The Immature Stages of *Myiotabanus barrettoi* Fairchild (Tabanidae-Diptera-Insecta)

S Coscarón, LC Coscarón-Arias*, OA Mancebo**

Facultad de Ciencias Naturales y Museo, 1900, La Plata, Argentina *Facultad de Ciencias Agrarias, 8324 Cinco Saltos, Río Negro, Argentina **Centro de Diagnóstico e Investigaciones Veterinarias (CEDIVEF), 3600 Formosa, Argentina

Larva and pupa of Myiotabanus barrettoi *living between leaves of* Pistia stratiotes *in ponds of Formosa Province (Argentina) are described. As immature stages of* Lepiselaga crassipes *inhabit the same environment and have very a similar appearance, new information on ornamentation and morphology is added to differentiate both species. Larvae and pupae were maintained individually in moist vials at laboratory temperature until adults emerged.*

Key words: description - larva and pupa - Neotropical horsefly

Horse and deer flies are hematophagous insects of economic importance because of their nuisance to man and domestic animals by their bites and vectorial capacity (Krinsky 1976, Coscarón & González 1989, Foil 1989) .

Knowledge of larvae and pupae in relation to their breeding places, bionomics and species identification is necessary when control meassures are planned. In order to perform adequate taxonomic and phylogenetic studies we need information about the preimaginal stages.

There is little knowledge about larvae and pupae of Tabanidae, especially in the Neotropical realm. Of nearly 1200 species catalogued in South and Mesoamerica (Fairchild & Burger 1994) the immature stages of only 50 species have been studied (Coscarón 1991).

The objective of this paper is to give information on the larva and pupa of *Myiotabanus barrettoi* Fairchild, a species from southern Brazil, Paraguay and northern Argentina. The adults are small (wing length 6.5 mm) dark brownish in colour with 1+1 submedian band, 1+1 lateral whitish stripes on thorax, banded eyes and a median trapezoidal black spot on the subcallus prolonging the narrow brownish dark callus. It is rarely reported in collections (Coscarón 1975).

Larvae were found in enviroments similar to *Lepiselaga crassipes* (Fabricius) whose immature stages were reported by Lutz (1928), and by Fairchild (1940) from Panama. Goodwin and Murdoch (1974) added more morphological and bionomic information from material from the same country. Because the larva and pupa of *M. barrettoi* and *L. crassipes* were found in similar ecological niches and are very close in appearance, we include here supplementary information to facilitate species identification.

Received 2 May 1995
Accepted 30 August 1995

MATERIALS AND METHODS

Specimens were taken from ponds around CEDIVEF Station, 12 km south of Formosa city and on the sides of highway 14, close to the Pilagá River, 30 km north of Formosa city (Formosa Province, Argentina) from September to October. Larvae were found between the leaves of water lettuce (*Pistia stratiotes*) called “repollito de agua” (water little cabbage) in northern Argentina. The specimens were carried in polyethylene bags to the laboratory and kept in individual plastic boxes with some *Pistia* leaves and wet towel paper for emergence. Morphological studies were made with living larvae and later, after fixation in boiling water there were kept in 70% alcohol. For microscopic studies, structures were mounted on slides in Canadian balsam, after treatment with NaOH. Pupae were studied alive and the gross morphology of larval and pupal exuvia were studied with a stereoscopic microscope. Morphological details of the larvae were studied with a compound microscope mounted slides. Drawings were made with a camera lucida. The specimens are kept in the Museo La Plata collection.

RESULTS

Description of the immature stages of *M. barrettoi* .

Mature larva: length relaxed 12 mm, fixed 16-18 mm. Color in life light green with greyish brown parallel irregular spots intensified dorsolaterally, leaving a clear ligth irregular stripe dorsally and 1-3 elongated lateral spots laterally on each segment (Figs 1-3). Body with abundant pubescence, concolorous with body coloration;

microtrichiae of darkened areas 0.029-0.039 mm long (Fig. 4). Cephalic capsule light brown, 2.8 mm long; antenna as in Fig. 5, third article 0.61-0.67 times longer than the second. Mandibles with 12-14 serrulations, length 0.59-0.68 mm, colour blackish brown. Maxillary palp as in Fig. 6. First thoracic segment ligther than remaining segments, without spots, except in some specimens with one brown spot on each side, and longitudinal striation on the anterior 1/3 of the integument. Longitudinal striations separated by 0.0055-0.0074 mm and transversal 0.0092-0.015 mm wide sides. Body with 12-14 single trichomes on thorax and 18 on abdomen 0.15-0.24 mm long, arranged in pairs (Fig. 4). Pro meso and metathorax with trichomes showing similar shape and size as abdomen. Abdominal segments with 3 pairs of pseudopodia, each segment with 2 dorsal, 1+1 ventro lateral and 2 ventral; those of first abdominal segment not well developed. Trichomes of pseudopodia 0.10-0.16 mm long, inserted in a globose base (Fig. 7). Anal segment (VIII) 1.2-1.9 mm long, gradually darkened laterally all around the distal area (Fig. 8). Anal ridge with sparce pubescense. Distal portion can be protruded with the respiratory siphon (Figs 2-3). Anterior anal lobe more protruded than the posterior (Figs 8-9). Respiratory siphon, (that can be retracted into the anal segment), is smooth, without longitudinal striations, with membranous borders and 3 pairs of single dorsal and ventral trichomes; tracheae short and rounded apically (Fig. 10); tracheal length 0.6 mm.

Pupa: exuvial color light yellow-brown, a little darker dorsally and especially on the thoracic spiracles; it is possible to see the development of imago through the exuvium as the thorax and abdomen darkens before emergence, and to observe thoracic longitudinal stripes, eye pigmentation and appendages. Maximum length 9.0 mm. Antenna sheath 1.1 mm long, not extending to epicranial suture in male and scarcely exceeding that of the female. Head capsule smooth, with antennal ridges scarcely elevated, scarcely accuminate distally and with vestigial annulations; callus tubercle short elevated, bearing a stout seta (Fig. 11). Front smooth; lateroorbital and postorbital setae as in Fig. 12. Thorax smooth with 1+1 anterior and 1+1 posterior mesonotal and 1+1 basialar setae (Fig. 13); spiracle prominences elevated, 0.6 mm high and about as wide at the base (Fig. 14). Spiracle peritreme as in Fig. 15. Metanotum with 3+3 separated setae. First abdominal tergum with 2+2 and 3+3 pleural setae; following segments apparently with the same number (not easy to count). Abdominal segments II-VII with about 36-80 well developed spines on the posterior border, mostly uniseriate and of variable size and shape (Fig. 17); sternum VII with 50-71 spines (Fig. 18); pleurae with 40-50 spines also on the posterior border, those posterior greatly enlarged and more elongated at sides on the tergal and sternal border. Abdominal respiratory spiracles smooth and very elongate, length 0.2 mm and of similar shape (Fig. 16). Anal segment with 5-9 lateral spines on each side and about 12-16 ventrolateral spines in male (Figs 19-20) and 3-5 on the lateral comb and 5-7 on the ventrolateral comb in female (Fig. 21). Aster with dorsal and lateral tubercles well developed; ventral tubercles smaller. Dorsal, lateral and ventral tubercles of distal area 0.24-0.30 mm, 0.35-0.42 mm and 0.11-0.14 mm long respectively. Dorsal and lateral tubercles directed dorsally and slightly posteriorly, ventral tubercle directed latero posteriorly. Anal tubercle bilobate in male, unilobate in female.

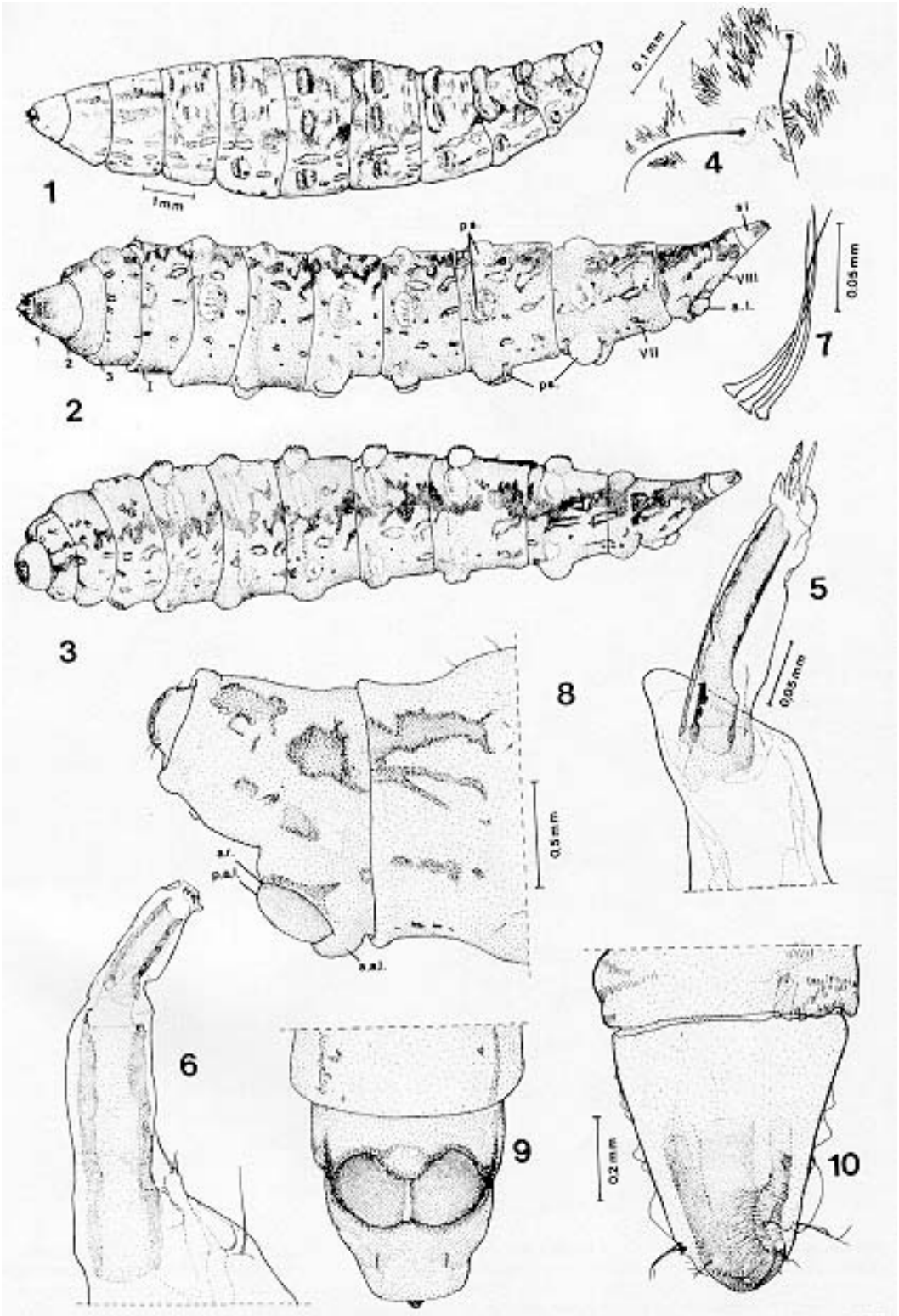
Material examined: ARGENTINA, Formosa, VIII/X-1994: 6 larvae, 6 pupae, (2 emerged).

Bionomic information: larvae and pupae were found on *P. stratiotes* between leaves, so it was necessary to open the leaves to see them.

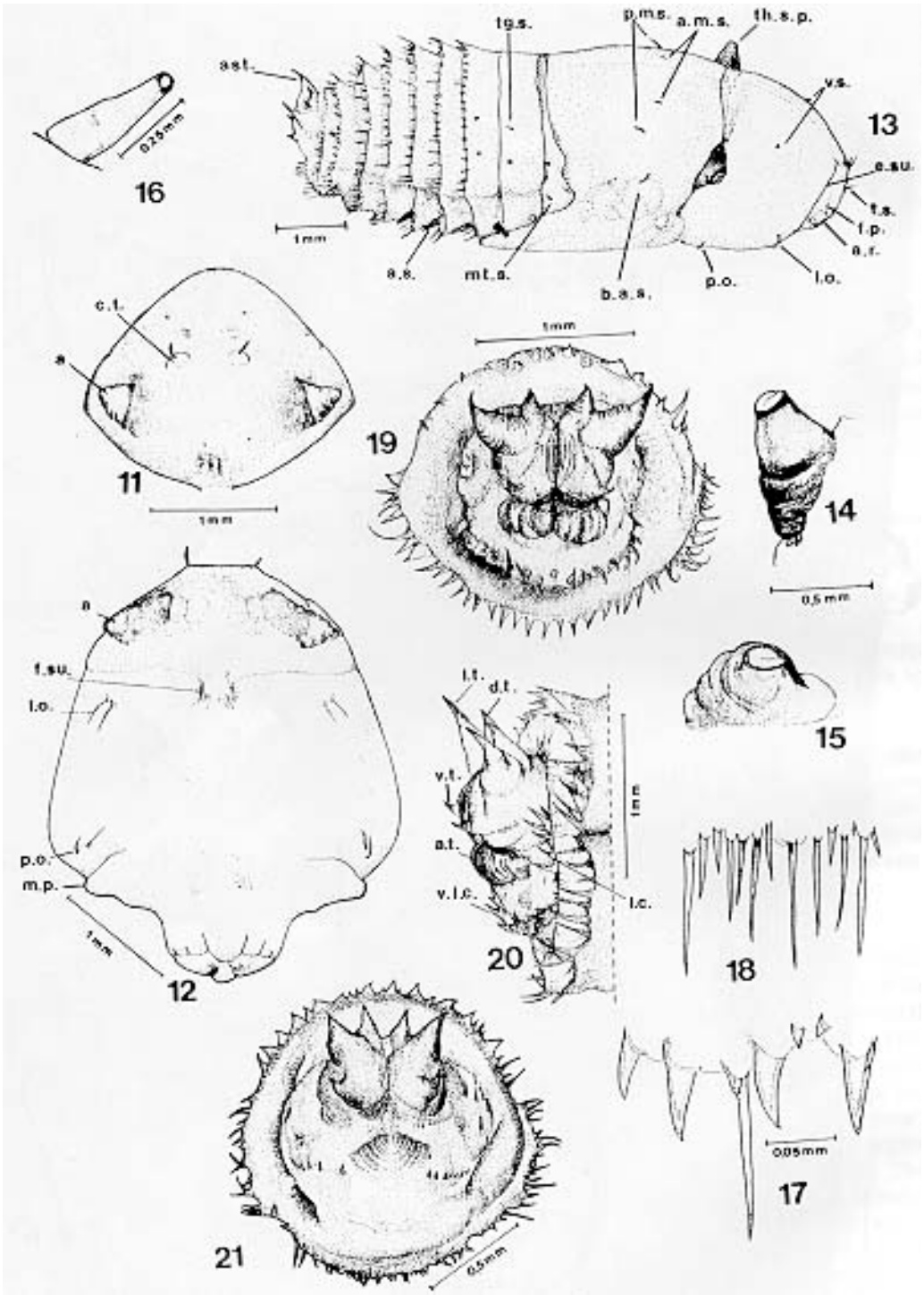
In the same place we also found *L. crassipes* and some other tabanid larvae of unknown species that did not emerge. *Pistia* is a very important breeding place for different invertebrates. Dunn (1934) mentioned 7 species of mosquitos and 2 of horseflies living in it. Good protection, adequate humidity and food is provided for an abundance nematodes and other insect larvae that live in the water among leaves make *Pistia* one of the best places to find horsefly larvae.

DISCUSSION

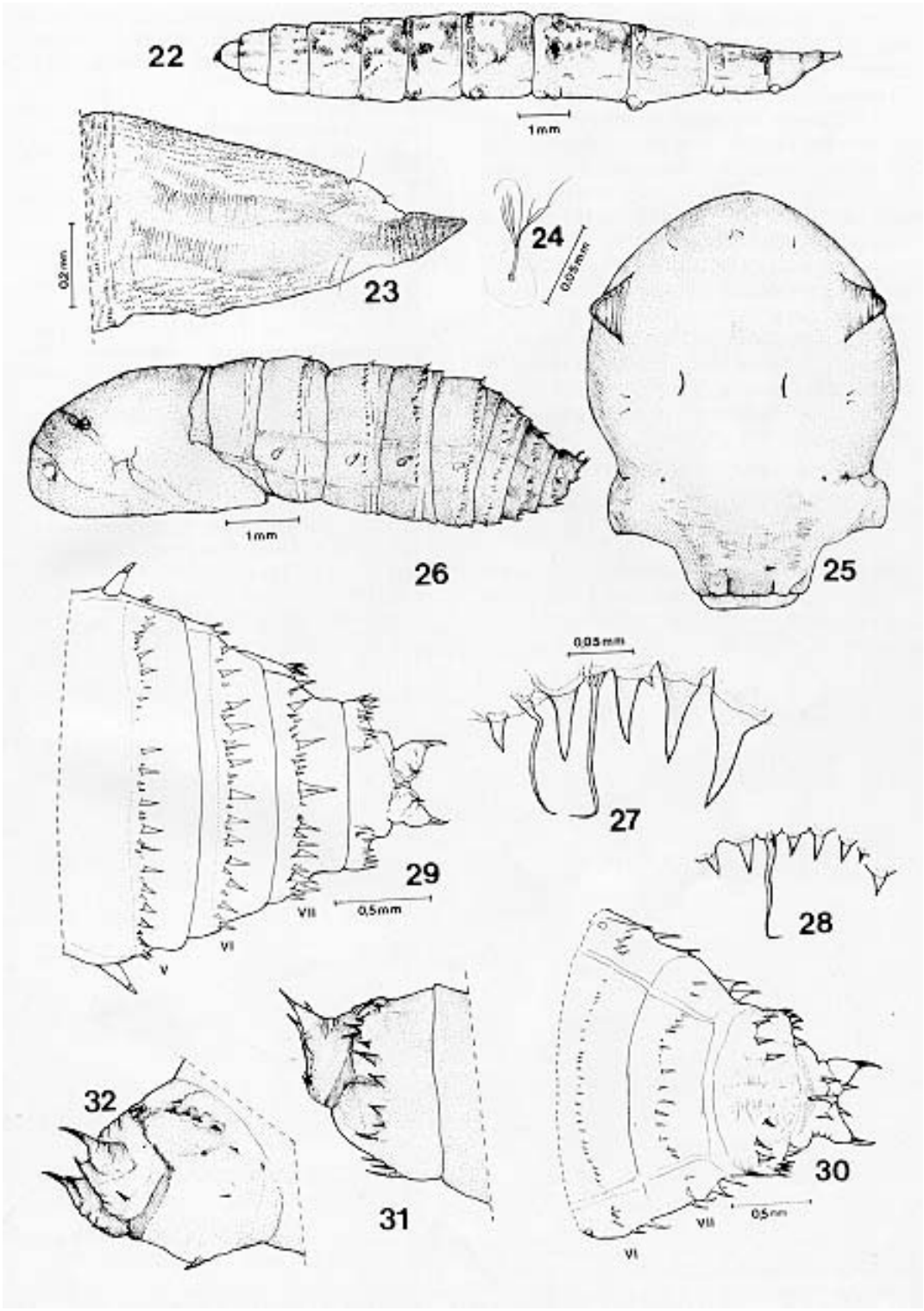
Immature stages of *M. barrettoi* are easily confused with *L. crassipes*, especially larvae that have a similar appearance. Both have living larvae that are light greenish with greyish brown irregular spots, but in *L. crassipes* the clear light medial dorsal stripe is not delimitated, the lateral elongated spots are narrower without a light area inside and the lateroventral area and anal segment are lighter than in *M. barrettoi* (Fig. 22). There are also morphological differences in *L. crassipes*: the respiratory siphon is pointed apically, with the tracheae more elongated (0.86 mm), integument with coarse longitudinal striations (separated by 0.01 mm) and shorter distal trichomes (0.14-0.15 mm) (Fig. 23). Also the anal segment lobes are less protuberant, and the microtrichiae of the integument are 0.0015 mm long and are arranged in sinuose rows appearing as scales under low magnification. Body trichomes are smaller with 1-8 branches (Fig. 24). There are some differences



Myiotabanus barrettoi, larva. Figs 1-3: general aspect of larvae in different position (ps = pseudopodia, si = siphon, a.l. = anal lobes, 1-3 = thoracic segments, I-VIII = abdominal segments). Fig. 4: abdominal trichomes with integumental microtrichia. Fig. 5: apex of III and distal portion of II antennal article. Fig. 6: labial palpus. Fig. 7: chaetae of pseudopodia. Figs 8-9 apices of body in lateral and ventral view (a.a.l. = anterior anal lobe, p.a.l. = posterior anal lobe, a.r. = anal ridge). Fig. 10: siphon everted in lateral view.



Myiotabanus barrettoi, pupa. Figs 11-12: frontal plate in anterior and ventral view respectively (c.t.= callus tubercle, a = antennal sheath, f.su. = frontal suture, l.o. = latero orbital seta, p.o. = posteroorbital seta, m.p. = maxillary palp sheath). Fig. 13: general aspect of pupa in lateral view (f.p. = frontal plate, e.su. = epicranial suture, t.s. = tubercle seta, a.r. = antennal ridge, v.s. = vertex setae, th.s.p. = thorax spiracle prominence, b.a.s. = basal alar seta, a.m.s. = anterior mesonotal setae, p.m.s. = posterior mesonotal setae, mt.s. = metanotal seta, t.g.s. = tergal seta, a.s. = abdominal spiracle, ast. = aster). Figs 14-15: thoracic spiracles in dorsal and lateral view. Fig. 16: abdominal spiracle, lateral view. Fig. 17: spines of posterior border of abdominal tergites. Fig. 18: spines of posterior border of abdominal sternite. Figs 19-20: anal segment of male in posterior and lateral view (d.t. = dorsal tubercle, l.t. = lateral tubercle, v.t. = ventral tubercle, a.t. = anal tubercle, v.l.c. = ventrolateral comb, l.c. = lateral comb). Fig. 21: anal segment of female in posterior view.



Lepiselaga crassipes, larvae. Fig. 22: general aspect of lateral view. Fig. 23: siphon. Fig. 24: abdominal hair. Pupa. Fig. 25: frontal plate in ventral view. Fig. 26: pupa general aspect in lateral view. Fig. 27: spines of posterior border of tergite VII. Fig. 28: spines of posterior border of sternite VII. Figs 29-30: distal portion in dorsal and ventral views respectively. Figs 31-32: anal segment in lateral and ventral views respectively.

in the structural measurements: length of body 16 mm (15-19), head capsule 2.40-2.67 mm, anal segment 1.50-1.78 mm, mandible 0.27 mm, body trichomes 0.13-0.20 mm.

The pupa also shows several similarities to *L. crassipes* such as color, size, morphology of the cefalic capsule and thorax with smooth surface, antennal sheaths slightly surpassing the epicranial suture in female (Fig. 25) and the same chaetotaxy. Differences are evident in the shorter thoracic spiracles 0.34-0.36 mm (Fig. 26), size of the spines on the distal border of the abdominal segments, larger on the tergites (Figs. 27, 29) and smaller on the sternites (Figs 28, 30) than in *M. barrettoi;* the dorsal and specially the ventral tubercles are more reduced as well as the number of ventral spines in the comb of anal segment (Figs 29-32).

ACKNOWLEDGEMENTS

To Nélida Caligaris for the illustrations.

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