

**DESCRIPTION OF THE FEMALE AND LARVA OF
PHYLLOGOMPHOIDES JOAQUINI RODRIGUES
CAPITULO, 1992
(ANISOPTERA: GOMPHIDAE)**

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The ♀ and last larval instar are described and illustrated based on specimens from Argentina (Buenos Aires province). The ♀ is unique in the possession of a subapical tooth on each lobe of the vulvar scale, and it can be besides distinguished from *P. andromeda*, the only other *Phyllogomphoides* sp. found in Argentina, by the pterothoracic colour pattern. The larva differs from all known South American *Phyllogomphoides* larvae by the crenate inner margin of the labial palp.

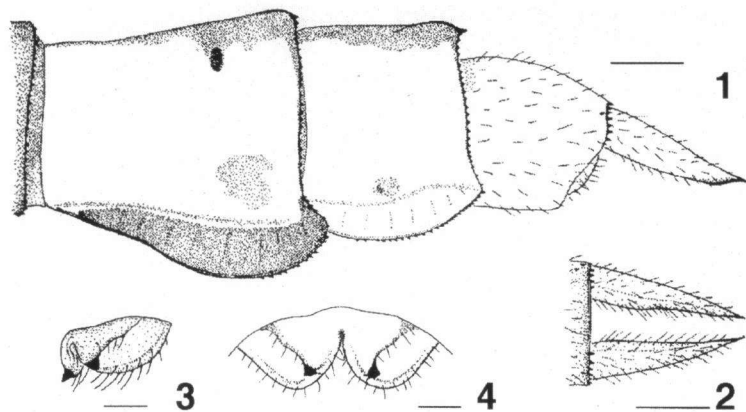
INTRODUCTION

Phyllogomphoides joaquina was described by RODRIGUES CAPITULO (1992) based on four males from Buenos Aires province. Only two *Phyllogomphoides* species have been so far recorded from Argentina, *P. andromeda*, from the north-eastern limit of the country, and *P. joaquina* from Buenos Aires province. Here, a description of its female (based on a pair collected in tandem and compared with the type specimens deposited at the Museo Argentino de Ciencias Naturales Bernardino Rivadavia collection [MACN]), and larva are provided for the first time.

DESCRIPTION OF THE FEMALE

Figures 1-4

Material. — Argentina, Buenos Aires province, without data, J. Bosqui leg. 1 ♀ (MACN); same except Cañuelas, arroyo Cañuelas at ruta provincial 6, 35°05'36.1" S, 58°41'25.6" W, 16-XII-



Figs 1-4. *Phyllogomphoides joaquina*, female: (1) abdominal segments VIII-X, lateral view; – (2) cerci, dorsal view; – (3) vulvar plate, ventral view; – (4) vulvar plate, ventrolateral view. – [Scales: Figs 1-2: 1 mm; Figs 3-4: 4 mm]

-1999, Muzón leg., ♂ and ♀ in copula (Museo de La Plata collection [MLP]); same except Pergamino, arroyo Maguire at ruta nacional 8, 33°57'46" S, 60°16'22" W, 15-I-2002, Muzón & Pessacq leg., 1 ♂ (MLP); same except Capitán Sarmiento, arroyo Horqueta at ruta nacional 8, 8-I-2002, 1 ♂ and 1 ♀ (MLP).

H e a d. – As male except rear of occiput and external half of postgenae yellowish green and labium whitish.

T h o r a x. – Prothorax anterior lobe dark brown, middle lobe brown with a posteromedial yellowish green spot, posterior lobe black. Pterothorax as male except antealar sinus yellowish (Cañuelas).

Legs. – As male except dark stripe in femora I and II developed as in femur III; tarsus III and basitarsus I and II yellowish.

Wings. – Forewings, antenodal crossveins 16-17, thickened antenodals 1st and 6th or 8th, postnodals 9-12. Hindwings, antenodal crossveins 11-12, thickened antenodals 1st and 5th, 6th or 7th, postnodals 9-12. Triangle 3-celled, supratriangle 1 or 2-celled, subtriangle 2 or 3-celled.

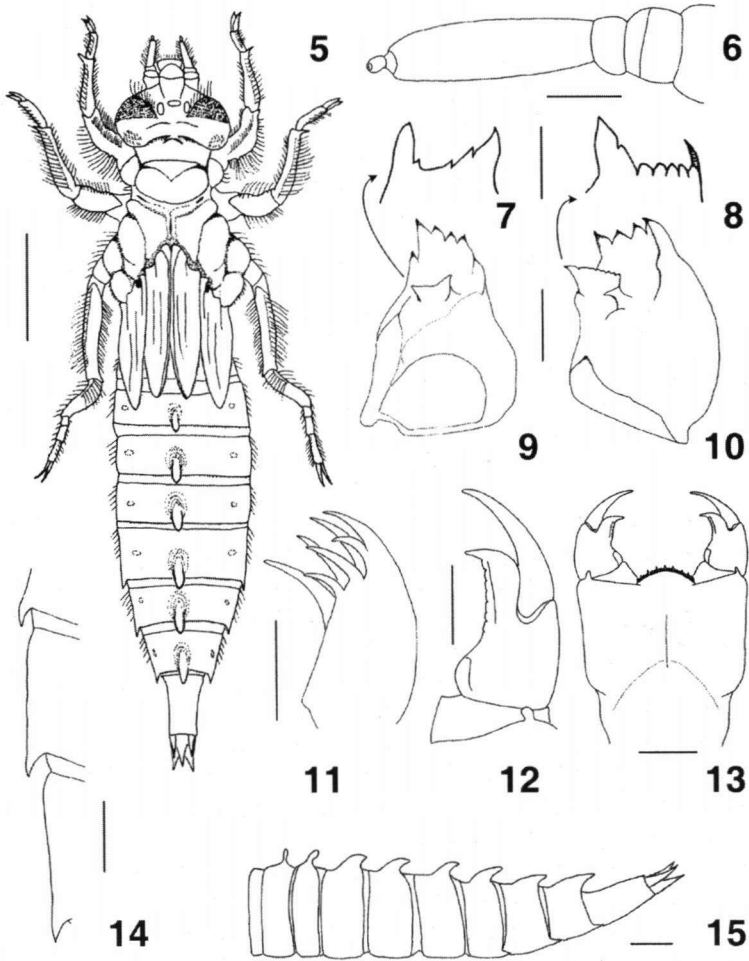
A b d o m e n. – As male except dark dorsal area on distal 1/3 of segments II-VIII; X yellowish green; lateral dilatations on IX yellowish and narrower than twice the width of those of segment VIII; sterna I-II and IX-X yellowish, III-VI black, VII-VIII brownish with black 1/7 basal; cerci (Figs. 1-2) yellowish with brown tips; paraprocts yellowish. Vulvar scale lobes rounded with convex sides and separated by a distance smaller than the width of each lobe and bearing a subapical tooth (Figs. 3-4)

M e a s u r e m e n t s (in mm). – Total length 61.77 ± 0.21 , FW 40.78 ± 1.3 , HW 38.7 ± 1.6 ; pterostigma (costal edge) FW 5.2 ± 0.2 , HW 5.5 ± 0.09 , femur III 7.25 ± 0.21 , abdomen length without cerci 45.4 ± 0.36 , cerci 2.43 ± 0.06 .

DESCRIPTION OF THE LAST LARVAL INSTAR

Figures 5-15

Material. – Argentina, Buenos Aires province, Pergamino, arroyo Maguire at ruta nacional 8, 9-I-2002, Pessacq & Muzón leg., 1 ♂ last larval instar (MLP).



Figs 5-14. Last larval instar of *Phyllogomphoides joaquina*, male: (5) general aspect, dorsal view; – (6) antenna, lateral view; – (7) right molar crest, inner-dorsal view; – (8) left molar crest, inner-dorsal view; – (9) right mandible, inner view; – (10) left mandible, inner view; – (11) left lacinia, ventral view; – (12) labial palp, ventral view; – (13) prementum, ventral view; – (14) lateral spines of abdominal segments VII-IX, dorsal view; – (15) abdominal dorsal hooks, lateral view. – [Scales: Fig. 5: 5 mm; Figs 6-12: 0.5 mm; Fig. 13: 1 mm; Figs 14-15: 2 mm]

H e a d. — 1.14 times as wide as long, posterior margin slightly concave. Ocelli pale. Labrum covered with scale-like setae except a central rectangular bare area; anterior margin with a fringe of thin long setae. Anteclypeus bare. Postclypeus, frons and vertex with scale-like setae; central triangular and lateral circular areas on vertex bare. Cephalic lobes with an irregular pattern of scale like setae. Antenna 4-jointed, 3 basal antennomeres covered with thin long setae and scale like setae, fourth bare; proportions of antennomeres 0.2, 0.18, 1, 0.09. Maxillae with thin long setae along external margin; laciniae with seven sharp and curved tooth, four ventral and three dorsal, the latter longer. Galea pointed, with thin long setae along the external margin. Prementum rectangular, 0.78 as wide as long, sides slightly convergent basally, dorsal surface bare, except for few lateral thin long setae; ligula convex, with long scale-like setae (pointed with wide base) along margin and ventral surface with a row of long thin setae. Labial palp short, inner margin crenate, with 6-7 crenulations increasing size distally, external margin with thin long setae. End hook of palp stout and strongly incurved. Movable hook 0.8 times as long as palp. Articulation of pre- and postmentum almost reaching the base of coxa II. Mandibular formula as follows (sensu WATSON, 1956): L 1234 0 a (m¹²³⁴⁵) b, R 1234 y a (m¹²³) b

T h o r a x. — Pronotum quadrangular, covered with scale-like setae, except two bare subquadrangular central areas with sparse central setae. Synthorax covered with scale-like setae, wing pads parallel, almost reaching the end of fourth abdominal segment, posterior margin with rows of thin long setae. Legs short and thick densely covered with thin long and scale like setae, except for longitudinal bare areas in femora and tibiae. Burrowing hooks on tibiae 1 and 2.

A b d o m e n. — Elongated and tapering caudally, maximum width at segments 5 and 6; mostly covered with scale like and sparse thin long setae, except for circular areas on each side of segments; lateral margin heavily setose. Segment 10 tubular, longer than 9. Dorsal hooks present on segments 2-9, increasing in size distally. Dorsal hooks on 7-9 overlapping the next segment. Lateral spines on segments 7-8 slightly incurved, almost straight on 9. Terminalia acutely pointed, proportions to epiproct as follows: epiproct 1, paraprocts 0.7, cerci 0.8.

M e a s u r e m e n t s (in mm). — Total length without appendages 34.0. Head: max. width 5.5, max. long 4.8. Antennomeres, 0.35, 0.3, 1.7, 0.15. Prementum long 3.6, max. width 2.8; labial palp, inner margin long 1.0, movable hook 0.9, ligula 0.9. Thorax: femur I 2.4, II 2.6, III 4.3; tibia I 3.5, II 3.3, III 4.5; inner wing pads 8.3, external wing pads 7.7. Abdomen: middorsal length segments IV to X as follows, 1.5, 1.7, 1.8, 1.8, 1.9, 1.9, 3.1; dorsal hooks (length in dorsal view) segments II to IX as follows, 1.0, 1.1, 1.3, 1.3, 1.3, 2.0, 2.0, 2.3; lateral spines on segment VII 0.4, VIII 0.6, IX 0.6; cerci 1.6, epiproct 1.9, paraprocts 1.4.

DISCUSSION

The tweezers-shaped cerci of the male (RODRIGUES CAPITULO, 1992) refer this species to the *andromeda* group of BELLE (1984), which includes *Phyl-*

logomphoides andromeda, *P. cassiopeia* and *P. cepheus*.

The female is unique within the genus in the possession of a subapical tooth on each lobe of the vulvar scale (Figs 3-4). It is easily differentiable from the females of *P. andromeda*, *P. cassiopeia* and *P. cepheus* by the shape of the vulvar scale lobes, which are rounded with convex sides and separated by a distance smaller than the width of each lobe in *P. joaquina* (Figs 3-4), and triangular with straight sides and separated by a distance larger than the width of each lobe in *P. andromeda*, *P. cassiopeia* and *P. cepheus* (BELLE, 1970, 1975, 1980, 1994). It differs besides from *P. andromeda* by the thoracic colour pattern (without pale mesothoracic half collar and with first pale antehumeral stripe pear shaped oblong in *P. andromeda* – with pale half collar and pale stripe linear in *P. joaquina*), from *P. cassiopeia* by the colour pattern of labrum (with black margin in *P. cassiopeia* – pale in *P. joaquina*), and from *P. cepheus* by the extension of the lateral dilatations of segment 8 (dilatations narrower than 1/6 of middorsal length of segment 8 and twice as wide as those of segment 9 or wider in *P. cepheus* – wider than 1/5 of middorsal length of segment 9 and narrower than twice the width of those of segment 9 in *P. joaquina*, Fig. 1).

It can be distinguished from all the South American larvae of *Phyllogomphoides* known (COSTA et al., 1999) by the crenate inner margin of the labial palps (Figs 7-8).

Based on larval characters NOVELO GUTIERREZ (1993) suggested that two evolutive lineages, South American and Middle American, could be recognized in the genus. The species belonging to the South American lineage would share prementum widened laterally at the middle; small ligula, its width shorter than the base of palp articulation; scale-like setae of ligula short; end hook of palp sharply pointed; internal margin of palp smooth or with a few blunt teeth; and lateral spines on abdominal segments 7-9 incurved. The larva of *P. joaquina* agrees well with the first three character states proposed, but the scale-like setae of ligula are long, the end hook of labial palp is not sharply pointed, its inner margin is crenate (Fig. 12), and the lateral spine of segment 9 (Fig. 14) is straight (character states assigned to the Middle American lineage). It is evident that the relationships within the genus are more complex than first thought, and should be re-evaluated taking into consideration adult as well as larval characters.

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REFERENCES

- BELLE, J., 1970. Studies on South American Gomphidae (Odonata). *Stud. Fauna Suriname* 11(43): 1-158.

- BELLE, J., 1975. Two new gomphine species from Paraguay (Anisoptera: Gomphidae). *Odonatologica* 4(3): 129-135.
- BELLE, J., 1980. Two new gomphoidine species from Brazil (Anisoptera: Gomphidae). *Odonatologica* 9(2): 173-180.
- BELLE, J., 1984. A synopsis of the South American species of Phyllogomphoides, with a key and descriptions of three new taxa (Odonata, Gomphidae). *Tijdschr. Ent.* 127(4): 79-100.
- BELLE, J., 1994. On five species of Phyllogomphoides Belle, 1970, from Brazil with the descriptions of three new taxa (Odonata: Gomphidae). *Zool. Med. Leiden* 68(8): 73-85.
- COSTA, J.M., T.C. SANTOS & A.M. TELLES, 1999. Phyllogomphoides annectens (Selys): description of the last larval instar, with a key to the South American species (Anisoptera: Gomphidae). *Odonatologica* 28(1): 79-82.
- NOVELO-GUTIERREZ, R., 1993. Four new larvae of Phyllogomphoides Belle from Mexico (Anisoptera: Gomphidae). *Odonatologica* 22(1): 17-26.
- RODRIGUES CAPITULO, A., 1992. Phyllogomphoides joaquinae spec. nov., a new Gomphoidini from Argentina (Anisoptera: Gomphidae). *Odonatologica* 21(2): 241-245.
- WATSON, M.C., 1956. The utilization of mandibular armature in taxonomic studies of anisopterous nymphs. *Trans. Am. Ent. Soc.* 81: 155-205.