

LAST INSTAR LARVA OF *TRITHEMIS WERNERI* RIS, 1912, AND COMPARISON WITH OTHER *TRITHEMIS* SPECIES (ANISOPTERA: LIBELLULIDAE)

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Afrotropical *T. weneri* is at the southern tip of its range in South Africa, where it overlaps with several other species of the genus. Its larva is described and compared with other known *Trithemis* spp. larvae from southern Africa.

INTRODUCTION

Trithemis weneri is an Afrotropical species. The record here from the Umfolozi River, Natal, represents the southern margin of its distribution. Until now it has only been recorded from the Sudan in the North, to the Transvaal and Angola in the South (PINHEY, 1985). The adults prefer semi-arid river valleys, settling on the bushes often at some distance from the water (PINHEY, 1985).

The larval morphology and ecology is unknown. This paper provides a detailed description of the larva. Because some morphological characters considered here were not described in previous papers on *Trithemis* larval morphology, we report here also a detailed description of the ventral surface of *T. annulata*, *T. stictica*, *T. kirbyi*, *T. dorsalis*, *T. arteriosa* and *T. furva*. This improves morphological comparisons between *Trithemis* larvae. Finally, as the *Trithemis* larvae key previously published (CARCHINI et al., 1992) did not include *T. weneri* and *T. annulata*, we propose here an insert to the key giving comprehensive treatment for identifying all the larvae of South African *Trithemis* species known to date.

METHODS AND TERMINOLOGY

All specimens described here were from South Africa, except for *T. annulata*, the specimens of which were from Italy. The larvae were collected in the field and reared through in the laboratory. Species determination was from the teneral imago. Last instar exuviae were stored in 75% ethyl alcohol and drawn using a stereomicroscope and camera lucida (50x magnification). All measurements were to the nearest 0.1 mm using a micrometric eyepiece. The following measurements were made: dorsal view, total body length, abdomen width, distance between tips of lateral abdominal spines, epiproct width, anal pyramid width, antennae length, distance between antennae insertions (i.e. distance between central axes of the first antennal segments); ventral view: abdomen length, prementum length, mask length and width (after being cut at the postmentum level and laid out, but not flattened); lateral view: epiproct and cercus length.

CORBET's (1953) terminology for the labium was adopted. Some features of setae alignment on prementum and palpus were not included in Corbet's terminology, and are here described as defined in the previous paper on *Trithemis* larvae (CARCHINI et al., 1992).

DESCRIPTION OF THE LARVA
OF *TRITHEMIS WERNERI* RIS

Material. — 1 last instar, Umfolozi R., Natal, 29-I-1991, G. Carchini leg.

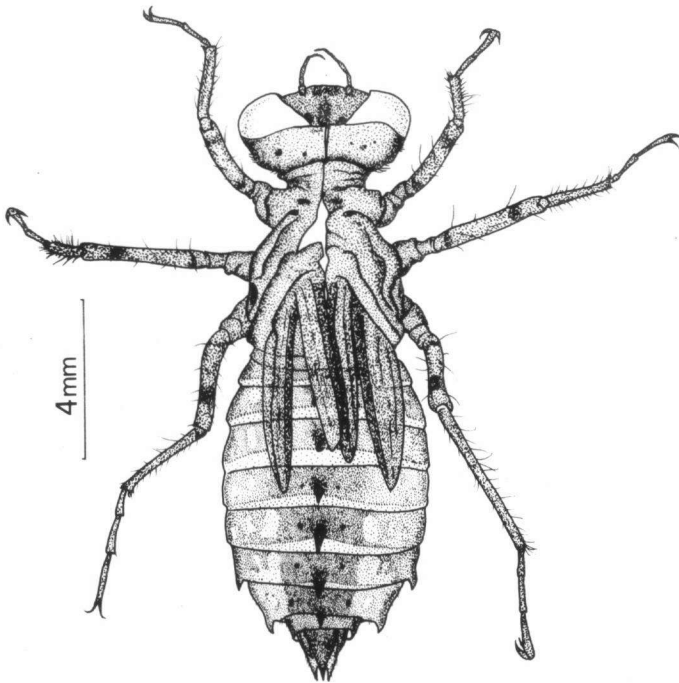


Fig. 1. *Trithemis wernerii*: last instar larva, habitus.

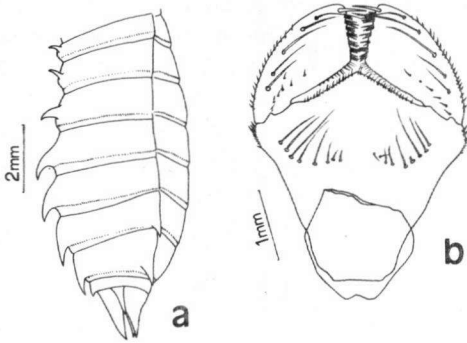


Fig. 2. *Trithemis weneri*: (a) abdomen, lateral view; – (b) mask.

Habitus typical of the genus. Body length 16.6 mm, colour pale brown, thinly setose. Antennae 7-segmented, the third segment longest. Antennae length 2.2 mm, distance between insertions 1.1 mm.

Mask length 3.8 mm, width 2.9 mm. Distal margin of medial premental lobe with a central group of two spiniform setae and two lateral lines of 17 spiniform setae, regularly spaced except for the external ones. Premental setae 8+8. Prementum length 3.4 mm.

Palpus with dark spots, 8-9 cremations on distal margin, each with groups of 2-4 spiniform setae. A line of 6-7 short setae near the articulation with prementum, between the inner margin of palpus and the line of the palpal setae. Palpal setae 5 & 5, movable hook slender, as long as palpal setae.

Thorax in ventral view with two lines of spiniform setae between mesocoxae, an anterior one of two long setae, and a posterior one of six shorter setae. Tufts of short spiniform setae on two reliefs close to coxae, more evident on mesosternum, as in Figure 3 (b) (where only the mesosternum is detailed), but present also on the prosternum and the metasternum.

Legs with scarce setae. Each femur with two brown bands, and tibiae without evident bands. Metatibia length 4.8 mm.

Abdomen length 8.7 mm, width 5.4 mm, S6 is the largest segment.

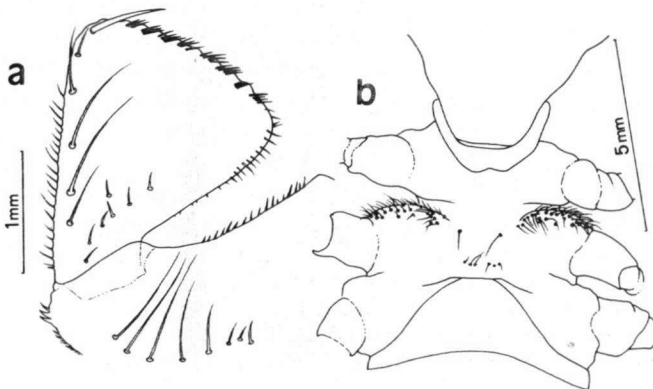


Fig. 3. *Trithemis weneri*: (a) palpus; – (b) thorax ventral morphology (only mesosternum is detailed).

Lateral spines S8 and S9, distance between the tips of the spines 4.2 mm for S8, and 2.6 mm for S9. Dorsal spines on S9-S3, those on S7-S6 the largest. Wing sheaths reaching halfway across S6. Dark transverse dorsal bands on S10-S7.

Anal pyramid poorly setose, in dorsal view as long as, or a little longer than, S10 and S9. Pyramid width 1.1 mm, epiproct length 1.7 mm, width 0.9 mm. Paraprocts as long as epiproct, with weakly incurved apices. Cercus length 0.7 mm.

COMPARISON BETWEEN *T. WERNERI* AND THE OTHER *TRITHEMIS* SPECIES

The larvae of *T. arteriosa* and *T. dorsalis* were briefly described by BARNARD (1937), while PINHEY (1961) described the larva of *T. kirbyi*. More comprehensive descriptions of these species were given by CARCHINI et al., (1992). *T. annulata* was described for the first time by CONCI & NIELSEN (1956), and CARCHINI et al. (1992) described *T. furva* and *T. stictica*.

Studies so far have shown *Trithemis* larvae to be very similar in general appearance. The morphology of the ventral surface of the thorax of all species is also similar, except in the case of *T. weneri* (Fig. 4), which has lines of two spiniform setae between the mesocoxae. Where the species do differ, is in the posterior edge of the postmentum. In all species, it is 'W-shaped', but the apices of the 'W' vary in the degree to which they are pointed. These apices are particularly sharp in *T. annulata*.

T. weneri appears to be the smallest of the described *Trithemis* species, although the prementum is almost equal in size to that of the other species. Another distinctive character of *T. weneri* is the number of the spine-like setae on the palpus near its articulation with the prementum. There are 7 instead of 2-3 as in the other *Trithemis* species. Also, the palpal setae are 5 & 5 in *T. weneri*, while they are not less than 6 & 6 in the other species of *Trithemis*. Finally, *T. weneri* shows a posterior line of six spiniform setae between mesocoxae, which makes it closer in appearance to *Crocothemis* than to *Trithemis*.

In conclusion, *T. weneri* differs in several morphological larval features from all the other described *Trithemis* larvae. Even though only one specimen of *T. weneri* was collected, its characters are sufficiently distinctive to key out *T. weneri* from other, morphologically-similar *Trithemis* species:

- | | | |
|---|--|--------------------|
| 1 | A posterior line of six spiniform setae on mesosternum | <i>T. weneri</i> |
| - | two lines of two spiniform setae on mesosternum | 2 |
| 2 | Posterior edge of postmentum with pointed angles | <i>T. annulata</i> |
| - | posterior edge of postmentum with rounded angles | 3 |
| 3 | From this point onward the key follows that of CARCHINI et al. (1992). | |

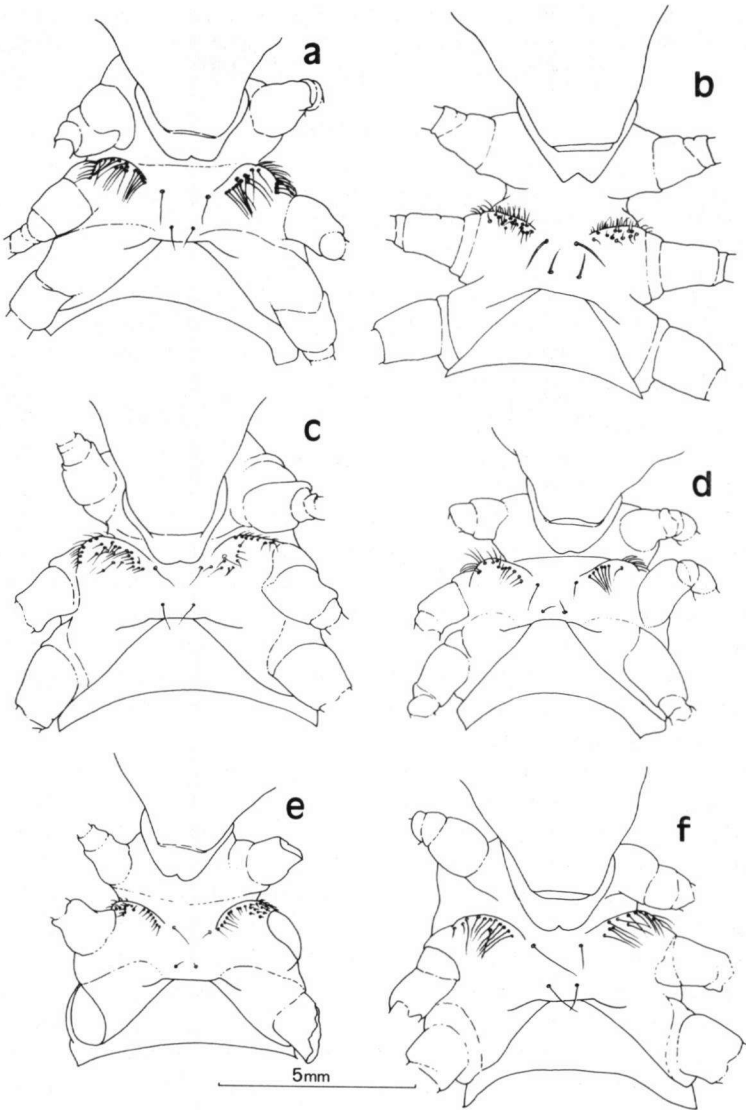


Fig. 4. Thorax ventral morphology of some *Trithemis* species (only mesosternum is detailed): (a) *T. stictica*; - (b) *T. annulata*; - (c) *T. dorsalis*; - (d) *T. furva*; - (e) *T. kirbyi*; - (f) *T. arteriosa*.

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