

DESCRIPTION OF THE FINAL INSTAR LARVA OF TRITHEMIS PALLIDINERNIS (KIRBY) (ODONATA: LIBELLULIDAE)

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KEY WORDS

Labium
Wing sheaths
Trithemis pallidinervis
Bivoltine

ABSTRACT The long-legged marsh glider (*Trithemis pallidinervis*) is a species of dragonfly found in grassland and open marshes. It likes to perch height at grass blade with wing slightly pointing up. The morphology of the final instar larva of *Trithemis pallidinervis* is described and illustrated. The larvae possess broad, rounded eyes present laterally, a bit lower in position. Body length 18.20-19.00 mm, head width 4.70-5.70 mm. Premental setae formula 16-17 and 16-17. Palal setae formula 14-15 and 14-15. Middorsal spines are present on the abdominal segments 3 to 9. Some useful informations on biology and habitat of the larva are included.

INTRODUCTION

Odonates are most ancient and beautiful insect that ever roamed earth with fossil records during back to the Permian era 230-280 million years ago. About 5740 species/sub species of odonates belonging to 654 genera in 32 families are documented world wide (Kalkaman *et.al.*, 2008, Schorr *et.al.*, 2009, Subramanian, 2009). India harbors 463 species and sub species belonging to 140 genera in 19 families (Subramanian, 2009). The odonate fauna is well known in terms of adult taxonomy, their ecology is little worked out and descriptions are available for all the reported species (Fraser, 1924; 1933-36; Dan's and Tobin (1984-85; Prasad and Varshnay 1995).

It generally breeds in stagnant waters of large ponds and lakes and in marshy zones. It exhibit non-contact guarding type of oviposition. The eggs are greenish-blue (the egg shell is blue while the yolk is greenish). The egg hatch in 6-7 days. For final metamorphosis the ultimate nymph climbs at the tip of twigs and undergoes ecdysis. It is usually infested with water mites all along the ventral abdomen and thorax.

The genus *Trithemis* *Buauer*, 1868, is widely distributed in Oriental region and Fraser (1936) has reported four species from India. Kumar (1972, 1973) had studied the final instar larvae of *Trithemis festiva* (Ramb) and *Trithemis aurora* (Burm). The present paper provides details on the morphology and biology of the final instar larva of *T. pallidinervis*.

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MATERIALS AND METHODS

10 male and 5 female final instar larvae of *T. pallidinervis* were collected from the Daryabganj lake of Distt. Kanshiram Nagar and successfully reared to adult stage. The description and figures are based on the larvae and exuviae or both the sexes. Terminology used for labium is adopted from Corbet (1953), and for tibial comb and tarsal setae from MacNell (1967).

RESULTS & DISCUSSION

Description of larva

Body colour greenish brown.

Body length = 18.20 – 19.40 mm x : 18.70 mm

Head width = 4.50 – 5.70 mm x 4.70 mm

(Measurements are the mean of 14 larvae)

Head

Triangular in shape with convex anterior margin, slightly concave posterior margin, convex postero-lateral regions, bearing small setae on surface. Antenna 7-segmented : scape 0.30 mm, pedicel 0.47 mm, successive flagellar segments 0.51 mm, 0.35 mm, 0.50 mm, 0.47 mm and 0.25 mm in length. Eyes broad, rounded, present laterally, a bit lower in position. Eye measurement 1.20 mm X 0.75 mm. Labium reaching ventrally upto the coxae of forelegs. Prementum 4.5 mm long and 4.2 mm wide, beset with claviform and spiniform setae, and having conical distal margin. Premental setae formula 16-17 and 16-17. Palp measurement 3.0 mm long and 2.05 mm wide. Palpal setae formula 14-15 and 14-15.

Thorax : Thorax compact, collar shaped, greenish-yellow. covered with black areas. Hind pair of wing sheaths extended upto the posterior half of sixth abdominal segment. Legs pale greenish-yellow with dark markings on femur and tibia. Tibial comb comprises many tridentate setae.

Abdomen : Abdomen oblong, 10-segmented, 9.5 mm long and 7.9 mm wide at 6th segment, greenish-yellow with black patches on dorsal and lateral regions. Dorsal side convex, middorsal spines present on

segments three to nine. 3rd spine small and vertical; 4th and 5th spines small and posteriorly directed; 6th, 7th and 8th spines medium sized and directed posteriorly; 9th spine reaching posteriorly upto anal appendages. 8th lateral spine is small, extended posteriorly upto anterior half of 9th segment; 9th lateral spine reaching upto anal appendages. Epiproct 2.75 mm long, pointed distally. A triangular, plate like structure present above epiproct in the male larva. Cerci pointed and 0.7 mm long.

Biology of larva : The larvae are found among the aquatic weeds like *Elchhornia crassipes*, *Hydrilla ver. ticillata*, *Potamogeton crispus*, *Nelumbo nucifera*, *Nymphaea stellata*, and cultivating hydrophytes of economic value like *Trapa bispinosa* which are abundantly present in the littoral zone of Daryabganj Lake. The larvae are sluggish and weed dwellers, and coexist with other anisopteran larvae viz. *Anax guttatus*, *Brachythemis contaminata* and *Urothemis signata*. The physico-chemical conditions of the site on the date of collection were as: Water temperature 25°C. pH 10, Chlorides 36 mg/l, Calcium hardness 88.2 mg/l, Total hardness 138.6 mg/l, Dissolved Oxygen 8.8 mg/l.

In Daryabganj Lake the final instar larvae of *T. pallidinervis*, are usually available two times every year, i.e. in the months of February and March, and later in September and October. During these periods emergence also takes place, for which mature larvae crawl up the floating leaves of aquatic vegetation. The adults are common on wings in summer (May-June), in rainy season (July-August) and later upto late October and November around the lake. Oviposition is exophytic, and takes place in the beginning of the monsoon in July and on the decline of monsoon in September, October, even upto early November. The oviposition is avoided in the summer, perhaps for the reason that aquatic vegetation gets decayed during this period and is not available to larvae for concealment from aquatic predators.

The final instar larva of *Trithemis pallidinervis*, the present species, is easily distinguishable from those of *T. festiva* and *T. aurora* which were studied by Kumar (1972, 1973). The palpal setae formula is

14-15 and 14-15 in *T.pallidinervis*, 6 and 6 in *T.festiva*, and 7 and 7 in *T.aurora*. The premental setae formula is 16-17 and 16-17 in *T.pallidinervis*, 11 and 11 in *T.festiva*, and 10 and 10 in *T.aurora*.

Kumar (1972, 1973) reported final instar larvae of *T.festiva* from slow running perennial streams, and of *T.aurora* from fast running perennial streams and monsoon ponds in Dehra Dun valley. The larvae of *T.pallidinervis* were found in the Daryabganj Lake. Most members of another Libellulid, *Orthetrum* have their larvae living in the mud of still or slowly running waters (Carchini and Di Domenico, 1996). Thus considerable variation exists with regard to the site of oviposition and habitat of the larva amongst anisopteran odonates. Not only this, variation is also noticeable regarding the number of broods in an year.

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