rare
- (18) *Sympetrum fonscolombeii* (Sel.): loc. 1, 3
- (19) *Trithemis annulata* (P. De Beauvais): loc. 2, 3, 4, 5; common
- (20) *T. arteriosa* (Burm.): loc. 2, 4, 5; common
- (21) *T. kirbyi ardens* (Gerstaecker): loc. 1, 2, 3, 4, 5; common
- (22) *T. furva* (Karsch): loc. 1, 4, 5; common
- (23) *T. donaldsoni* (Calv.)*: loc. 2, 4 ♂
- (24) *Zygonyx torrida* (Kirby): loc. 4, 5; fairly common
- (25) *Pantala flavescens* (Fabr.): loc. 2 (mass eclosion), loc. 4, 5
- (26) *Selysiothemis nigra* (Vander L.): loc. 3, several ♂

Comments

Yemen is certainly a rich dragonfly country, as shown by the fact that, in four days in the field, 26 species could be collected, i.e. almost the total number of species previously recorded

from the country. It is, therefore, to be expected that numerous regional species still await discovery.

A few species deserve some additional comments:

Enallagma nigridorsum — This is one of the three African *Enallagma* known from the Arabian peninsula, and it was also collected by one of us (HJD) in Wadi Darbaat, Dhofar, in March 1990. The specimens from both localities agree perfectly in colour pattern and structural details, and correspond well to SELYS' (1876) original description. The male appendages are short, dark coloured, and correspond with figures by RIS (1921) and PINHEY (1951).

Pseudagrion s. sublacteum — A long series of specimens from Yemen was compared with *P. s. mortonii* Schmidt for the Jordan valley. The latter subspecies is a much paler insect, with a yellowish pterostigma. Yemeni specimens agree much better with the nominal subspecies, and were compared with and found indistinguishable from, series from the African Rift Valley in Ethiopia and Burundi.

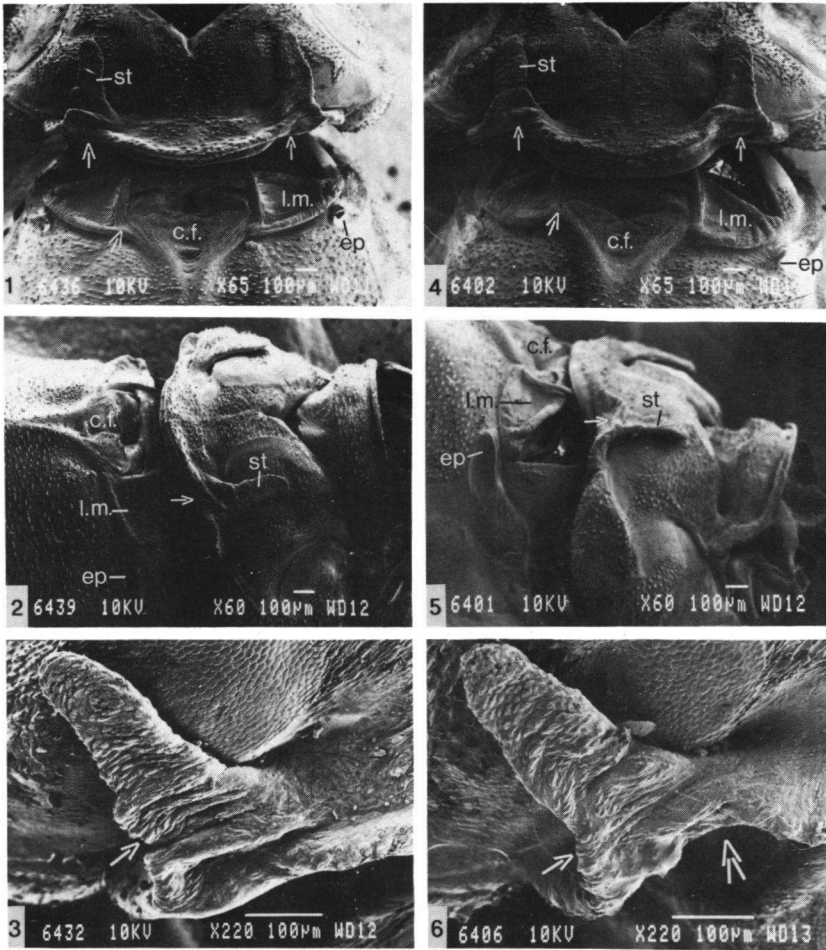
Pseudagrion arabicum — A taxon described from the high mountains in south-western Arabia, of which the Yemeni locality is a southern continuation. Although structurally closely allied to another regional species, *P. kersteni* (Gerst.), the females differ, in flight, by their more reddish appearance. Morphologically, there are minute, yet significant differences in the shape of the pronotum, which find their equivalent in structural differences in the male appendices. The pronotum of both species has been well figured by SCHNEIDER (1987). We here present some SEM-micrographs, based on Yemeni specimens, of the female pronotum and lamina mesostigmalis (Figs 1-6). — The most prominent character differentiating the species is the more angular hind ridge of the pronotum in *P. arabicum*, caused by a stronger development of its lower lip. Additional, more subtle differences are seen in the shape of the stylets, which have a symmetrically widened base in *P. arabicum* (Fig. 6) but an asymmetrical base in *P. kersteni* (Fig. 4). The carinal fork in *P. kersteni*, finally, is smoothly confluent with the inner posterior

corner of the lamina mesostigmalis in *P. kersteni* (Figs 1-2), but forms an acute angle in *P. arabicum* (Figs 4-5). — Males of *P. arabicum* have a dark thorax, without the prominent pseudo-antehumeral stripes characteristic of *P. kersteni*, in addition to small differences in structure of the terminalia, well figured by SCHNEIDER (1987). Both species were not found together, and it would seem that in Yemen, where the ranges of the two taxa meet, an altitudinal habitat separation exists, *P. arabicum* living only on high mountain streams, and *P. kersteni* being restricted (but extremely common) to altitudes well below 2000 m.

Trithemis donaldsoni — This dark and structurally well defined (hamuli sickle-shaped, lamina anterior bifid) species is new to the Arabian peninsula, but its occurrence in Yemen is no surprise, since it was originally described from the Ogaden "desert" in E Ethiopia (CALVERT, 1899). This constitutes an environment closely akin, if not identical to the Yemen mountains. Specimens were spotted, in territorial positions, along Wadi Warazan. They would perch on overhanging branches at ca 1-1.5 m above water, and fiercely attack all other dark-coloured intruders, such as *Zygonyx torrida*. Their patrolling flight was extremely rapid and agitated, and only with luck and patience could two male specimens be captured.

Pantala flavescens — Loc. 2 was noteworthy for the mass eclosion of *Pantala* which had occurred here. Per meter of shore, at least 100 exuviae were counted, bringing the total number of specimens produced by that rain-pool to many thousands. In agreement with the emigratory habitats of this species (CORBET, 1988), no adults were seen at the pool. Copulating specimens, and egg-laying tandems, were seen in locs 4-5, ovipositing in running water.

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Figs 1-6. *Pseudagrion kersteni*, ♀ (Figs 1-3) and *P. arabicum*, ♀ (Figs 4-6): (1, 4) Hind region of pronotum and the adjacent dorsum of prothorax, dorsal view; — (2, 5) Idem, lateral view; — (3, 6) Stylet, enlarged. — [st = stylet, — c.f. = carinal fork, — ep = epaulette, — l.m. = lamina mesostigmalis. — Arrows indicate the areas where infraspecific differences occur]

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Received March 4, 1991