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THE GENUS *PSEUDAGRION* (ODONATA: ZYGOPTERA) IN IRAN

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Abstract

Two species of *Pseudagrion* are reported from Baluchistan-Seistan, South-East Iran. *P. decorum* is an Oriental, and *P. cf laidlawi* a south-east Palaearctic species with Oriental affinities.

Introduction

To date, not a single *Pseudagrion* species had been reported from Iran. While in the North and West of the country, the occurrence of these typically tropical-subtropical zygopterans is indeed unlikely, the situation in the South and South-East is quite different. The spectacular increase in our knowledge of the Odonata of South Arabia (for Oman and Yemen, see Schneider & Krupp, 1993, Schneider & Dumont, 1997) in the last two decades has revealed the presence of at least six different species of *Pseudagrion* there. The overwhelming majority (five species) of these are Afrotropical or of Afrotropical origin, with only one, *Pseudagrion decorum* (Rambur), an oriental element. North Oman and the Makran coast are only separated by the narrow strait of Hormuz, which can hardly be considered a barrier to dragonfly dispersal. Unfortunately, little is known of the fauna of South Pakistan West of the Indus (the lower Sind and Baluchi provinces), except for some occasional records by Fraser (1921, 1933). Even in recent papers by Pakistani workers (Khaliq & Yousuf, 1993 a,b,c), the arid zone West of the Indus is only rarely referred to, with records mainly from the valley of the river itself, rarely from the Makran coast. This arid territory is continuous with the Iranian provinces of Baluchistan and Seistan, and is climatically and geographically very similar to Oman. Therefore, this zone of Iran is the most likely to harbour *Pseudagrion* species among its dragonfly fauna.

In fact, we managed to find two species here.

1. *Pseudagrion decorum* (Rambur): Fig. 4.

Material examined: 1 male, Polan (Sangan area), 5 September 1997.

This single male was compared with material from several localities in Oman and with specimens from Tamil Nadu, South India (senior author's collection). Aside from a

smaller size (total length 32 mm, abdomen 24.5 mm, fore wing 18.5 mm, hind wing 17 mm), no differences were found.

2. *Pseudagrion* sp. (prope *P. laidlawi* Fraser) : Figs 1-3.

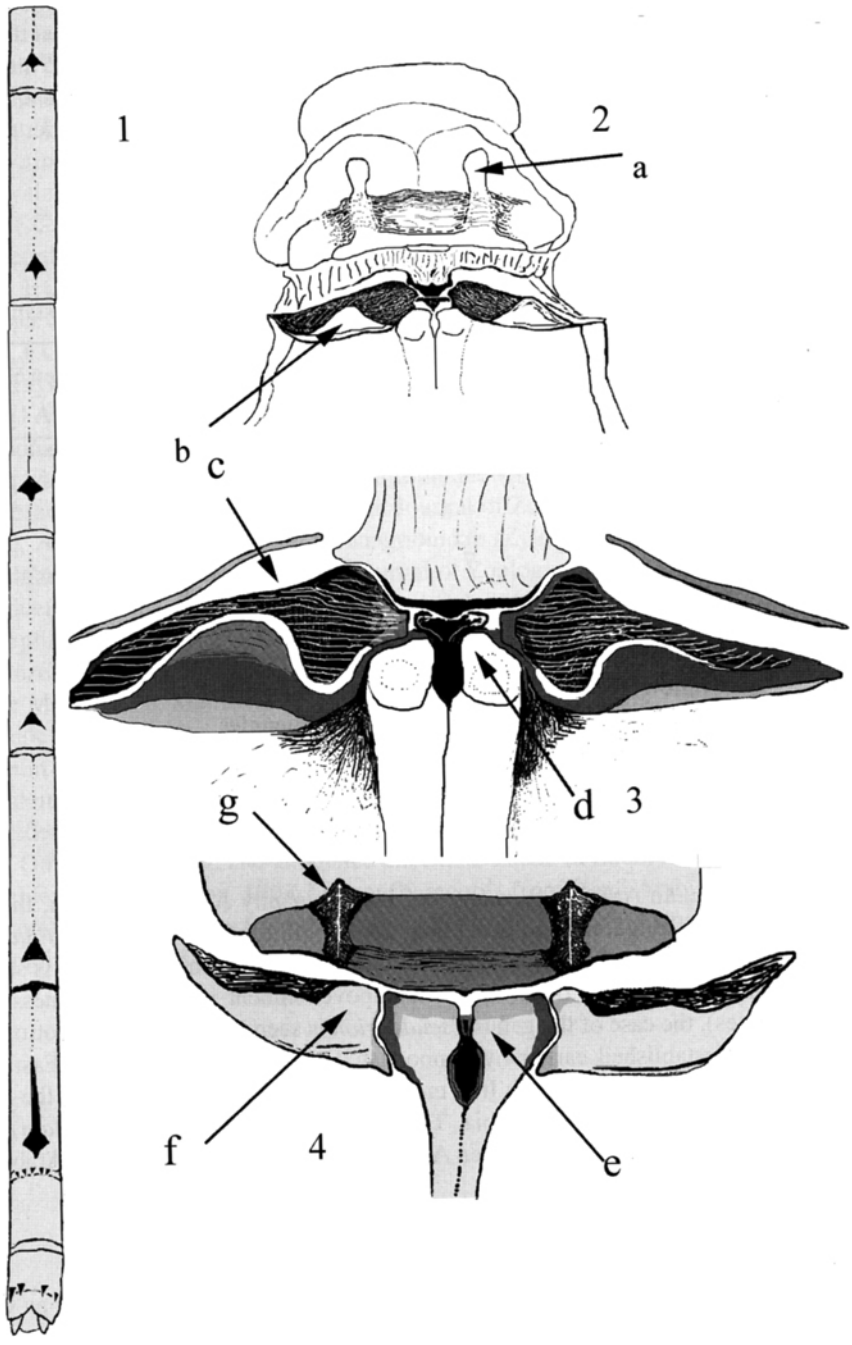
Material examined: 1 female, Iranshahr (leg. Omara), 1 August 1993.

This animal is definitely not conspecific with *P. decorum*. It is strongly decolorate, with the dorsum of the head, the pro- and synthorax totally unmarked and sand-coloured (in dried condition; live colouration may have been greenish or bluish). The abdomen too is only sparsely marked with black (Fig. 1), a condition not unusual in *Pseudagrion* living in arid environments (Dumont, 1974). It has well-developed, apically upturned stylets on the dorsum of its pronotum (Fig.2a), a condition found in most Oriental *Pseudagrion* (Fraser, 1933), but not in *P. decorum* (Schneider, 1987). Figure 4 shows the diagnostic features of female *P. decorum* (a female from Nakhl, Oman) for comparison. Here, the stylets are reduced to a couple of "knobs"(Fig. 4 g) at the base of the hind lobe of the pronotum. It has recently been shown that the quantitative development of such stylets may vary within species (e.g. in *P. syriacum*: Schneider & Katbeh-Bader, 1997). By itself, presence or absence of stylets may therefore no longer be considered an infallible character. However, there are other marked differences between the two Iranian *Pseudagrion*. The carinal fork in *P. cf laidlawi* is only slightly widened at its anterior end (Fig. 3 d), against distinctly so in *P. decorum* (Fig. 4 e), where it broadly separates the two laminae mesostigmales (lam.mes, Fig. 4f).

But perhaps the most convincing difference is displayed by the laminae, the anchoring site of the male's superior appendages, themselves. In *P. decorum*, their hind margin rises progressively towards the middle, and is highest adjacent to the carinal fork. The laminae do not extend in the gap anterior to the fork (Fig. 4 f).

In *P. cf laidlawi*, the hind margin of the laminae is somewhat sinuous, reaching their maximum height about in the middle (Fig. 2 b). Closer to the carinal fork, the hind margin is broadly depressed and the lamina itself protrudes significantly into the gap in front of the carinal fork. The anterior depression of the laminae is deep and wide, with a strongly grooved bottom (Fig. 3 c). The left and right anterior endings of the carinal fork are produced into a slight but distinct tubercle (Fig.3c)

Unfortunately, the original description of *P. laidlawi* by Fraser (1922) is totally inadequate to permit a fully trustworthy identification. A more recent study on *Pseudagrion* in Pakistan has added little or no structural features (Khaliq & Yousuf, 1993b). Our reasons for considering *laidlawi* a possible candidate for the Iranshahr specimen lies with Fraser's (1933) statement that this is a decolorate species (yet not on the dorsum of the abdomen), with well developed stylets (like in Fig. 2a), and apparently the only "Indian" *Pseudagrion* to be largely restricted to the arid and semi-arid zones West of the Indus River, where it was said to be fairly common in and around Karachi. Again, the specimen in front of us is probably a dwarf (total length 26 mm, abdomen 20 mm, fore wings 15 mm, hind wings 14 mm). The only other species with which it could possibly be confused is *Pseudagrion spencei Fraser*, which is said to possess a female with a largely decolorate abdomen (Fraser, 1933). A comparison of available characters (compiled from



Figures 1-4. 1. Abdomen of *Pseudagrion cf laidlawi* female from Iranshahr. 2. Pronotum of *P. cf laidlawi* (a, stylet; b. central zone of hind ridge of lamina mesostigmalis). 3. Lamina mesostigmalis of *P. cf laidlawi*, enlarged. C, anterior broad and deeply grooved depressed part of lamina, d. anterior end of carinal fork, raised (d) but almost not widened. 4. Hind ridge of pronotum., lamina mesostigmalis and carinal fork of *Pseudagrion decorum* female (Oman); e. anteriorly widened carinal fork, f. hind ridge of lamina, highest near the carinal fork, g. reduced stylet.

Fraser, 1922, 1933, and Khaliq & Yousuf 1993b) is given in table 1. Wing venation (number of pn in fore and hind wings, and colour of the pterostigma) again suggest that the specimen in front of us is *P. laidlawi* (or an undescribed species closely allied to *P. laidlawi*). The discovery of the male is eagerly awaited, to definitively decide whether this a western outlier of a known taxon, or a new species endemic of the south-eastern frontier zone of the Palaearctic.

Table 1.

A comparison with some characters in two *Pseudagrion* from South-West Pakistan.

	stylets	Pt	PN in fore-wing	PN in hind-wing	abdomen S.3-6	abdomen S10
P. spencei	+	dark reddish-brown	9 -10	8	with small (sub)apical triangles)	unmarked
P. laidlawi	+	pale yellow	8	7	with broad dorsal black band	unmarked
P. sp.(Iran)	+	pale yellow	8	6-7	with small sub-apical triangles	unmarked

Biogeographic significance.

In contrast to the South Arabian *Pseudagrion*, predominantly African in origin, the two species now known from Iran (and accepting, for the time being, that *P. cf laidlawi* is indeed that species), are both Oriental (even though by distribution, *P. laidlawi* is strictly speaking palaearctic). In spite of an apparent impoverishment in species richness (two against six species), the case of the genus *Pseudagrion* is seen to confirm the Afrotropical-Oriental gradient established earlier by Dumont & Heidari (1996) for South-East Iran. The discovery of *P. decorum* in South Iran moreover closes the apparent gap in the range of that species between India and Arabia. The distribution of the genus *Pseudagrion* is thereby revealed to be continuous between Africa and Asia, via the Levant and Arabia.

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