

Description of the Last Instar Larva of *Phyllocycla gladiata* (Hagen in Selys) (Anisoptera: Gomphidae)

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Abstract. The larva of the last instar of *Phyllocycla gladiata* (Hagen in Selys) is described and illustrated based in only one exuvia, collected at Camorim River, Jacarepaguá, Rio de Janeiro State, Brazil. Exuvia is deposited in the Museu Nacional (UFRJ), Rio de Janeiro, Brazil.

Keywords: Odonata; immatures; systematics; Brazil

Descrição do Último Ínstar Larvar de *Phyllocycla gladiata* (Hagen in Selys) (Anisoptera: Gomphidae)

Resumo. A larva do último ínstar de *Phyllocycla gladiata* (Hagen in Selys) é descrita e ilustrada com base em uma exúvia coletada no Rio Camorim, Jacarepaguá, Rio de Janeiro, Brasil. A exúvia foi depositada no Museu Nacional (UFRJ), Rio de Janeiro, Brasil.

Palavras-Chave: Odonata; imaturos; sistemática; Brasil

The genus *Phyllocycla* Calvertis composed by 31 species in the New World (Garrison *et al.* 2006), 18 of these occurs in Brazil (HECKMAN 2006) which only five have been the larvae described: *Phyllocycla argentina* (Hagen in Selys) (RODRIGUES CAPITULO 1983), *Phyllocycla modesta* (Belle) (BELLE 1970), *Phyllocycla ophis* (Selys) (BELLE 1970), *Phyllocycla propinqua* (Belle) (BELLE 1972) and *Phyllocycla viridipleuris* (Calvert) (BELLE 1992). Santos collected three specimens in the last instar, at Rio Camorim, Jacarepaguá, Rio de Janeiro on 18.i.1968, which were reared in laboratory and just one emerged, identified by him as *Phyllocycla gladiata* (Hagen in Selys) and is described herein.

MATERIAL AND METHODS

Specimen are deposited in the Departamento de Entomologia, Museu Nacional, Universidade Federal do Rio de Janeiro. The exuvia was preserved in 80% ethanol and adult was dried and preserved in envelopes. The illustrations were made using camera lucida attached to a stereoscopic microscope; measurements were made using Starrett digital caliper. Terminology for mandibular formula follows WATSON (1956). S1-10 refers to abdominal segments 1-10. The principal characters that differs the known larvae of genus *Phyllocycla* in the New World are given in Table 1.

RESULTS

Phyllocycla gladiata (Hagen in Selys)

Measurements (in mm). Total length 33 (n=1); head length 3, width 3,5; antenna length 2, antennomeres length: I 0,39; II 0,22; III 1,42; IV 0,23; labium length 4, width 3; thorax length 6,4; forewing pads length 6,1; hind wing pads length 6,3;

femur I 2,38, II 2,7, III 4,73; tibia I 3,8, II 4,2; III 3,9; abdomen length 23, width 5,0.

Description. General shape of body typical of Gomphidae, similar to known larvae of *Phyllocycla* genus (Figure 1): Integument light brown.

Head (Figure 1). Wider than long, general shape rectangular. Occipital margin slightly concave, eyes large in dorsal view; cephalic lobes rounded, covered with tuft of setae. Antenna small, 4 segmented. Third antennal segment slightly longer than twice the length of the two basal segments combined (Figure 2); fourth antennal segment a tusk-like rudiment, erect and nearly fourth as long as segment 3. Labium light brown, articulation of postmentum and prementum reaching anterior margin of mesocoxa. Prementum smooth (Figure 3), slightly triangular. Ligula convex, with a row of robust, medium truncated scale-like setae, all of the same size. Palpal lobe with end-hook strongly pointed and slightly curved inward and with internal margin smooth; external lateral margin smooth. Movable hook of moderate size, thick, pointed. Mandibles biramous (Figures 4, 5) with following formula (Watson, 1956): L 1 2 3 4 0 a (m 1234)/R 1 2 3 4 a(m12)b. Maxillae with seven long incurved hooks on the laciniae (Figure 6); galeae with long setae.

Thorax (Figure 1). Pronotum slightly square. Wing pads parallel reaching base of abdominal S4. Femur I and II short and flattened laterally and thicker than tibiae; hind legs slightly flattened. Tarsal formula 2-2-3.

Abdomen (Figure 1). Elongate, without setae, with small dorsal hook on S3-5 (Figure 7); segment 10 long (7 mm). Lateral spines on S8 and 9, these spines small and sub-equal. Anal appendages short.

DISCUSSION

Based on shape of ligula and similarity of larvae we believe that *P. gladiata* shows closer affinities to *P. viridipleuris*, but differs by characters following: 1) total length in *P. gladiata* 33 (in *P. viridipleuris* 35-37); 2) antennae with long hairs in *P. gladiata* (short in *P. viridipleuris*); 3) abdominal dorsal hook in *P. gladiata* on segments 3-5 (in *P. viridipleuris* 3-7); 4) abdominal lateral spines in *P. gladiata* on segments 8-9 (in *P. viridipleuris* 7-9).

The adult males of *P. gladiata* differ of *P. viridipleuris* by characters following: 1) superior anal appendage with a superior tooth at one-fourth of its length in *P. gladiata* (tooth absent in *P. viridipleuris*); 2) the widest point of the lateral dilatation on the eighth abdominal segment is at the mid-length in *P. gladiata* (at the distal-length in *P. viridipleuris*); 3) anal appendage in *P. gladiata* robust (delicate and incurved to down in *P. viridipleuris*).

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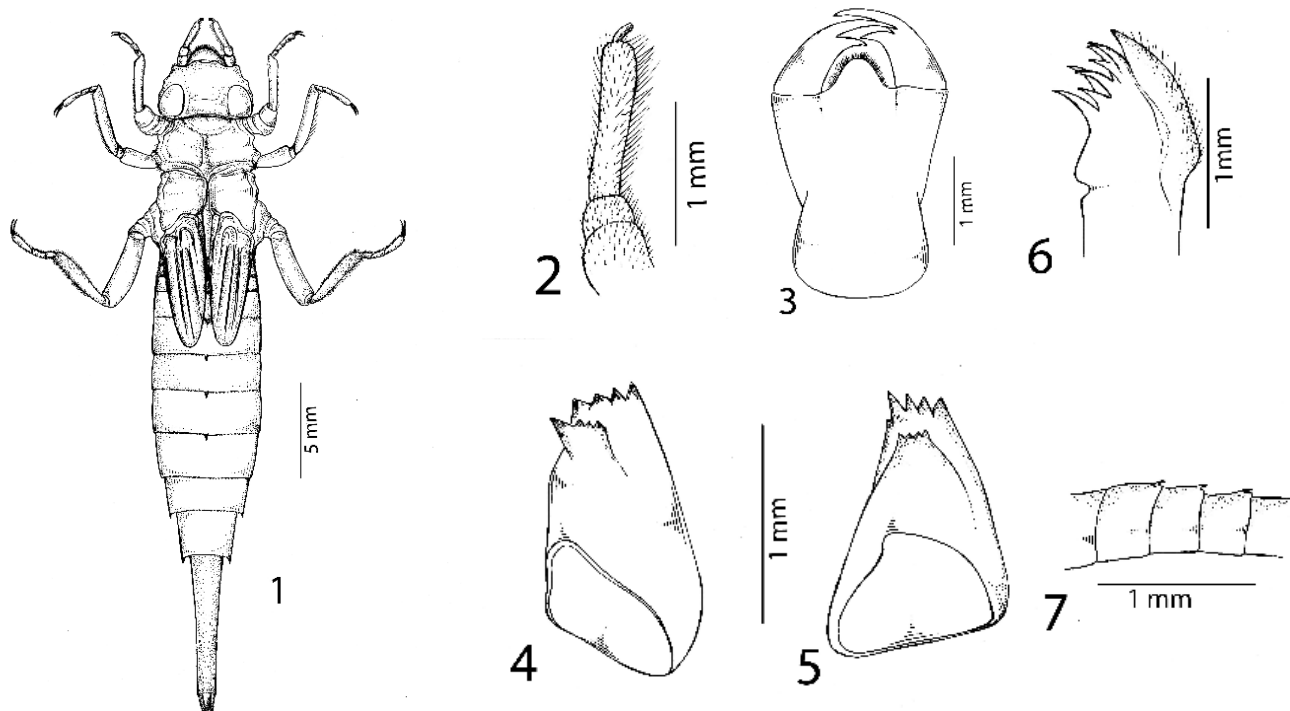
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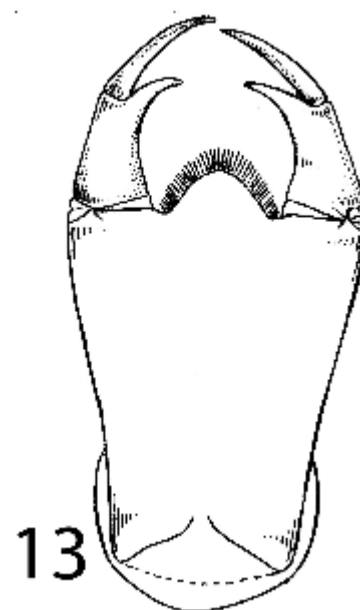
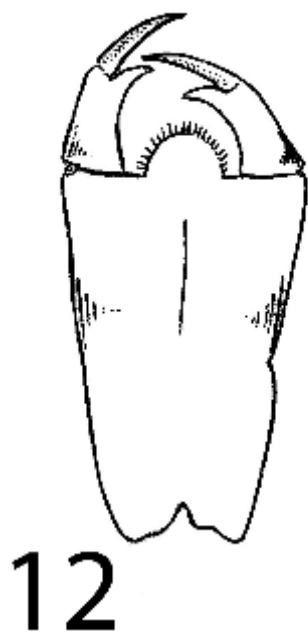
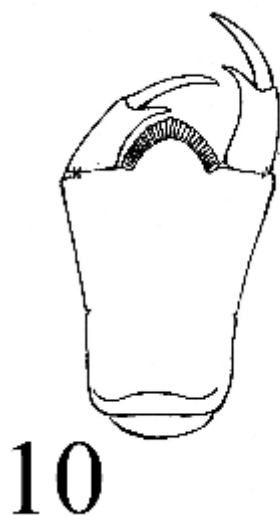
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Figures 1-7: *Phyllocycla gladiata* (Hagen in Selys): (1) larva, dorsal view. (2) antenna. (3) labium and labial palp, ventral view. (4) left mandible, inner view. (5) right mandible, inner view. (6) maxillae, dorsal view. (7) abdominal segments 3-5, lateral view.

Table 1. Principal characters of the known larvae of genus *Phyllocyca* in the New World. The characters of larvae of all species, except *P. gladiata*, were taken from literature.

Species	Total Length (mm)	Antennae	Prementum	Ligula	End-hook of Palpal Lobe	Palpal Lobe	Burrowing hooks	Abdominal dorsal hook	Abdominal lateral spines	Distribution
<i>P. argentina</i> [Rodrigues Capítulo, 1983]	31,8	with long hairs	reaching mesocaxae	high (Fig. 8)	strongly pointed and slightly incurved	?	?	3 - 5	6 - 9	Argentina, Brazil and Uruguay
<i>P. elongata</i> [Needham, 1940]	40	?	?	?	?	?	?	3 - 9	7 - 9	Guatemala and Mexico
<i>P. gladiata</i>	33	with long hairs	reaching mesocaxae	high	strongly pointed and slightly incurved	?	rudimentary	3 - 5	8 - 9	Brazil
<i>P. modesta</i> [Fleck, 2002]	33,5	with long hairs	reaching mesocaxae	lower (Fig. 9)	incurved, short and sinuous	?	rudimentary	3 - 9	6 - 9	Brazil, Guyana, French Guyana, Surinam and Venezuela
<i>P. neotropica</i> [Fleck, 2002]	26-27	with short hairs	reaching mesocaxae	high (Fig. 10)	pointed and slightly incurved	?	rudimentary	3 - 9	7-9	French Guyana and Surinam
<i>P. ophis</i> [Belle, 1970]	37	with long hairs	reaching mesocaxae	high (Fig. 11)	incurved, large, sinuous and bluntly pointed	with row of minute teeth in the margin	rudimentary	3 - 9	5 - 9	Brazil, Guyana, French Guyana, Surinam and Venezuela
<i>P. propinqua</i> [Nedham, 1940]	29	with short hairs	?	?	?	?	?	3-9	7-9	Argentina, Brazil and Uruguay
<i>P. viridipleuris</i> [Belle, 1992]	35-37	with short hairs	reaching mesocaxae	high (Fig. 12)	strongly pointed and slightly incurved	?	small	3 - 7	7 - 9	Brazil and Paraguay
<i>P. volsella</i> [Needham, 1940]	29	with short hairs	reaching mesocaxae	high (Fig. 13)	pointed and slightly incurved	?	small	2 - 9	7 - 9	Central America



Figures 8-13: *Phyllocycla argentina*: (8) labium and labial palp, ventral view (after RODRIGUES CAPÍTULO 1983). *Phyllocycla modesta*: (9) labium and labial palp, ventral view (after FLECK 2002). *Phyllocycla neotropica*: (10) labium and labial palp, ventral view (after FLECK 2002). *Phyllocycla ophis*: (11) labium and labial palp, ventral view (after BELLE 1970). *Phyllocycla volsella*: (12) labium and labial palp, ventral view (after NEEDHAM 1940). *Phyllocycla viridipleuris*: (13) labium and labial palp, ventral view (after BELLE 1992).