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SHORT COMMUNICATIONS

DESCRIPTION OF THE LAST INSTAR LARVA OF *ORTHETRUM HINTZI* SCHMIDT, 1951, AND COMPARISON WITH OTHER AFRICAN *ORTHETRUM* SPECIES (ANISOPTERA: LIBELLULIDAE)

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The ultimate instar larva is described and illustrated from specimens collected in the streams nr York, Sierra Leone. It is the smallest of the known *Orthetrum* larvae, from which it can be separated by the presence of dorsal abdominal spines on S7. The main larval features in 8 African *Orthetrum* spp. are briefly reviewed.

INTRODUCTION

Orthetrum hintzi is a widespread libellulid, inhabiting the warmer portions of the bush and forest streams, from Natal to Transvaal, up to E and W equatorial Africa (PINHEY, 1985). In the present paper, the larva is described for the first time. A comparison is also made with the larval morphology of the other hitherto described African congeners.

MATERIAL AND METHODS

Five last instar larvae were collected in the streams near York, Freetown Peninsula, Sierra Leone, 9-III-1992 (W. Rossi leg.). They were reared in plastic floating cages through to emergence in the laboratory. Species identification is based on the teneral imago.

The exuviae were stored in 75% ethyl alcohol and then measured and drawn, using a stereomicroscope and a camera lucida. The (dorsal view) measurements are given in Table I. CORBET's (1953) terminology for the labium was adopted.

DESCRIPTION

Body size small, colour brown, poorly setose (Fig. 1). Head typical of the genus, with small eyes. Tufts of long hair-like setae behind and between the eyes, on the antennae and between their insertions (Fig. 2a). Antennae 7-segmented, the third segment the longest. Distance between antennae insertions shorter than the antennae length. Mask quadrate, nearly as long as wide. Two series of premental setae, each divided into two groups, a medial one of 15-20 small setae, and a lateral one of 3 long setae. Each series forms an S--shaped pattern. The distal margin of prementum is clearly pointed, with 12-15 crenations interpolated with stout and sharp spiniform setae (Fig. 2b). Palpus typical of the genus, with 5 palpal setae. The moveable hook is thin and shorter than the setae. The distal margin of palpus has 10-15 crenations interpolated with groups of 2-4 spiniform setae (Figs 2c, 2d). Legs robust and setose. Abdomen ovoid, not very setose, the fifth segment widest. The segments S4-S7 have long dorsal spines with rounded apex, almost equal in size (Fig. 2e). Lateral spines on segments S8-S9. Two series of pale spots laterally along the dorsal keel on segments S6-S9 (Fig. 1). Anal pyramid short, setose, about as long as length of S9 and S10. Epiproct slightly longer than paraprocts. Cerci about half of the length of the anal

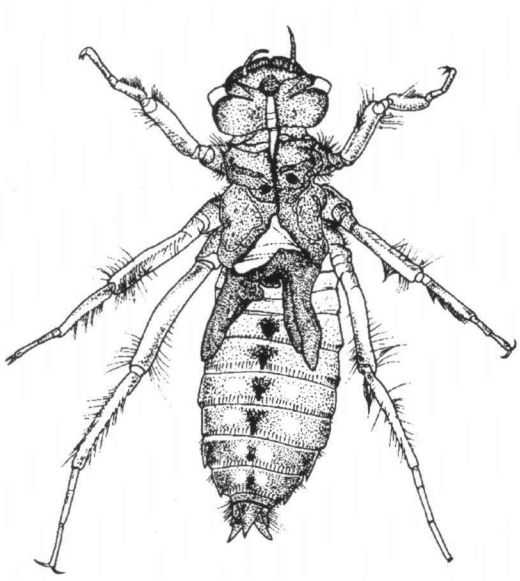

Fig. 1. *Orthetrum hintzi* Schmidt, last instar larva (total length 15.5 mm).

Table I

Size ranges (in mm) of some morphological features from five individuals of *Orthetrum hintzi* larvae

Total length	14.8 - 15.6
Head width	3.7 - 4.0
Distance between antennae insertions	1.5
Antennae length	2.2 - 2.3
Prementum length, lateral view	3.2 - 4.0
Anal pyramid length	1.2
Anal pyramid width	1.2 - 1.3
Cerci length, lateral view	0.5 - 0.7
Epiproctum length, lateral view	1.1 - 1.2
Paraprocta length, lateral view	0.9 - 1.1
Metatibia length	4.0 - 4.5

pyramid. For measurements see Table I.

DISCUSSION

There are 23 *Orthetrum* species recorded to date as occurring in Africa (DAVIES & TOBIN, 1985). The larval morphology of most of them is still unknown, except for 8 species: *O. brachiale* (P. de Beauv.), described by PINHEY (1961), *O. caffrum* (Burm.) by PINHEY (1959), *O. chrysostigma* (Burm.) by CAMMAERTS (1975), *O. julia* Longfield by BARNARD (1937) as *O. capense* Calv., *O. nitidinerve* (Sel.) by CONESA GARCIA (1990), *O. robustum* Balinsky by CARCHINI et al. (1992), *O. trinacria* Sel. by DUMONT (1973) and CARCHINI (1983), and *O. hintzi* (present paper).

O. hintzi is the smallest of the described *Orthetrum*. For this reason, it resembles *O. brachiale*, which is just a little bigger, but this latter species is completely lacking any dorsal or lateral spines on the abdomen. On the other hand, *O. hintzi* bears long, rounded dorsal spines on segments S4-S7. It can easily be separated, since no other species has dorsal spines or keel on S7. As to the premental and palpal features, it is not different from the other species of the genus. The body of *O. hintzi* appears scarcely setose, with respect to the other species, except for head, legs and

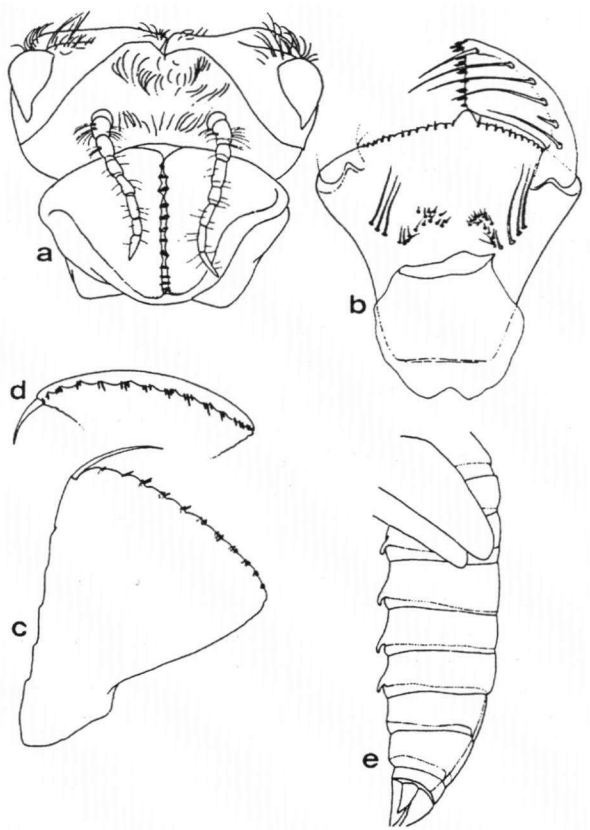

Fig. 2. *Orthetrum hintzi* Schmidt, larval structural features: (a) head, frontal view (width 4.0 mm); – (b) mask, dorsal view (length 3.5 mm, width 3.5 mm); – (c) palpus; – (d) same, detail of distal margin; – (e) abdomen, lateral view.

anal pyramid. This is unusual in the genus. Most if its members live in the mud of still or slowly running waters, so that the setae on the body, retaining a big quantity of debris, conceal the larvae from predators. Unfortunately, we have no data on the ecology or habitat of *O. hintzi*, therefore it is not possible at present to explain the scarcity of setae on its body.

As the larvae of only a few species have been described, it is not possible to propose an identification key for the African taxa. However, some useful characters can be highlighted.

The body size is variable, ranging from 15 mm (*O. hintzi*) to 27 mm (*O. trinacria*), but the larval morphology is overall rather uniform. The morphology of prementum and palpus is quite constant, though there are differences in number and position of premental and palpal setae. All the species show two symmetrical series of premental setae. Each series is composed of a few long, lateral setae and a group of 10-20 or more shorter setae. In *O. chrystostigma*, the long and short setae are not clearly distinct, because the setae become gradually shorter towards the middle of prementum. *O. nitidinerve* is immediately distinguishable in having only one long premental seta, while there are 2-4 in all the other species.

The epiproct and paraproct shape is also similar in all the *Orthetrum* species. The anal pyramid is as long as, or a little longer than, S9 and S10. Only *O. trinacria* has a very long anal pyramid, clearly longer than S9 and S10.

The number and size of the abdominal spines can be used to divide the genus into species groups. In fact, *O. chrysostigma, O. brachiale* and *O. nitidinerve* do not have any spines or keel on the medial line of the abdomen. The other species bear more or less stout spines, but sometimes only a slight dorsal spine is present (*O. caffrum, O. julia*). The lateral spines can also be totally absent, as in *O. brachiale, O. chrysostigma* and *O. caffrum*. In the other species, they are present, although in some species they are hardly detectable because they are coated with hair-like setae.

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