

SHORT COMMUNICATIONS

**DESCRIPTION OF THE LAST INSTAR LARVA OF
AGRIOCNEMIS F. FALCIFERA PINHEY, 1959
(ZYGOPTERA: COENAGRIONIDAE)**

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Ultimate instar larva of both sexes, from Pietermaritzburg and Durban, South Africa, is for the first time described, illustrated and compared with the African and Asiatic congeners.

INTRODUCTION

The genus *Agriocnemis* is widely distributed through Africa, Asia and Australia. Seventeen species occur in Africa (DAVIES & TOBIN, 1984), although the systematic status of some of these is controversial. Five species are known from South Africa: *A. exilis* Sélys, 1872, *A. falcifera* Pinhey, 1959, *A. gratiosa* Gerstaecker, 1891, *A. pinheyi* Balinsky, 1963, and *A. ruberrima* Balinsky, 1961 (PINHEY, 1984).

A. pinheyi is the only South African species whose larval morphology is well known (CARCHINI et al., 1995). Among the other African species, there is only a poor description of *A. pygmaea* (Rambur, 1842) from the Seychelles (PINHEY, 1974) and from India (KUMAR, 1973). DUMONT (1991) has illustrated the palpus of *A. sania* (Nielsen, 1959), probably from Israel. However, *A. sania* is considered by PINHEY (1974) and DAVIES & TOBIN (1984) to be a subspecies of *A. pygmaea*. Even among the Asian species, very few of their larvae have been described: *A. femina* (Brauer, 1868) by LIEFTINCK (1962) and by CHOWDHURY & MIAH (1990); *A. corbeti* Kumar & Prasad, 1978 by KUMAR & PRASAD (1978); *A. lacteola* Sélys, 1877 by CHOWDHURY & MIAH (1990).

A. falcifera occurs in still waters only in South Africa. *A. f. falcifera* Pinhey, 1959 is known from KwaZulu-Natal and *A. f. transvaalica* Pinhey, 1974 from Transvaal

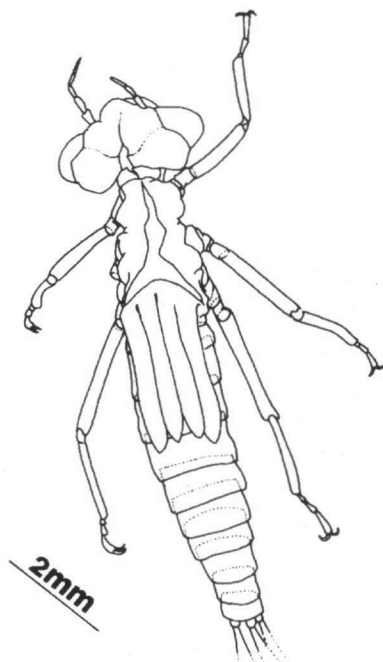


Fig. 1. *Agriocnemis f. falcifera*: exuviae.

(Mpumalango). The morphology of the last instar larva of *A. f. falcifera* is described here for the first time.

METHODS

The larvae were collected in the field and reared through to emergence in the laboratory. Species determinations were from the teneral imago. Exuviae were stored in 75% ethyl alcohol, and drawn using a microscope and camera lucida (up to 100 × magnification). All measurements were to the nearest 0.1 mm, using a micrometric eyepiece.

CORBET's (1953) terminology for the labium was adopted, and abdominal segments are indicated as S1...S10.

MORPHOLOGICAL DESCRIPTION

Material. – 1 last instar ♂ larva, National Botanical Gardens, Pietermaritzburg, 12-III-1992; – 1 last instar ♀ larva, Kenneth Stainbank Nature Reserve, Durban, 29-XII-1992, Gael Whiteley leg.

B o d y as typical of the Agriocnemidinae (Fig. 1), i.e. similar to the other Coenagrionidae, but smaller. Surface of body smooth, glabrous, pale brown, yellowish in the exuviae, with no bands, spots or other colour patterns.

H e a d pentagonal, with postocular lobes rounded, and large eyes. Antenna 7-segmented, the third segment being the longest. Seventh segment shorter than half the length of the sixth (Fig. 2a). Prementum pentagonal in shape. Premental setae 5+5. A row of 6-10 spiniform setae on the distal half of the lateral edges of prementum, not reaching the articulation with palpi. Distal margin of prementum finely crenulated (Fig. 2b). Palpus typical of the family. Palpal setae 5 & 5 or 5 & 4. Movable hook stout and short, not longer than the palpal setae. Distal margin of palpus with 6 strong, rounded teeth, the internal one being the longest. Distal half of the internal

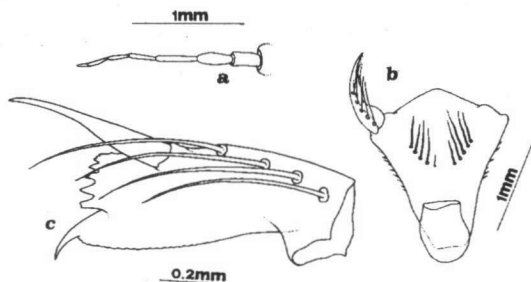


Fig. 2. *Agriocnemis f. falcifera*: (a) antenna; – (b) mask; – (c) palpus.

edge of palpus crenulated (Fig. 2c).

T h o r a x glabrous, wing sheath reaching the half of S4. Legs long, with very small spines and few long, thin setae on femur and tibia. Pectinate and tridentate setae on tarsus and distal end of tibia, the pectinate setae more abundant on tarsus.

A b d o m e n conical, with a row of spiniform setae on the lateral carina of segments S5-S9 (Fig. 3a). Ovipositor well developed, reaching the half of S10, with a row of spines on the ventral edge. Strong spiniform setae on distal margins and dorsal surface of the last abdominal segments. Cerci short yet distinctive (Fig. 3b). Caudal lamellae long and pointed, wider in the distal half. Principal tracheae slightly decentralised and straight, secondary tracheae wide, ramified, emerging from the first with an angle near to 90° in the proximal third, acute more distally (Fig. 3c). A breaking line on lamellae insertion on S10. No spots or transverse bands on lamellae.

For measurements see Table I.

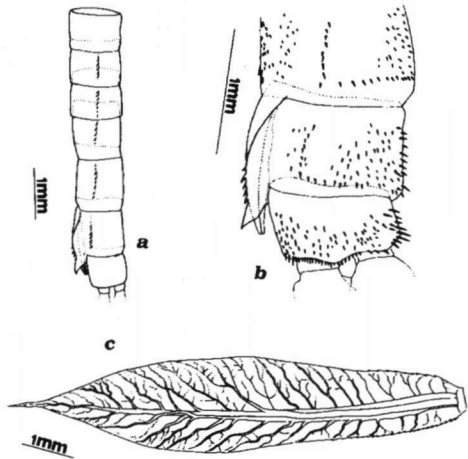


Fig. 3. *Agriocnemis f. falcifera*: (a) abdomen; – (b) last abdominal segments, lateral view; – (c) lateral lamella.

DISCUSSION

Table I
Measurements (in mm) of a male and a female specimen of *Agriocnemis f. falcifera*

Character	♂	♀
Total body length	9.2	9.2
Head width	2.4	2.9
Distance between antennae insertions	0.8	0.8
Antenna length	1.7	1.7
Wing-sheath length	2.5	2.5
Hind femur length	2.2	2.6
Hind tibia length	1.8	2.3
Hind tarsus length	0.8	0.8
Mask length	2.0	2.0
Mask width	1.6	1.6
Median lamella length	5.7	5.7
Lateral lamella length	6.2	6.2

We have compared the morphology of *A. f. falcifera* with the described African and Asian species. *A. f. falcifera* shows most of the characteristic features of the other Agriocnemidinae. Its dimensions are very small (body length 9.2 mm), intermediate between the still smaller *A. lacteola* (8.4 mm) and the larger *A. femina* (11.03). In its even colour pattern, *A. f. falcifera* differs from both *A. pygmaea* and *A. pinheyi*, which both have distinct longitudinal stripes along the body.

The shape of the head, with

rounded postocular lobes is similar to those of all other species, with exception of *A. corbeti*, which has postocular lobes that are pointed and triangular in shape.

The eyes, as well as the mask and the number of the premental setae, are similar in all the described species. The palpal morphology is also similar in all species, with the exception of *A. sania* from Israel, whose palpus shows a very long internal tooth and a much shorter movable hook (DUMONT, 1991). This feature distinguishes *A. sania* from all the other *Agriocnemis* spp. larvae so far described, including *A. pygmaea* from the Seychelles (considered conspecific by PINHEY (1974) and DAVIES & TOBIN (1984)).

The pectinate setae on tarsi and tibiae of *A. f. falcifera* are unusual. The same feature occurs in *A. pinheyi* (CARCHINI et al., 1995), in *A. corbeti* (KUMAR & PRASAD, 1978) and in *A. pygmaea* (KUMAR, 1973), yet they have not been described from other *Agriocnemis* larvae. This may possibly be because the very small size of these setae, which are only visible with a good stereomicroscope.

The caudal lamellae of *A. f. falcifera* have strong and numerous tracheae, as in *Ischnura* sp., and closely resembling those of *A. femina* and *A. lacteola*, but not *A. pinheyi*. *A. pinheyi* also has no breaking line at the lamellae insertions as does *A. f. falcifera*. Also, *A. f. falcifera* has no spots or stripes on the lamellae, thus differing from some Asian species such as *A. lacteola*, *A. corbeti* and *Agriocnemis* sp. (KERDIPIBULE et al., 1979).

In conclusion, the striped pattern along the body, the transverse bands across the lamellae and the shape of the postocular lobes appear to be the only characters really helpful for discerning the different species, although no one of the *Agriocnemis* species so far described show all of the three characters, and no one of the latter is exclusive of one species.

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