

The Preimaginal Stages of *Cryptotylus unicolor* (Wiedemann) and *Tabanus nebulosus ornativentris* Kroeber (Tabanidae-Diptera-Insecta)

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A larva with peculiar very long pubescence on the integument, the pupa of Cryptotylus unicolor, and the larva and pupa of Tabanus nebulosus ornativentris are described and illustrated.

Key words: description - larva and pupa - Neotropical horseflies

The female pupa was the only known preimaginal stage of *Cryptotylus unicolor* (Coscarón & Poi de Neiff 1996). From larvae collected on *Pistia stratiotes* (repollito de agua) in lagoons of Chaco geographic area, we obtained mature larvae, pupae and imagoes of both sexes of *C. unicolor*. From the same place we collected another larva that changed to the pupa stage in the laboratory, emerging finally as a female corresponding to *Tabanus nebulosus ornativentris*. This taxon was considered a subspecies due to morphological and tinctorial differences with the typical *T. nebulosus* DeGeer that has a northern distribution (from Belize to Surinam and Mato Grosso). The subspecies *ornativentris* is restricted to the Chaco area in Paraguay, Bolivia and northern Argentina. The pupa of *T. nebulosus* described by Goodwin and Murdoch (1974), originated from Panama in the typical area of *nebulosus* s. str. is found. Because the pupae collected by us showed some differences from the pupa collected in Panama we include here a description of the pupa of *T. n. ornativentris* as well as the previously unknown larva.

MATERIALS AND METHODS

Specimens were collected in Formosa province, in ponds around CEDIVEF (Centro de Diagnóstico e Investigaciones Veterinarias, Formosa) south of Formosa City on Highway 14. Larvae were found living on water lettuce, *Pistia stratiotes*. Live material was maintained individually in vials, with humid cotton until pupation, and subsequent emergence of imagoes. For morphological studies, larvae were fixed in boiling water and stored in 70% ethanol. Larvae and pupae were examined with

stereoscopic microscope. *C. unicolor* larvae were fixed in glutaraldehyde for scanning electron microscope studies. Exuviae of larvae were mounted on slides for compound microscopic studies. Specimens are in the Museo La Plata collection.

RESULTS

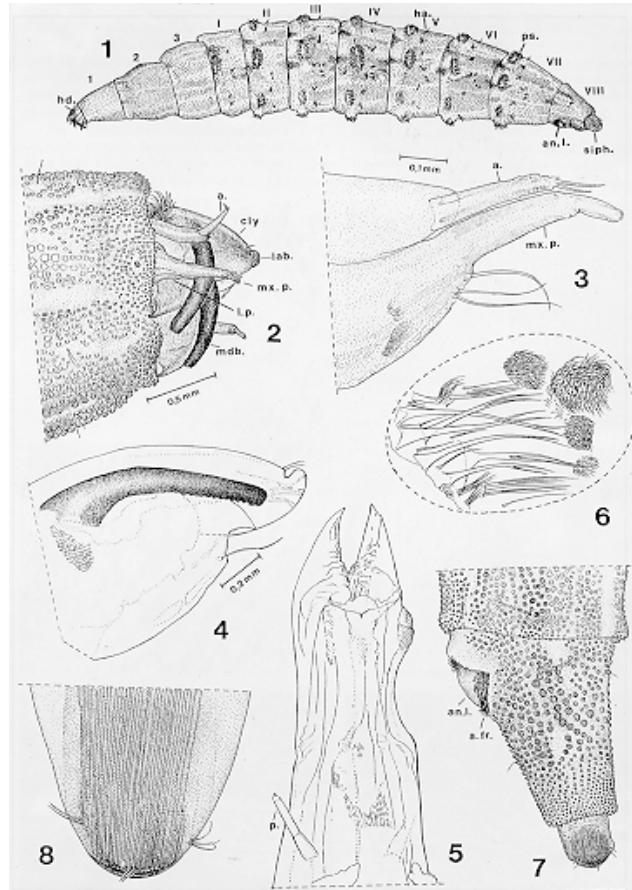
Cryptotylus unicolor

Mature larva: robust (relaxed 20 mm, fixed 30 mm long). Color in life grayish green, lighter ventrally, tegumental ornamentation with longitudinal pale striations of variable intensity on the different specimens, showing dorsally one median and 1+1 submedian, 2+2 laterally, and ventrally 1+1 submedian (Fig. 1). Integument with abundant pubescence constituted by long ciliae (0.06-0.08 mm), arranged in differing shapes from subtriangles to subquadrates 0.1-0.16 mm wide (Figs 6, 9-14). Head capsule yellow brown, length 2.6 mm. Antennae with the third article 0.35-0.40 times longer than the second (Figs 2, 3); mandible length 1.5 mm with 21-23 serrulations; maxillae, clypeus, labrum and prementum as shown in Figs 2-5. Thoracic segments with 4-6+4-6 trichomes each 0.4-0.5 mm long and bearing one to three branches emerging from the base (Figs 2, 9). Tegumental longitudinal striations on the anterior third of the segment, separated by 0.0077-0.023 mm. Abdominal segments II-VII with three pairs of pseudopods: 2 dorsal, 1+1 lateral and 2 ventral (Fig. 1); the dorsal pseudopodia on the first abdominal segment appear fused; only the dorsal pseudopods are well developed, the ventral pseudopodia are small and the lateral pseudopodia are inconspicuous. Pseudopod trichomes are variable in size and shape, single to medio-distally and divided in to 2-6 branches (Figs 6, 10), length 0.2-0.35 mm. There are 14-16 abdominal trichomes on each segment, length 0.5 mm. Anal segment (eighth abdominal segment) 2.5-3.5 mm long; anal lobe

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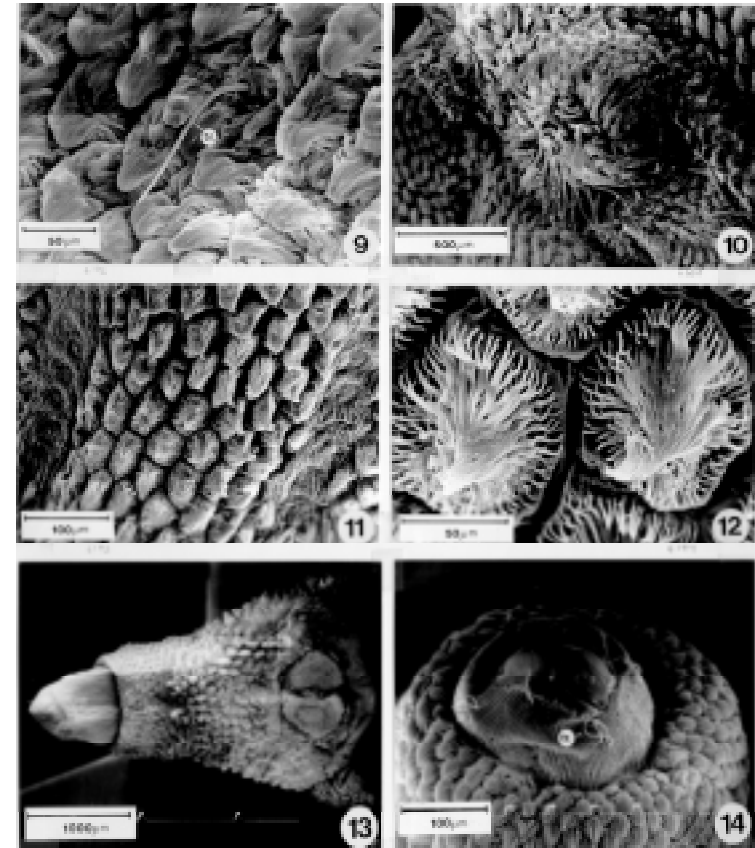
Cryptotylus unicolor, larva. Fig. 1: general aspect (hd.: head, ha.: hair, ps.: pseudopodia, siph.: siphon, an. l.: anal lobes, 1-3: thoracic segments, I-VIII: abdominal segments). Fig. 2: head partially enveloped (a.: antenna, cly.: clypeus, lab.: labrum, mx. p.: maxillary palp, l. p.: labial palp, mdb: mandible). Fig. 3: antenna (a) and maxillary palp (mx. p.). Fig. 4: mandible and prementon. Fig. 5: labrum and labial palp (l. p.). Fig. 6: spines of pseudopodia and group of ciliae of tegumental pubescence. Fig. 7: anal segment and siphon (an. l.: anal lobe, a. fr.: anal fringe). Fig. 8: apex of siphon in lateral view. (Figs 2 and 7 with the same scale and also Figs 3, 5, 6 and 8 respectively).

fringed with abundant pubescence 0.06-0.08 mm long (Figs 7, 13). Respiratory siphon 0.9-1.1 mm long, showing longitudinal striations, and 1+1 dorsal, 1+1 ventral, 1+1 medio lateral trichomes with a group of 2-3 hairs inserted apically (Figs 8, 14); tracheae relatively short 0.6-0.7 mm long.

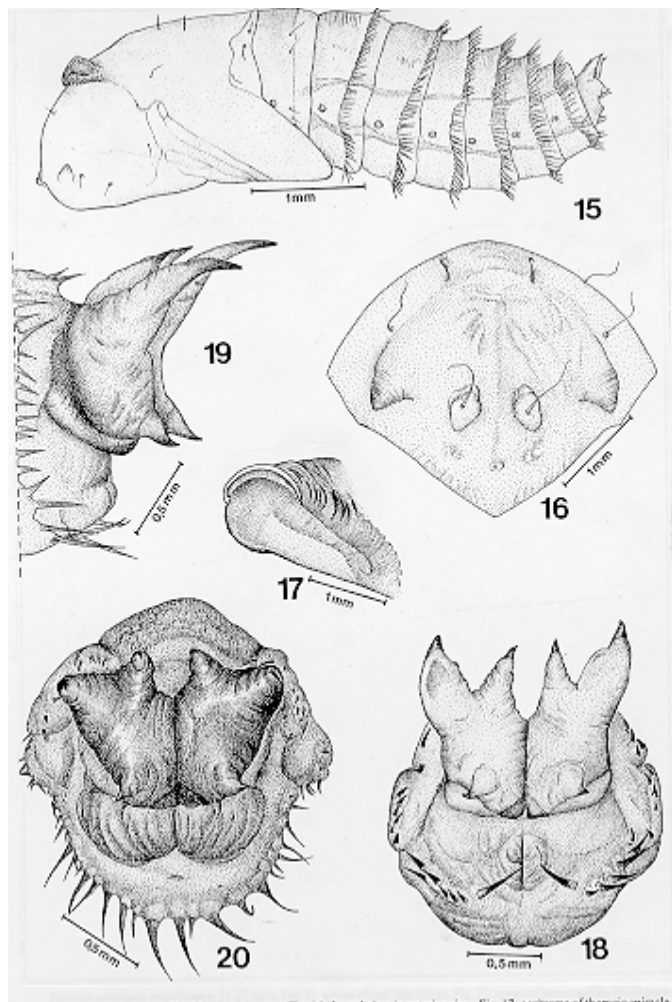
Pupa: general aspect and morphology of frontal plate, thoracic peritreme, and aster of female as in Figs 15-19, male pupa not different from female except for the anal segment; except for

11-17 dorso-lateral spines left and right respectively and 18-28 ventrolateral spines on left and right respectively (Fig. 20). Length of male aster tubercles are: dorsal 0.5-0.7 mm, lateral 0.25-0.5 mm and ventral 0.2-0.4 mm. Variation in spine number of anal segment in the female are: dorso-lateral 13-19 and ventrolateral 12-18.

Material examined: six males and eleven females reared in the laboratory from larvae collected on *P. stratiotes*, in lagoons near Formosa city during Oc-



Cryptotylus unicolor, larva (photographs). Fig. 9: trichome and groups of ciliae of tegument pubescence of thoracic segment, (tr.: trichome). Fig. 10: general view of pseudopodia. Fig. 11: tegument pubescence groups bordered by stripes of longitudinal tegument striations. Fig. 12: tegument pubescence groups with high magnification. Fig. 13: anal segment in ventral view showing the anal lobes. Fig. 14: siphon scarcely emerged in posterior view (tr.: trichome).

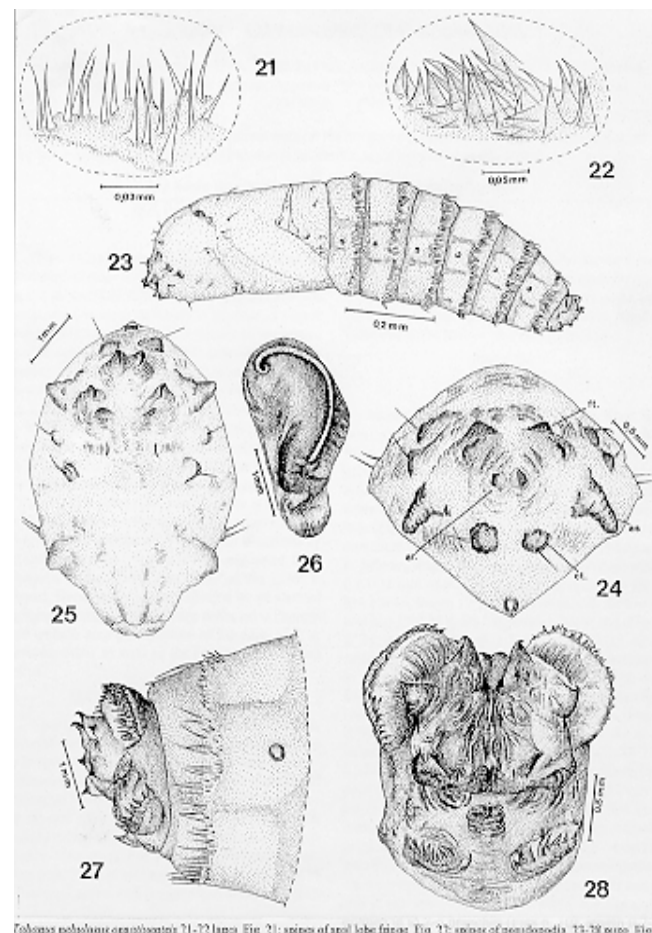


Cryptotylus unicolor, pupa. Fig. 15: general aspect. Fig. 16: frontal plate in anterior view. Fig. 17: peritreme of thoracic spiracle. Figs 18-19: anal segment of female in posterior and lateral view respectively. Fig. 20: anal segment of male in posterior view.

tober, November and December, col. O Mancebo.

Discussion: the abundant body pubescence, plus the greenish gray coloration with longitudinal light stripes, number and disposition of pseudo-

pods in larvae show a strong resemblance to *Chlorotabanus*. This is reinforced by aspect of the adults and demonstrates the close relationships of these two genera.



Tabanus nebulosus ornativentris 21-22 larva. Fig. 21: spines of anal lobe fringe. Fig. 22: spines of pseudopodia. 23-28 pupa. Fig.

Tabanus nebulosus ornativentris. Figs 21-22 larva. Fig. 21: spines of anal lobe fringe. Fig. 22: spines of pseudopodia. Figs 23-28 pupa. Fig. 23: general aspect. Figs 24-25: frontal plate in anterior and ventral view respectively (as.: antennal sheath, ct.: callus tubercle, ar.: antennal ridge, ft.: frontal tubercles). Fig. 26: peritreme of thoracic spiracle. Figs 27-28: anal segment of female in lateral and posterior views respectively.

Tabanus nebulosus ornativentris

Mature larva: (material observed in life and described from exuvia). Large 33 mm. Uniformly whitish, without strong contrasting colors, marked with light grayish pubescent. In general aspect is like *T. claripennis* (Bigot) but larger than this species larvae (Coscarón & Led 1969). Third antennal article 0.44-0.57 times longer than the second. Mandible 1.1 mm long with 12-13 serrulations. Thoracic and abdominal segments with homogeneous, short pubescence constituted of microtrichiae forming a ring on the anterior border which is continued distally near the middle of the segment by thick stripes. The remainder of the integument is bare with longitudinal striations 0.007 mm wide. Abdominal segments show an anterior pubescent ring shorter than in the thorax. Just behind the pubescent area, are the pseudopods on the II-VII abdominal segments. They have robust spines 0.6-0.7 mm length (Fig. 22). The pseudopods form a near continuous wide ring on the anterior third portion of the segment. The anal lobes were fringed by pubescence formed of thin spines 0.6-0.7 mm length (Fig. 21). Traqueal ducts 1.5 mm length.

Pupa female: 29 mm length, yellowish brown. Tubercle callus sharply ridged 0.5 wide and 0.7 mm high above median cleft; frontal tubercles well evident 0.5 mm long by 0.38 mm wide at the base, pointed slightly apically, antennal ridge with two prominent elevations apically and subacute 0.52

mm high. Antennal sheaths 0.75 mm long and 0.52 mm wide at base; antero and postero-orbital setae emerging from a prominent tubercle; vertexal tubercles well evident (Figs 24, 25). Thoracic spiracle with spiracular prominences well evident showing hard curvature 1.1 mm length and 0.38 mm high over thorax surface (Fig. 26). First abdominal segment distally bordered by a single fringe of short spines; II-VII combs with bi or triseriate longer spines. Tergite VII comb mostly uniseriate with 41 spines relatively short and uniformly distributed with 1+1 median spines about 4-5 times longer and posteriorly disposed; lateral and ventral long spines are also present (Fig. 23). Dorsolateral comb of preanal segment with 27-28 relatively short and robust spines on each side, ventrolateral combs with 8-9 spines (Figs 27, 28); dorsolateral and ventral tubercles of aster 0.33-0.25-0.25 mm long respectively, no additional accessory pairs of tubercles on the midline.

Material examined: one female developed from a mature larva to a pupa in the laboratory. The larva was collected from Formosa, on *P. stratiotes*. The same lagoons also support larvae of *Myiotabanus barrettoi*, *Lepiselaga (L.) crassipes*, *T. claripennis*, *T. pungens* and *C. unicolor*; collected by O Mancebo.

Discussion: the *T. nebulosus ornativentris* pupa examined showed some differences from the pupal description of *T. nebulosus* by Goodwin and

Murdoch (1974). There are also differences in the imagoes (Coscarón 1979) which are listed in Table.

The differences showed in the Table helps to justify the existence of the subspecies *ornativentris* from the southern area in accordance to Fairchild and Burger (1994).

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TABLE

Comparison of pupal and adult female differences of *Tabanus nebulosus* and *T. n. ornativentris*

Character	<i>T. nebulosus</i>	<i>T. n. ornativentris</i>
<i>Pupa</i>		
Color	Brown	Yellowish brown
Antennal ridges elevation	0.46 mm	0.52 mm
Callus tubercles	Smooth	Sharply ridged (Fig. 24)
Thoracic spiracle length	1.3 mm	1.1 mm
VII tergite comb	Biseriate, fringe of 42-46 spines	Uniseriate, fringe of 41 spines 4-5 times long and similar long spines laterally and ventrally (Fig. 23)
Number of preanal comb spines	Dorso lateral: 25 ventral: 10-11	27-28 8-9
Tubercles of aster	Relatively thin	Relatively thicker (Figs 27, 28)
Lateral and ventral aster tubercles length	0.50 and 0.33 mm respectively	0.25 and 0.25 mm
Accessory pairs of tubercles along vertical midline of aster	Present	Absent
<i>Female</i>		
Abdomen midline triangles of T. III-VI	Lighter and scarcely evident	Darker and more evident
Color of scutum pilosity	Golden reddish brown	Dark grayish brown
Prescutum spot	Present	Absent
Wing coloration	Scarcely darkened and without light spot	Strongly darkened with pale subcircular spot on medial anterior portion of M ₁ and covering part of cells br and bm

