



Species of the genus *Arthrobrachus* Solier, 1849 (Coleoptera: Melyridae) distributed to the East of the Andes

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Abstract

The species of the genus *Arthrobrachus* Solier, 1849 distributed in Argentina, Bolivia, Paraguay and Uruguay have been revised. The morphological study of specimens and the review of the type material have resulted in a new combination: *Arthrobrachus flavomarginatus* (Blanchard, 1843) **n. comb.** (from *Astylus* Laporte, 1836), and four new synonymies: *Arthrobrachus rufitarsis* Philippi & Philippi, 1864 = *A. obscuripes* Pic, 1927 **n. syn.**; *Arthrobrachus flavomarginatus* (Blanchard, 1843) = *A. xanthurus* (Blanchard, 1843) **n. syn.** = *A. boucardi* Pic, 1919 **n. syn.** = *A. lajoyei* Pic, 1919 **n. syn.** Three species described by Steinheil (1874), *Arthrobrachus depressus*, *Arthrobrachus testaceolimbatus* and *Arthrobrachus testaceus* are considered as *incertae sedis* and *Arthrobrachus quadrilineatus* Steinheil, 1874 is transferred to *Astylus* Laporte, 1836 as *A. steinheili* **nomen novum**. Four new species of *Arthrobrachus* have been described: *A. antonioi* **n. sp.**, *A. eloisae* **n. sp.**, *A. solervicensi* **n. sp.** and *A. armandoi* **n. sp.** Distributional data and a key to the species are provided.

Key words: Melyridae, *Arthrobrachus*, South America, taxonomic revision

Introduction

The species of the genus *Arthrobrachus* Solier, 1849 are distributed throughout the southern part of South America (Blackwelder 1945). A revision of the Chilean species (Estrada & Solervicens 1999) recognized nine valid species among the 25 nominal taxa described by Blanchard (1843), Laporte (1836), Philippi & Philippi (1864), Pic (1919) and Solier (1849). Moreover, Estrada (2003, 2005) and Estrada & Solervicens (1999) described three new species from Chile.

Among the non-Chilean species there are eight from Argentina (Blackwelder 1945, Gemminger & Harold 1869, Pic 1929), four of them described by Steinheil (1874), *A. testaceolimbatus*, *A. testaceus*, *A. quadrilineatus* and *A. depressus* and four by Pic, *A. impressithorax* Pic, 1919, *A. minutus* Pic, 1919, *A. vicinus* Pic, 1919 and *A. obscuripes* Pic, 1927. Further, two species were described from Paraguay by Pic (1919), *A. boucardi*, and *A. longipilis*, two from Uruguay, *A. lajoyei* Pic, 1919 and *A. xanthurus* (Blanchard, 1843) (Blackwelder 1945, Pic 1929), and one from Bolivia by Wittmer (1958), *A. forsteri*.

In recent years, Estrada & Solervicens (1999) established the synonymy of *A. vicinus* Pic, 1919 and *A. impressithorax* Pic, 1919 with *A. nigromaculatus* Solier, 1849 and of *A. minutus* Pic, 1919 with *A. rufitarsis* Philippi & Philippi, 1864.

Materials and method

Type material. The type material of nine species described from Argentina and Uruguay has been reviewed. The specimens are deposited in the collections of the Muséum national d'Histoire naturelle at Paris (21 types) and in the collections of the Museo Argentino de Ciencias Naturales Bernardino Rivadavia at Buenos Aires (1 type).

Verbatim label data has been given for all types designated and/or examined, with label breaks indicated by a double slash (//). The lending institution and number of specimens have been also indicated, e.g. “(MLPA) (1♂)”. It

is indicated in parenthesis when labels are colored or handwritten. For all the holotype and lectotype specimens the male genitalia was dissected and mounted with the specimen.

Additional material: A total of 1100 specimens of different taxa have been reviewed. The following institutions provided the material:

IADIZA	Instituto Argentino de Investigaciones en Zonas Áridas Mendoza, Argentina.
IPCN	Instituto Patagónico de Ciencias Naturales, San Martín de los Andes, Neuquén, Argentina, now deposited at IADIZA.
IMLA	Fundación e Instituto Miguel Lillo, Universidad Nacional de Tucumán, Argentina.
JEBC	Juan Enrique Barriga Tuñón, Personal Collection, Curicó, Chile.
MACN	Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina.
MLPA	Museo de La Plata, Universidad Nacional de La Plata, La Plata, Argentina.
MNHN	Muséum National d'Histoire Naturelle, Paris, France.
MNNC	Museo Nacional de Historia Natural, Santiago, Chile

Morphological analysis: The external morphology and genitalia of a sample of 10 specimens of each species from different localities within their geographical distribution was studied. It is indicated if there was only available a smaller number of individuals. The length and width of different structures were obtained with a micro-graduated scale set into the ocular microscope. Measurements and quotient between them are expressed as average indicating their range. Abdominal segments are named according to Lawrence & Britton (1991) and the genitalia according to Sharp & Muir (1912).

Results

All of the studied material shares a considerable interspecific similarity in colour pattern, punctuation and pubescence, making difficult the recognition of taxa through external characters and focusing the distinction of species on the genitalia. Female genitalia is very uniform among the different taxa and additionally there were not found in the collections specimens in copula, that is worth for recognizing conspecific males and females. Consequently, identification of the species is based, primarily, on structures of male genitalia and therefore the designation of lectotypes is based on male specimens.

Examination of the type material resulted in new nomenclatural changes. The type material of the species described by Steinheil (1874), *Arthrobrachus testaceolimbatus* (two females), *A. testaceus* (six females) and *A. depressus* (one female) were found in the collections of the Muséum national d'Histoire naturelle at Paris practically destroyed. Despite this condition it was possible to recognize the specimens as females with the consequent difficulty to do a good characterization of the species. Additionally, as the original descriptions do not clearly lead to the identification of the species, it was necessary to consider these taxa as *incertae sedis*.

The type of the fourth species described by Steinheil (1874), *Arthrobrachus quadrilineatus*, also found at Paris, is a male whose external morphology and genitalia correspond to the genus *Astylus*, to which it is proposed to be transferred. However, as the specific name is preoccupied by *Astylus quadrilineatus* (Germar, 1824) (Blackwelder 1945, Gemminger & Harold 1869, Pic 1919) the new name *Astylus steinheili* **nomen novum** is proposed (Article 72.7 of the International Code of Zoological Nomenclature) (ICZN1999) as a replacement name of *Astylus quadrilineatus* (Steinheil, 1874) **n. comb.**

At the Paris Museum there were also found, in good conditions, the types of the species described by Blanchard (1843) and Pic (1919, 1927); their study allowed to establish four new synonymies and a new combination.

Among the additional material studied four new species have been found, which are described in this paper. A key to species is provided.

The taxonomy of the species of *Arthrobrachus* with distribution in Argentina, Bolivia and Uruguay is summarized as follow:

Arthrobrachus antonioi **n. sp.**
Arthrobrachus armandoi **n. sp.**
Arthrobrachus depressus Steinheil, 1874, *incertae sedis*
Arthrobrachus eloisae **n. sp.**
Arthrobrachus flavomarginatus (Blanchard, 1843) **n. comb.**
 = *Dasytes xanthurus* Blanchard, 1843 **n. syn.**
 = *Arthrobrachus boucardi* Pic, 1919 **n. syn.**
 = *Arthrobrachus lajoyei* Pic, 1919 **n. syn.**
Arthrobrachus nigromaculatus Solier, 1849
 = *Arthrobrachus scutellaris* Philippi & Philippi, 1864
 = *Arthrobrachus subaeneus* Philippi & Philippi, 1864
 = *Arthrobrachus nigromaculatus* var. *solieri* Pic, 1919
 = *Arthrobrachus vicinus* Pic, 1919
 = *Arthrobrachus impressithorax* Pic, 1919
Arthrobrachus rufitarsis Philippi & Philippi, 1864
 = *Arthrobrachus germaini* Pic, 1919
 = *Arthrobrachus minutus* Pic, 1919
 = *Arthrobrachus obscuripes* Pic, 1927 **n. syn.**
Arthrobrachus solervicensi **n. sp.**
Arthrobrachus testaceolimbatus Steinheil, 1874, *incertae sedis*
Arthrobrachus testaceus Steinheil, 1874, *incertae sedis*

Key to species of *Arthrobrachus* distributed to the East of the Andes

1. Pronotum with complete or incomplete oblique lateral carina 2
- Pronotum without lateral carina 6
2. Pronotum with complete lateral carina and crater-like punctuation (Fig. 1) 3
- Pronotum with lateral carina reduced to the anterior third and fine punctuation (Fig. 2) 4
3. Elytra uniformly dark-testaceous. Male genitalia: parameres completely sclerotized, without longitudinal medial carina; tegmen without dorsal flange at the base of the parameres (Fig. 8a–c); median lobe entirely sclerotized and with a narrow flection area, rather straight from a lateral view (Fig. 8d–f). Generally with five slightly dilated preapical antennomeres (Fig. 8g). Body length: 2.8–4.5 mm. Distribution: Chile, between the provinces of Valparaíso and Valdivia; Argentina, provinces of Santa Fe, Neuquén, and Río Negro (Fig. 10) *rufitarsis* Philippi & Philippi
- Elytra red and black or completely black. Male genitalia: parameres completely sclerotized, with longitudinal medial carina; tegmen with conspicuous dorsal flange at the base of the parameres and strongly sclerotized ventral plate (Fig. 7a–c); median lobe with membranous dorsal surface and wide flection area, slightly sinuated from a lateral view (Fig. 7d–f). Generally with five dilated preapical antennomeres (Fig. 7g). Body length: 4.6–5.5 mm. Distribution: Chile, between Elqui and General Carrera provinces; Argentina: Provinces of Mendoza, Neuquén, Río Negro, and Chubut (Fig. 10) *nigromaculatus* Solier
4. Elytra dark-testaceous with a marginal light testaceous stripe, sometimes extended by the suture from the apex 5
- Elytra always light-testaceous, generally with a black spot in the parahumeral area. (Male genitalia: parameres weakly sclerotized; tegmen without dorsal flange at the base of the parameres (Fig. 3a–c); median lobe with long membranous dorsal surface (Fig. 3d). Generally with four dilated preapical antennomeres (Fig. 3i)). Body length: 3.5–5.0 mm. Distribution: Argentina, provinces of Jujuy, Salta, Tucumán, Catamarca, Córdoba, Mendoza and San Luis (Fig. 10) *antonioi* **n.sp.**
5. Generally with three dilated preapical antennomeres (Fig. 6i). Male genitalia: parameres sclerotized, except at the base, apex ciliated; (Fig. 6a–c), tegminal arms moderately converging towards the apodeme; median lobe almost straight, entirely sclerotized, with a narrow flection area and a linear phallotrema (Fig. 6d–f). Body length: 3.0–4.0 mm. Distribution: Widely distributed in central and northern Argentina, Uruguay and Bolivia (Fig. 10) *flavomarginatus* (Blanchard)
- Generally with four dilated preapical antennomeres (Fig. 5i). Male genitalia: parameres completely sclerotized with glabrous apex; tegminal arms moderately curved towards the apodeme (Fig. 5a–c); median lobe entirely sclerotized, with a fusiform phallotrema (Fig. 5d–f). Body length: 3.0–4.0 mm. Distribution: Argentina, provinces of Misiones, Catamarca, and Buenos Aires (Fig. 10) *eloisae* **n.sp.**
6. Pronotum with circular impressions on each basal angle, with a finely punctate surface. Elytra light-testaceous with dark margins. Male genitalia: parameres short, apex truncated with slight V shaped emargination and two long median and two short lateral tuft of hairs; tegmen with well marked dorsal flange at the base of the parameres (Fig. 9a–c); median lobe sclerotized and with wide flection area (Fig. 9d–f). Generally with five dilated preapical antennomeres (Fig. 9i). Body length: 1.7–2.0 mm. Distribution: Argentina, provinces of Neuquén and Río Negro (Fig. 10) *solervicensi* **n.sp.**
- Pronotum without circular impression on basal angles, surface with crater-like punctuation. Elytra dark- testaceous. Male gen-

italia: parameres with rounded apex; tegmen without dorsal flange at the base of the parameres, tegminal arms strongly curved towards apodeme, this is laminated. (Fig. 4a–c); median lobe with moderately wide flexion area (Fig. 4d–f). Generally with four dilated preapical antennomeres (Fig. 4i). Body length: 2.7–3.5 mm. Distribution: Argentina, provinces of Neuquén and Río Negro (Fig. 10) *armandoi* n. sp.

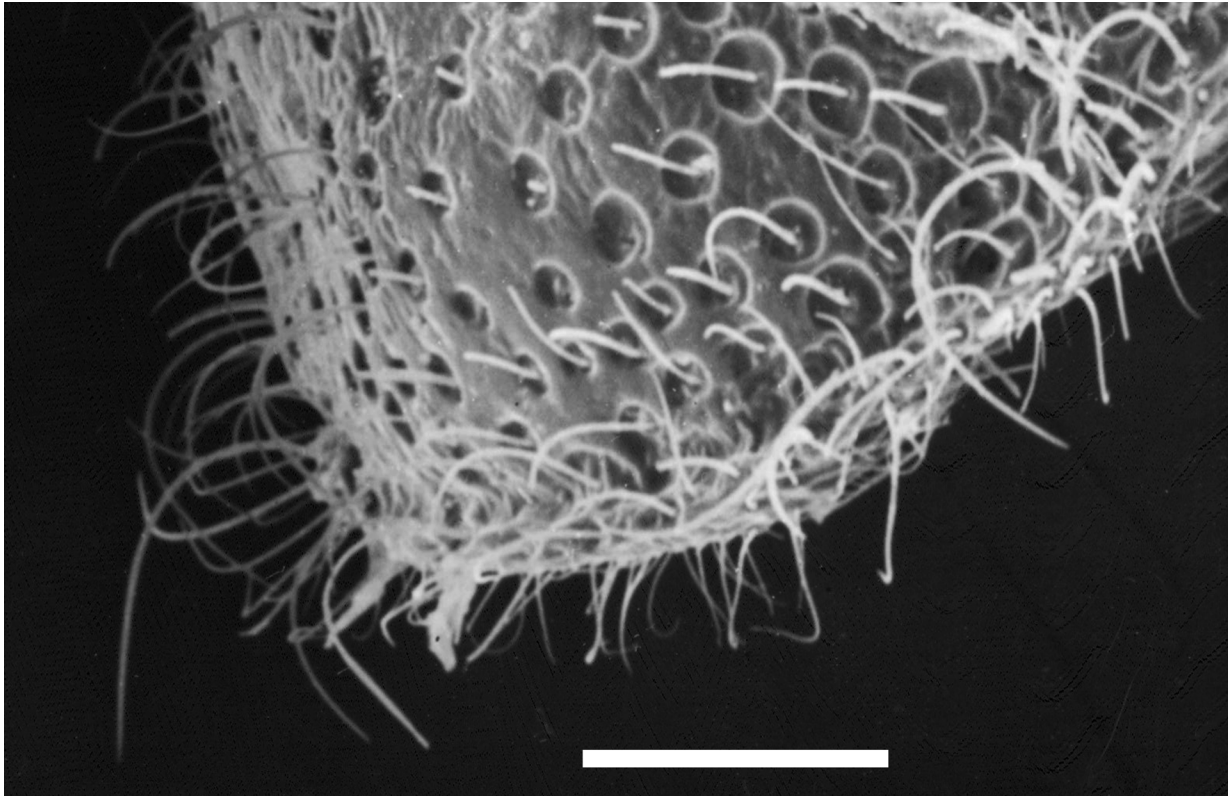


FIGURE 1. Dorsal surface of pronotum of *Arthrobrachus rufitarsi* n. sp. Scale 0.1 mm.

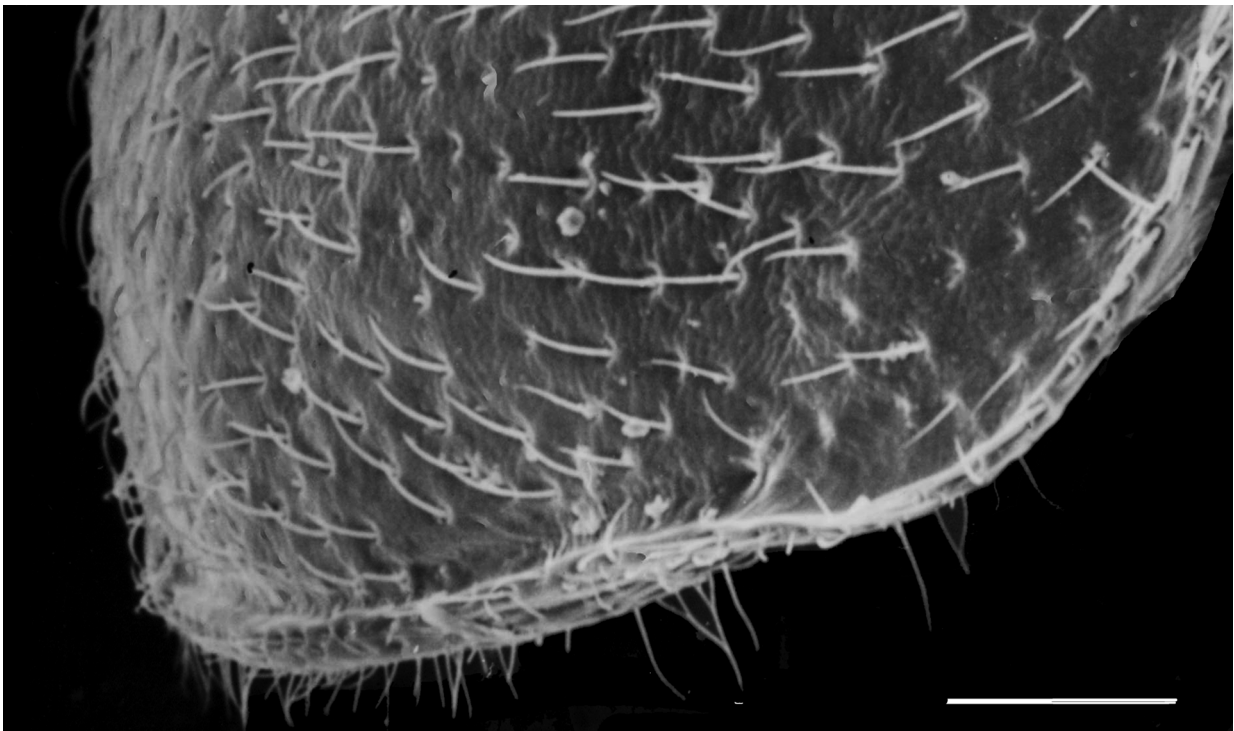


FIGURE 2. Dorsal surface of pronotum of *Arthrobrachus antonioi* n. sp. Scale 0.1 mm.

***Arthrobrachus antonioi* n. sp.**

(Figure 3)

Holotype: Male from Argentina Tucumán, 14 Nov. 1929; H. E. Box collector // *Arthrobrachus antonioi* Estrada, 2015 // Holotype (all handwritten) // circular (pink). Deposited in MLPA.

Paratypes: Catamarca // L.P. // *Arthrobrachus antonioi* Estrada, 2015 // Paratype. Deposited in MLPA (1♂). Argentina, Jujuy, Tilcara, 24/01/1948 // T // *Arthrobrachus antonioi* Estrada, 2015 // Paratype. Deposited in IMLA (1♂ 1♂). Argentina, Prov. San Luis, Villa Elena, Nov., 1976, leg. M. Viana // Colección J. E. Barriga, Chile 113779 // *Arthrobrachus antonioi* Estrada, 2015 // Paratype. Deposited in MNNC (1♂). Argentina, Prov. San Luis, Sn. Gerónimo, Dic, 1972, leg. G. Williner // Colección J. E. Barriga, Chile 115142 // JEB // *Arthrobrachus antonioi* Estrada, 2015 // Paratype. Deposited in MNNC (1♂). Argentina, Tucumán, 14 Nov. 1929 // Col. C. Bruch // H. E. Box Collector // 3368 // *Arthrobrachus antonioi* Estrada, 2015 // Paratype. Deposited in MACN // circular label (black) (1♂). Chaco // Mus. Arg. Cs. Nat. // 6822 // 11291 // *Arthrobrachus antonioi* Estrada, 2015 // Paratype. Deposited in MACN // circular label (black) (1♂).

Etymology. *antonioi*, in honour to Antonio Martínez L., my husband, because of his genuine curiosity for nature, specially for insects, in recognition of his unconditional and affectionate support and great stimulus for the achievement of my personal and professional goals.

Diagnosis. Antenna with four dilated preapical antennomeres (Fig. 3i); pronotum with additional carina subparallel to the lateral carina in the anterior third, and one circular impression in the basal angle; epipleura wide, with convergent margins toward the apex; male ventrite 6 with two lateral, flat, transverse, subcontiguous plates (Fig. 3h); last tergite nearly square, with rounded distal angles (Fig. 3h); parameres basally weakly sclerotized (Fig. 3a); tegmen without dorsal flange at the base of the parameres, tegminal plate reduced and weakly sclerotized, apodeme reduced or inconspicuous (Fig. 3b), tegminal arms strongly curved basally (Fig. 3c); median lobe with membranous grooved dorsal surface (Fig. 3d), with narrow flexion area, apodeme with ventral apical protuberance (Fig. 3e–f). The female of this species has not been recognized.

Description. Average body length: 4.3 mm (range: 3.5–5.0 mm), length: width ratio 2.12:1, sides subparallel; punctuation coarse, dense in the head, pronotum and elytra; pubescence fine, short and inclined, dense in pronotum and scattered in the head; thick, short, erect, dense and uniformly distributed hairs on elytra; body dark-testaceous, pronotum black, with clear edges or light testaceous bottom with a black spot at the center, elytra always light-testaceous with a black spot in the parahumeral area, antennae and legs orange.

Head: Including eyes narrower than the anterior margin of pronotum (0.862:1); antennae shorter than the pronotum (0.716:1), with four medially dilated preapical antennomeres (Fig. 3i).

Thorax: Pronotum wider than long (1.4:1), moderately convex transversely and slightly convex longitudinally, base wider than apex (1.31:1) and almost as wide as humeral region (0.962:1); from a dorsal view the anterior margin is slightly convex, anterior and posterior margins fine, lateral margins curved, hind angles marked, with adjacent circular impression, lateral edges of disc narrow and flat, with additional anterior carina subparallel to the lateral carina; elytra 1.42:1 longer than wide; lateral margin subparallel, rounded at distal third, elytral disc moderately convex transversely and slightly descending in the distal portion, lateral sides flat, horizontal, scarcely narrower than the epipleura; epipleura wide, of constant width throughout its length, sides convergent at the apex, glabrous and almost flat, internal margin with scarce denticles; legs: all the tibiae with scarce, short spines at external margin; tarsomeres with abundant apical spines.

Abdomen: Ventrite 5 flat with nearly straight distal margin; ventrite 6 with two flat lateral subcontiguous plates; last tergite subsquare, with rounded distal angles and posterior margin slightly emarginate medially, its apodemes moderately long, pubescence thick and short, scattered (Fig. 3h); segment 9 very fine, weakly sclerotized, with fine sternal arms and long apodeme (Fig. 3g). Genitalia: parameres wide, rounded at the apex, sides slightly convergent, slightly convex, lightly esclerotized, emarginated at base; from a lateral view the lower margin of parameres and tegmen in straight-line; tegmen without dorsal flange at the base of the parameres, tegminal arms thick, first subparallel and after curved and convergent medially, from a lateral view strongly and abruptly bent at the base, apodeme laminated and moderately reduced, tegminal plate weakly sclerotized, irregularly cut in the distal margin, extended to the base of the apodeme (Fig. 3a,b,c); median lobe subcylindrical, lateral margin subparallel, apex pointed, grooved, dorsal surface membranous in its full extent, with narrow flexion area (Fig. 3e,fl), apodeme enlarged (Fig. 3d,e,f).

Distribution. ARGENTINA (Fig. 10): Provinces of Jujuy (IMLA), Salta (IMLA, MACN), Tucumán (IMLA, MACN), Catamarca (IMLA, MACN), Córdoba (IMLA, JEBC), San Luis (IMLA, JEBC, IADIZA); Mendoza (MACN).

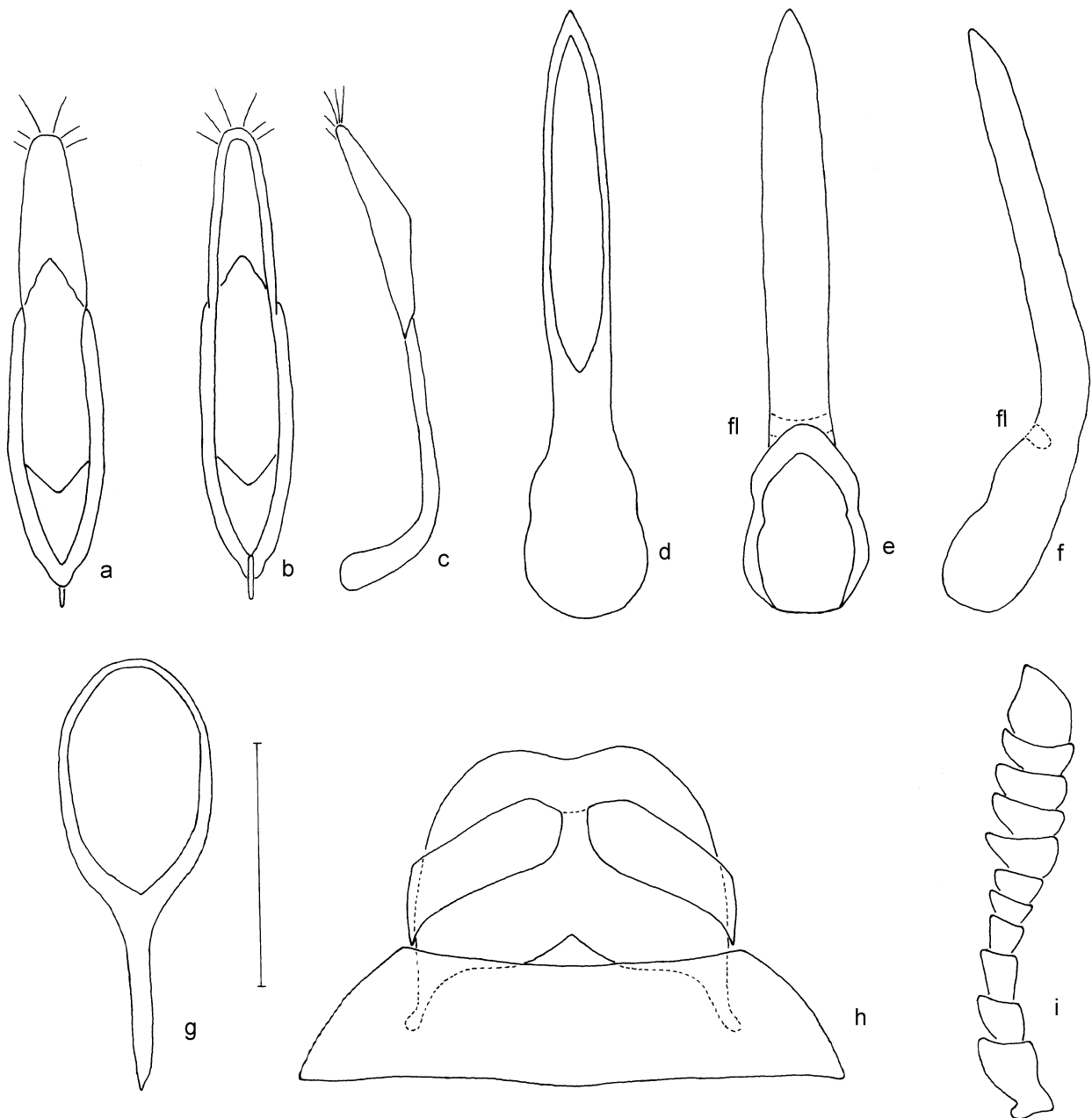


FIGURE 3. *Arthrobrachus antonioi* n. sp: Male genitalia. Tegmen and parameres: **a**: dorsal view; **b**: ventral view; **c**: lateral view; Median lobe: **d**: dorsal view; **e**: ventral view; **f**: lateral view. Terminal segments of abdomen: **g**: IX segment; **h**: V, VI ventrites and last tergum; Antenna: **i**. Scale 0.5 mm.

***Arthrobrachus armandoi* n. sp.**

(Figure 4)

Holotype: Male from Rep. Argentina, Prov. Río Negro, H. Richter // Bariloche //3642// circular (orange) // *Arthrobrachus armandoi* Estrada, 2015 // Holotype. Deposited in MLPA.

Paratype: Two males labelled as follows: Rep. Argentina, Prov. Río Negro H. Richter // Bariloche //3645// L.P. // *Arthrobrachus armandoi* Estrada, 2015 // Paratype. Deposited in MLPA (1♂). Argentina, Río Negro // Bariloche //3645// circular (orange) // *Arthrobrachus armandoi* Estrada, 2015 // Paratype. Deposited in MLPA (1♂).

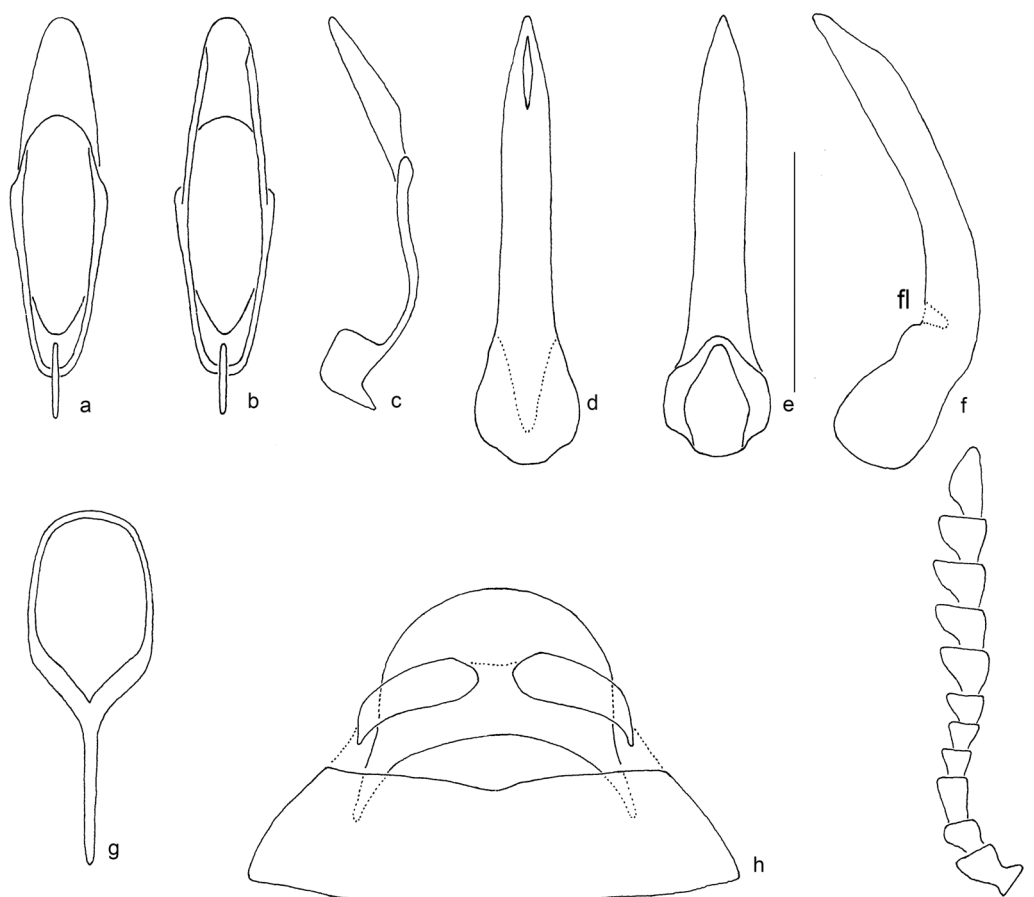


FIGURE 4. *Arthrobrachus armandoi* n. sp: Male genitalia: Tegmen and parameres: **a**: dorsal view; **b**: ventral view; **c**: lateral view; Median lobe: **d**: dorsal view; **e**: ventral view; **f**: lateral view. Terminal segments of the abdomen: **g**: IX segment; **h**: V, VI ventrites and last tergum; Antenna: **i**. Scale 0.5 mm.

Etymology. in honour to my father, Armando Estrada H., who taught me about the value and courage of ethics and perseverance in life, and in recognition of his unforgettable sympathy to the coleoptera.

Diagnosis. Antennae with four mesally dilated preapical antennomeres (Fig. 4i); pronotum without circular impression on basal angles; ventrite 6 with two lateral, flat, transverse and separated plates (Fig. 4h); parameres scarcely sclerotized in the base; tegmen without dorsal flange at base of parameres, tegminal plate reduced and scarcely sclerotized, lateral arms thick, subparallel in the distal part, convergent and strongly curved almost in right angle at the base, apodeme long, laminate, with a dorsal apophysis, well sclerotized (Fig. 4a,b,c); median lobe sclerotized, sides subparallel, apex acuminate, slightly curved from a lateral view, forming an obtuse angle with the apodeme, flection area moderately wide (Fig. 4d,e,f).

Description. Average body length 3.29 mm (range: 2.75–3.55 mm), length: width ratio 1.98:1, sides subparallel; coarse and dense punctures in head, pronotum and elytra; dorsal vestiture with dense, thick, erect hairs, evenly distributed; body dark testaceous, elytra slightly less coloured than the rest of the body.

Head: Included the eyes slightly narrower than the apex of the pronotum (0.9:1); antenna as long as the pronotum (1.04:1), generally with four mesally dilated preapical antennomeres (Fig. 4i).

Thorax: Pronotum wider than long (1.61:1), with moderate transverse convexity and slight longitudinal convexity, base wider than the apex (1.27:1) and slightly narrower than the humeral base (0.74:1), anterior margin slightly convex, anterior and posterior margins moderately marked, lateral margins slightly convex, anterior and

posterior angles marked, disc without circular impression on basal angles; elytra longer than wide (1.5:1), sides parallel, rounded at distal third, disc slightly convex, subvertical at lateral edges and slightly descending in apical third; epipleura wide, narrowed and slightly dentate toward the apex; legs: all the tibiae with thin, right, fine spines.

Abdomen: Vestiture of fine, thin hairs; punctuation scattered, fine; ventrite 5 with distal margin slightly emarginated at center and slightly bent ventrally; ventrite 6 with two transverse, flat plates, broadly separated, mesal margins of each plate rounded, distal margin substraight and with thin, short hairs; last tergite with distal margin widely rounded (Fig. 4h); segment 9 with tergum like a narrow strip, sternal arms narrow, apodeme fine and long (Fig. 4g). Genitalia: Parameres short, wide, more or less flattened, sides subparallel, apex wide and rounded, lateral edges bent ventrally, scarcely sclerotized in the base, from a lateral view their ventral margin forming an obtuse angle with the tegmen; tegmen without dorsal flange at the base of the parameres, lateral arms thick, subparallel, and strongly curved almost in right angle at the base, tegminal plate reduced and scarcely sclerotized, with V-shaped distal margin, projected on the base of the apodeme, apodeme well sclerotized, long, laminate, with a dorsal apophysis (Fig. 4a–c); median lobe subcylindric, dorsal surface sclerotized, sides subparallel, apex acuminate, slightly curved from a lateral view, forming an obtuse angle with the apodeme, flection area moderately wide, apodeme long (Fig. 4d–f, f1).

Distribution. ARGENTINA (Fig. 10): Provinces of Río Negro (MLPA) and Neuquén (MLPA).

Arthrobrachus eloisae n. sp.

(Figure 5)

Holotype: Male from Rep. Argentina, Misiones, Richter, 19 //2616// circular (orange)// Holotype // *Arthrobrachus eloisae* Estrada, 2015. Deposited in MLPA.

Paratypes: Three males labelled as follows: *Arthrobrachus eloisae* Estrada, 2015 // Prov. Buenos Aires, col. J. Bosq // LP //27// Paratype. Deposited in MLPA (1♂ 1♂). Catamarca // Mus. Arg. Cs. Nat. // circular (black) // *Arthrobrachus eloisae* Estrada, 2015 (handwritten) // Paratype. Deposited in MACN (1♂).

Etymology. *eloisae* in honour to my mother, Eloísa Mancilla G. who taught me the value of courage and tenacity in life, in memory of her innate love for nature.

Diagnosis. Antennae with four dilated preapical antennomeres (Fig. 5i); pronotum with additional carina subparallel to the lateral carina slightly marked in the anterior third; epipleura wide, narrow in the apex; ventrite 6 with two lateral, flat, transverse, contiguous plates (Fig. 5h), last tergite subsquare; parameres entirely sclerotized; tegmen: dorsal flange at base of parameres absent, tegminal plate reduced and weakly sclerotized, its distal margin moderately emarginated, tegminal arms thick, sides subparallel, convergent at the base, apodeme reduced (Fig. 5a–c); median lobe with dorsal surface sclerotized, strongly curved at the base, flection area like a fold (Fig. 5d–f).

Description. Body elongated, average body length 3.23 mm (range: 3.28–4.0 mm), length: width ratio 1.57:1, sides subparallel; head and pronotum with dense, shallow, coarse punctures; elytra coarsely and densely punctate; head, pronotum and elytra with dense, fine, white, decumbent hairs; elytral vestiture also with thick, dark and erects hairs evenly distributed; body black, pronotum dark testaceous with slightly lighter edge, elytra black, with marginal testaceous stripe enlarged in the apex and slightly extended in the suture, legs light testaceous.

Head: included eyes as wide as the apex of pronotum (1.01:1); antennae slightly shorter than the pronotum (0.8:1), generally with four mesally dilated preapical antennomeres, scarcely hairy (Fig. 5i).

Thorax: Pronotum wider than long (1.26:1), slightly convex transversely and longitudinally, base wider than the apex (1.32:1) and slightly narrower than the humeral region (0.80:1), disc somewhat explanate laterally, with additional carina subparallel to the lateral carina slightly marked in the anterior third, posterior angles marked; elytra longer than wide (2.32:1), sides subparallel, rounded apically, disc somewhat explanate, descending toward the apex, lateral edges more or less explanate, suture well marked; epipleura wide, with constant width until the distal fourth, narrow in the apex, hairy, with scarce asperities in the apex; tibiae with scarce fine spines on outer margin.

Abdomen: With fine vestiture and very fine and scarce punctuation; ventrite 5 with substraight distal margin, slightly curved ventrally; ventrite 6 with two transverse, contiguous plates, distal margin with scarce short hairs; last tergite subsquare, distal angles rounded, basal margin straight, distal border with fine hairs (Fig. 5h); segment 9 with linear tergum, short and fine sternal arms and long and fine apodeme (Fig. 5g). Genitalia: parameres almost flat, sclerotized, sides convergent to apex, apex subacuminated, from a lateral view the lower margin of parameres and tegmen moderately curved; tegmen without dorsal flange at the base of the parameres, tegminal arms thick, subparallel and curved at the base, tegmen plate reduced and flat, distal margin moderately emarginated, apodeme reduced and rounded (Fig. 5a–c); median lobe subcylindric, with dorsal surface sclerotized, sides subparallel, convergent in the apex, forming an almost right angle with the apodeme, apex acuminate, flection area folded, scarcely sclerotized, inconspicuous, apodeme long (Fig. 5d–f).

Distribution. ARGENTINA (Fig. 10): Provinces of Misiones (MLPA), Catamarca (MACN), Buenos Aires (MLPA).

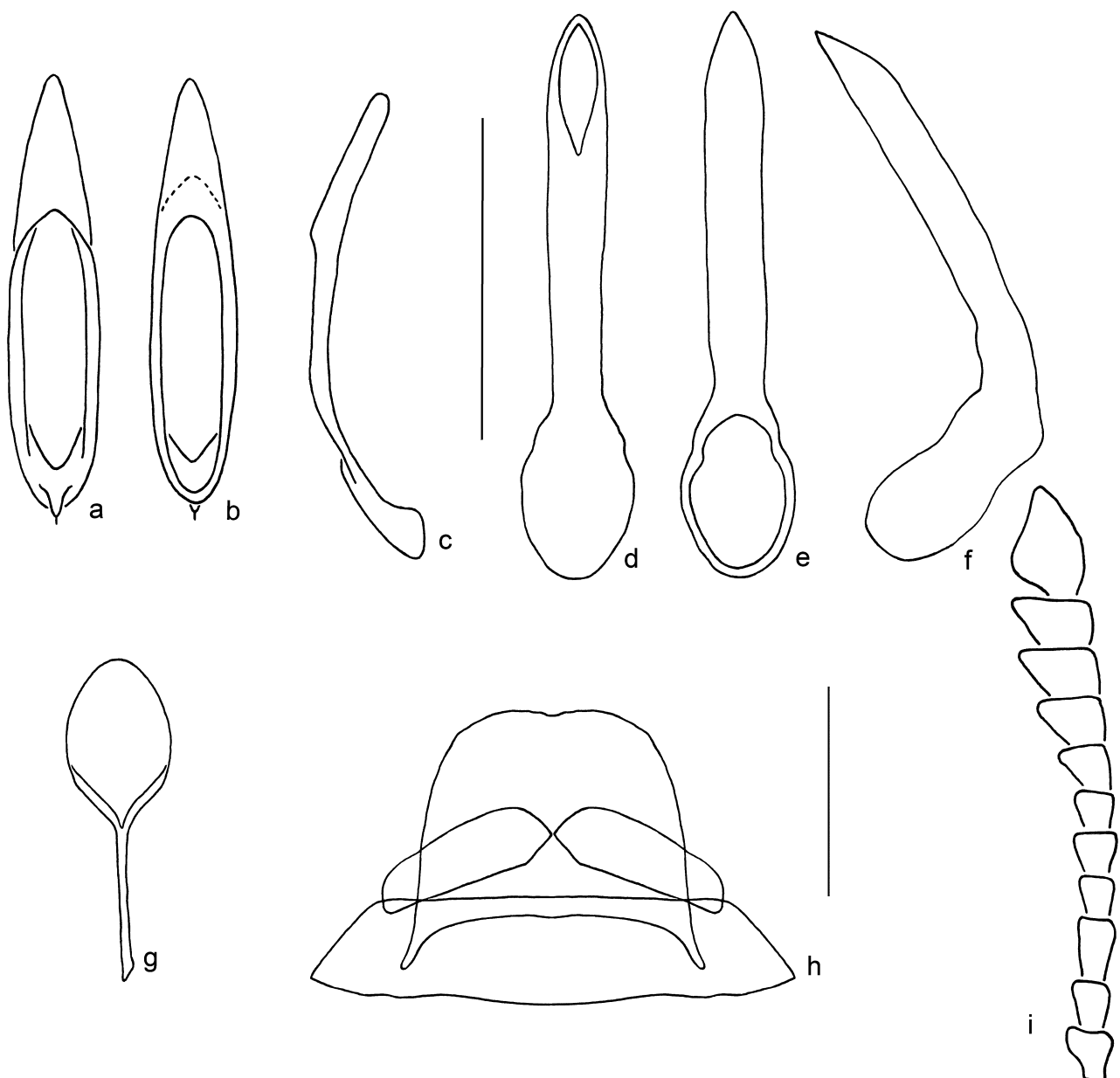


FIGURE 5. *Arthrobrachus eloisae* n. sp: Male genitalia: Tegmen and parameres: **a**: dorsal view; **b**: ventral view; **c**: lateral view; Median lobe: **d**: dorsal view; **e**: ventral view; **f**: lateral view. Terminal segments of the abdomen: **g**: IX segment; **h**: V, VI ventrites and last tergum; Antenna: **i**. Scale 0.5 mm.

***Arthrobrachus flavomarginatus* (Blanchard, 1843) n. comb.**

(Figure 6).

Dasytes flavomarginatus Blanchard, 1843: 100; Lacordaire 1857: 402 (*Astylus*?); Gemminger and Harold 1869: 1717 (*Astylus*); Pic 1929: 9 (*Astylus*); Blackwelder 1945: 378 (*Astylus*) (Type locality: Chuquitacos, Bolivia) **n. comb.**

Dasytes xanthurus Blanchard, 1843: 100; Lacordaire 1857: 402 (*Astylus*?); Gemminger and Harold 1869: 1718 (*Astylus*); Pic 1929: 16 (*Arthrobrachus*); Blackwelder 1945: 379 (*Arthrobrachus*). (Type locality: Montevideo, Uruguay) **n.syn.**

Arthrobrachus boucardi Pic, 1919: 9; Pic 1929: 15; Blackwelder 1945: 379 (type locality: Uruguay) **n.syn.**

Arthrobrachus lajoyei Pic, 1919: 11; Pic 1929: 16; Blackwelder 1945: 379 (Type locality: Montevideo, Uruguay) **n.syn.**

Types examined:

-*flavomarginatus*: Two syntypes deposited in MNHN. One male, herein designated as lectotype, and labelled as follows: *D. flavomarginatus* Blanch. (rectangular, green) // Chuquitacos M. D'Orbigny (white) // 2987 (white) // 46 (white) (all handwritten) // 1986 34 (green, circular) // Type (red, printed). One female, herein designated as paralectotype and labelled as follows: 1986 36 (circular, green) // N°47 (white) (both handwritten) // Type (red, printed). The female is doubtfully assigned as paralectotype.

-*xanthurus*: Five syntypes deposited in MNHN. One male herein designated as lectotype and labelled as follows: Montevideo M. D'Orbigny (large, green) // 252 (small square, white) // 5250-34 (green top, white bottom) // *Dasytes xanthurus* Bl. (white) // N°40 (white) (all handwritten) // Museum Paris Maldonado D'Orbigny, 1834 // Type (both printed). Four specimens, herein designated as paralectotypes and labelled as follows: 5250 34 (green, circular) // *A. xanthurus* (white) // N°41 (white) (all handwritten) // Museum Paris Maldonado D'Orbigny, 1834 (printed) // Type (both printed) (1♂). *Dasytes xanthurus* Bl. // 5251-34 (green, circular) // N°42 (all handwritten) // Museum Paris Maldonado D'Orbigny // Type (both printed) (1♂). *A. xanthurus* // 5251/34 // Museum Paris Maldonado D'Orbigny, 1834 // Type (1♀). *A. xanthurus* // *Dasytes xanthurus* types Blanchard // 5257 34 // Museum Paris Maldonado D'Orbigny, 1834 // N°44 // Type (1♀). The females of the type series by Blanchard are doubtfully assigned as paralectotypes.

-*boucardi*: One male in poor condition, deposited in MNHN, herein designated as lectotype and labeled as follows: *A. boucardi* Pic // Type // Uruguay // Museum Paris coll. M. Pic // N°34 // Type.

-*lajoyei*: One male, deposited in MNHN, herein designated as lectotype and labelled as follows: *Arthrobrachus limbatus* Sol (gardé a) // Type // lajoyei Pic (all handwritten) // Montevideo // Pic type // Museum Paris coll. M. Pic // Type (all printed).

Diagnosis. Antennae generally with three dilated preapical antennomeres (Fig. 6i); pronotum with a lateral, oblique carina, at least in the anterior half, and one moderate circular impression near the basal angles; epipleura wide, with convergent edges in the apex; males: ventrite 6 with two flat, transverse, subcontiguous plates (Fig. 6h); last tergite subsquare, with moderately rounded hind angles (Fig. 6h); parameres weakly sclerotized basally (Fig. 6a,b); tegmen without dorsal flange at the base of the parameres, tegminal plate reduced and flat, sometimes projected in the area of the apodeme (Fig. 6c), tegminal arms moderately curved at the base (Fig. 6c); median lobe with sclerotized dorsal surface and membranous narrow flexion area (Fig. 6d-f).

Description. Males: Average body length 3.49 mm (range: 3.0–4.0 mm), length: width ratio 2.34:1, sides subparallel; pronotum and elytra with distinct coarse punctures covering their dorsal surface; pubescence fine, short and inclined, dense in dorsal surface; body dark-testaceous, elytra with a light testaceous marginal stripe, also slightly extended by the suture from the apex, antennae and legs orange.

Head: Included the eyes almost as wide as the distal margin of the pronotum (0.925:1); antennae shorter than the length of the pronotum (0.762:1), generally with three mesally dilated preapical antennomeres (Fig. 6i).

Thorax: Pronotum wider than long (1.4:1), moderately convex transversely and slightly curved longitudinally, the base wider than the apex (1.38:1) and almost as wide as the humeral region (0.927:1), from a dorsal view the anterior margin slightly convex, anterior and posterior margins well marked, lateral margins slightly curved, lateral edges of disc flat; the oblique lateral carina prolonged from the anterior margin, never less than half the length of the pronotum, better marked on the distal part, one moderate circular impression present near the basal angle; elytra 1.75:1 longer than wide; lateral margins subparallel in the two basal thirds and rounded in the distal one; disc moderately convex, with light lateral border; epipleura wide, their margins convergent at the apex, almost flat, generally grainy and hairy, sometimes with blunt apical denticles; legs: median and hind tibiae with scarce spines in the external margin, tarsomeres with few ventral spines.

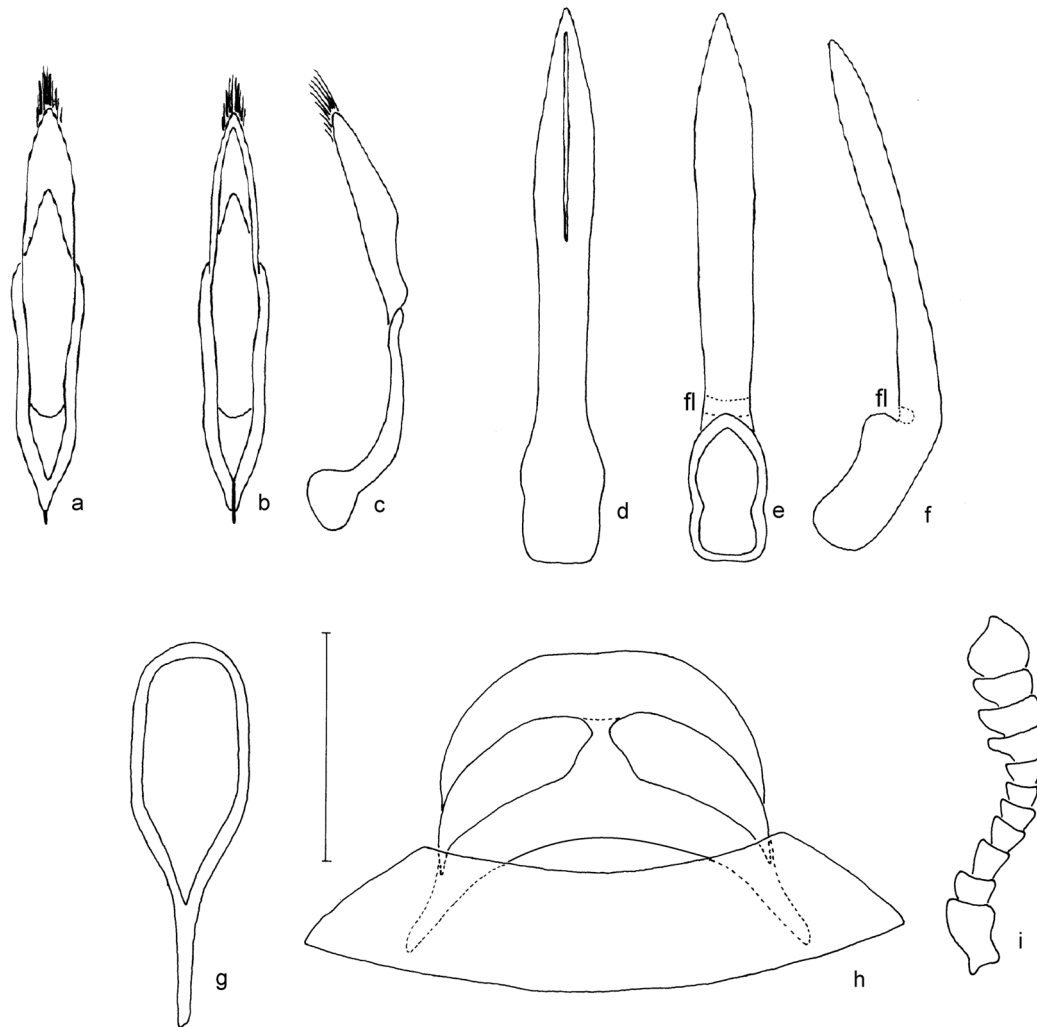


FIGURE 6. *Arthrobrachus flavomarginatus*: Male genitalia: Tegmen and parameres: **a**: dorsal view; **b**: ventral view; **c**: lateral view; Median lobe: **d**: dorsal view; **e**: ventral view; **f**: lateral view. Terminal segments of abdomen: **g**: IX segment; **h**: V, VI ventrites and last tergum; Antenna: **i**. Scale 0.5 mm.

Abdomen: Ventrite 5 with straight distal margin, slightly convex; ventrite 6 with two flat lateral subcontiguous plates; last tergite subsquare, distal angles moderately rounded, its posterior margin rounded, apodemes moderately long (Fig. 6h); segment 9 weakly sclerotized, tergum narrow, fine sternal arms and moderately long apodeme (Fig. 6g). Genitalia: parameres acuminate at apex, sides subparallels, slightly convex, emarginated or weakly sclerotized at the base, lateral edge narrow, sometimes lateral margins communicated on the apex, from a lateral view the lower margin of parameres and tegmen slightly curved; tegmen without dorsal flange at the base of the parameres, tegminal arms thick, sides subparallel, gradually convergent toward the base, from a lateral view strongly curved at base, tegminal plate reduced, distal margin slightly concave, apodeme rounded (Fig. 6a–c); median lobe subcylindrical, sides subparallel convergent at apex, almost straight in lateral view, forming an obtuse angle with the apodeme, apex acuminate, dorsal surface sclerotized with narrow membranous area, flection area narrow, apodeme enlarged (Fig. 6d–f, fl).

Distribution. ARGENTINA (Fig. 10): Provinces of Jujuy (IMLA), Formosa (IMLA), Chaco (MACN, IMLA, MLPA), Salta (IMLA, JEBC), Misiones (MLPA), Catamarca (IMLA), La Rioja (IMLA, MACN), Santiago del Estero (IMLA, MLPA), Santa Fé (MACN, MLPA), Entre Ríos (MLPA), San Luis (JEBC, IMLA), Córdoba (IMLA, MLPA), Buenos Aires (MLPA), Mendoza (MLPA). URUGUAY: Montevideo (MNHN). BOLIVIA: Chuquitacos (MNHN).

Comment: Lacordaire (1857) assigned with doubts *Dasytes flavomarginatus* and *D. xanthurus* to *Astylus*, classification followed by Gemminger & Harold (1869). Pic (1929) transferred *D. xanthurus* to *Arthrobrachus*, what was followed by Blackwelder (1945). A study of the type material of Blanchard allows to propose the transfer of *Astylus flavomarginatus* to the genus *Arthrobrachus* and to recognize the synonymy of this species with *xanthurus*. As Blanchard (1843) described *Dasytes flavomarginatus* and *D. xanthurus* in the same page the first name is selected as the valid name and the second as its synonym. Further, the type locality of *A. boucardi* (Paraguay in Blackwelder 1945 and Pic 1919) must be changed to Uruguay based on the type label data.

***Arthrobrachus nigromaculatus* Solier, 1849**

(Figure 7)

Arthrobrachus scutellaris Philippi & Philippi, 1864: 273; Estrada & Solervicens 1999: 45

Arthrobrachus subaeneus Philippi & Philippi, 1864: 272; Estrada & Solervicens 1999: 45

Arthrobrachus nigromaculatus var. *solieri* Pic, 1919: 10; Estrada & Solervicens 1999: 45

Arthrobrachus vicinus Pic, 1919:10; Estrada & Solervicens 1999: 45

Arthrobrachus impressithorax Pic, 1919:10; Estrada & Solervicens 1999: 45

Diagnosis. Elytra black or black with two red areas of a variable size; antennae with five preapical dilated antennomeres (Fig. 7g); pronotum with a deep impression adjacent to the posterior angle; male ventrite 6 divided in two large and convergent plates; parameres with conspicuous median carina, its sides bend ventrally at the base forming a semi-cylindrical cavity for the median lobe; tegmen with a well developed dorsal flange at the base of the parameres and strongly sclerotized ventral plate, tegminal arms gradually converging to the apodeme (Fig. 7a–c); median lobe slightly sinuated in lateral view, with membranous dorsal surface and wide basal flexion area (Fig. 7d–f).

Distribution. ARGENTINA: provinces of Mendoza, Neuquén, Rio Negro and Chubut. CHILE: between provinces of Elqui and General Carrera (Fig. 10).

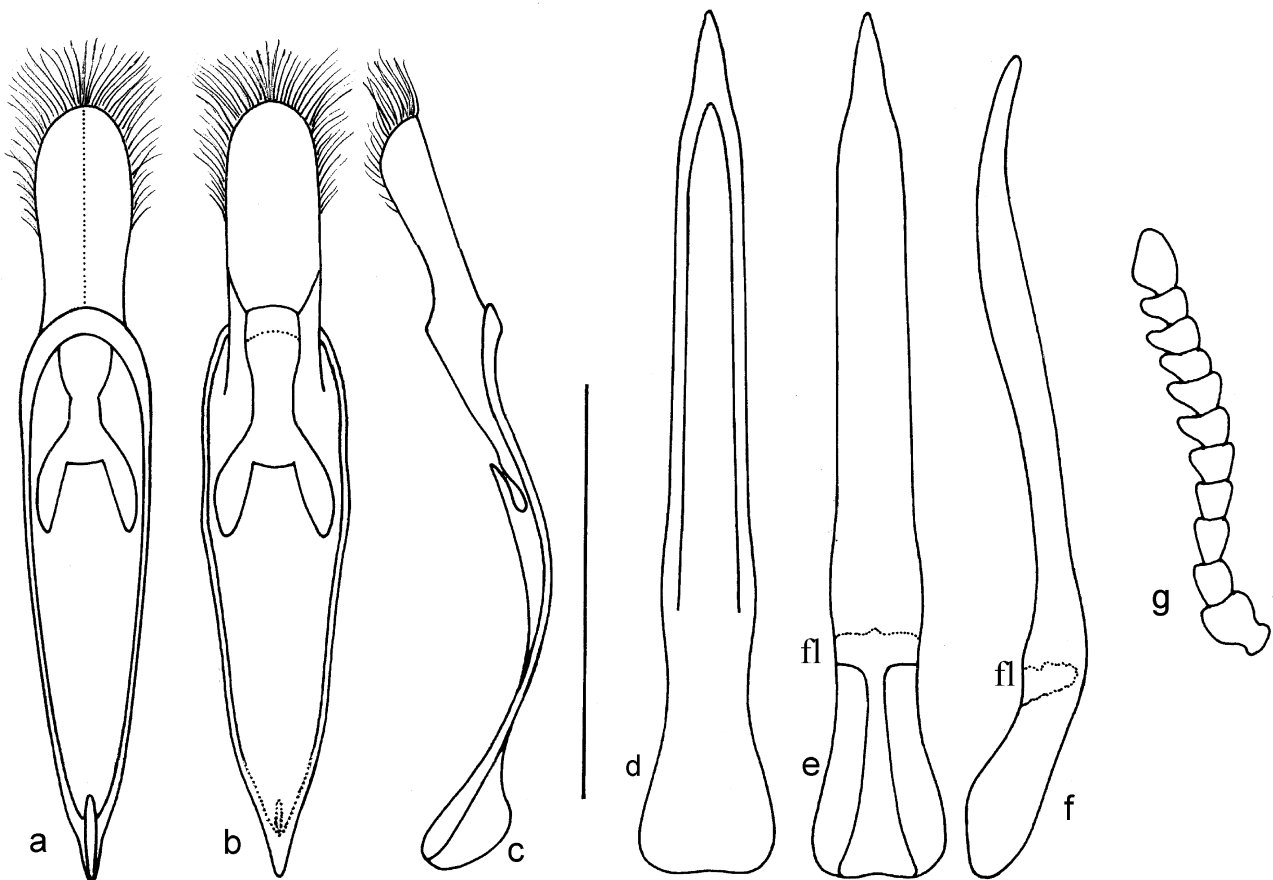


FIGURE 7. Male genitalia of *Arthrobrachus nigromaculatus*. Tegmen and parameres: a: dorsal view; b: ventral view; c: lateral view; Median lobe: d: dorsal view; e: ventral view; f: lateral view; Antenna: g. Scale 0.5 mm

***Arthrobrachus rufitarsis* Philippi & Philippi, 1864**

(Figure 8)

Arthrobrachus germaini Pic, 1919: 10; Estrada & Solervicens 1999: 52

Arthrobrachus minutus Pic, 1919: 10; Estrada & Solervicens 1999: 52

Arthrobrachus obscuripes Pic, 1927: 43 (Type locality: Fives Lille, Santa Fé), **n. syn.**

The examination of the genitalia and external morphology of the lectotype of *Arthrobrachus obscuripes* Pic, 1927 (MACN) allowed to establish its synonymy with *Arthrobrachus rufitarsis* Philippi & Philippi, 1864, a species originally described from Chile. Lectotype designated and described by Estrada & Solervicens (1999).

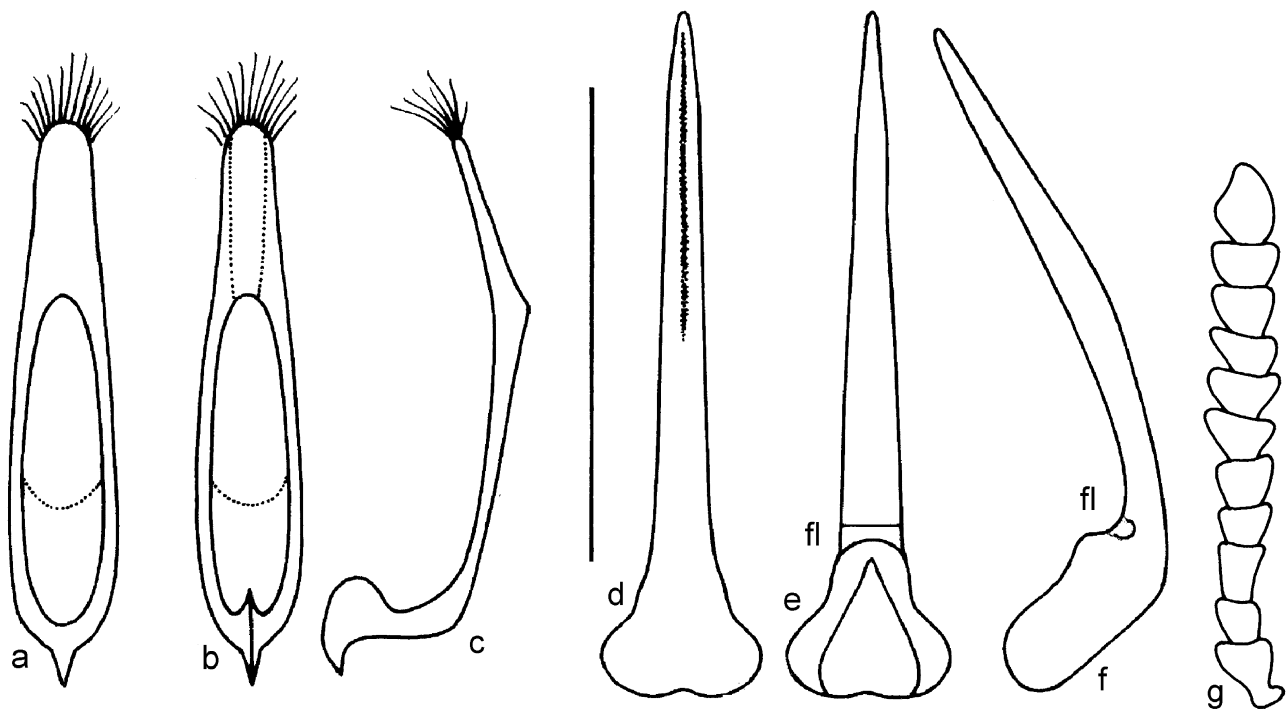


FIGURE 8. Male genitalia of *Arthrobrachus rufitarsis*. Tegmen and parameres: a: dorsal view; b: ventral view; c: lateral view; Median lobe: d: dorsal view; e: ventral view; f: lateral view; Antenna: g. Scale 0.5 mm.

Diagnosis. Body dark-testaceous; antennae with five dilated preapical antennomeres (Fig. 8g); pronotum with an additional carina subparallel to the lateral carina; male ventrite number 6 divided in two separated plates; tegmen without dorsal flange at the base of the parameres and with a great oblongous aperture, tegminal arms thick, first subparallel and after curved towards the apodeme, from a lateral view strongly bent downward near the apodeme (Fig. 8a–c); median lobe almost straight, with narrow basal flexion area (Fig. 8d–f).

Distribution. ARGENTINA: provinces of Santa Fé, Neuquén and Río Negro. CHILE: between provinces of Valparaíso and Valdivia (Fig. 10).

***Arthrobrachus solervicensi* n. sp.**

(Figure 9)

Holotype: Male from Neuquen, Köler //32473// Mus. Arg. Cs. Nat. // *Arthrobrachus solervicensi* Estrada, 2015 (handwritten) // Holotype. Deposited in MACN.

Paratypes: Two males labelled as follows: col. A. Breyer // Neuquen, leg. Köhler // Mus. Arg. Cs. Nat. // *Arthrobrachys testaceolimbatus* Stein (handwritten) // *Arthrobrachus solervicensi* Estrada, 2015 // Paratype. Deposited in MACN (1 ♂). Neuquen, leg. Köhler // Mus. Arg. Cs. Nat. // *Arthrobrachys testaceolimbatus* Steinh. (handwritten) //324723// circular (black) // *Arthrobrachus solervicensi* Estrada, 2015// Paratype. Deposited in MACN (1 ♂).

Etymology. in honour to Professor Jaime Solervicens A., in recognition to the teacher and mentor in the area of the Natural Sciences. For his friendship, example, stimulus, and support in my professional and personal development.

Diagnosis. Generally with five mesally dilated preapical antennomeres (Fig. 9i); pronotum with slightly marked circular impression near hind angles; metasternum with two brush-like short rows of setae located on elevated base; epipleura wide, sides convergent at the apex, without denticles in the inner margin; ventrite 6 of males with a single transverse plate, distal edge with strong V shaped emargination (Fig. 9h); last tergite subsquare, distal angles rounded, distal margin lightly emarginate (Fig. 9h); parameres short, apex wide, truncate, with light central V-shaped emargination, each with a long median and a short lateral tuft of hairs; tegminal plate flat (Fig. 9a–c); median lobe sclerotized, flection area wide (Fig. 9d–f).

Description. Average body length 3.95 mm (range: 3.5–4.5 mm), length: width ratio 2.05:1, sides subparallel; fine punctures in head and pronotum, dense in head and scattered in pronotum, punctuation on elytra coarse and dense; vestiture of thick, short, erect, abundant hairs; head and pronotum black, rest of the body dark testaceous, elytra light testaceous, generally with dark borders; legs orange. Four measured specimens.

Head: Included eyes almost as wide as the apex of the pronotum (0.993:1); antennae almost as long as the pronotum (0.994:1), generally with five mesally dilated preapical antennomeres (Fig. 9i).

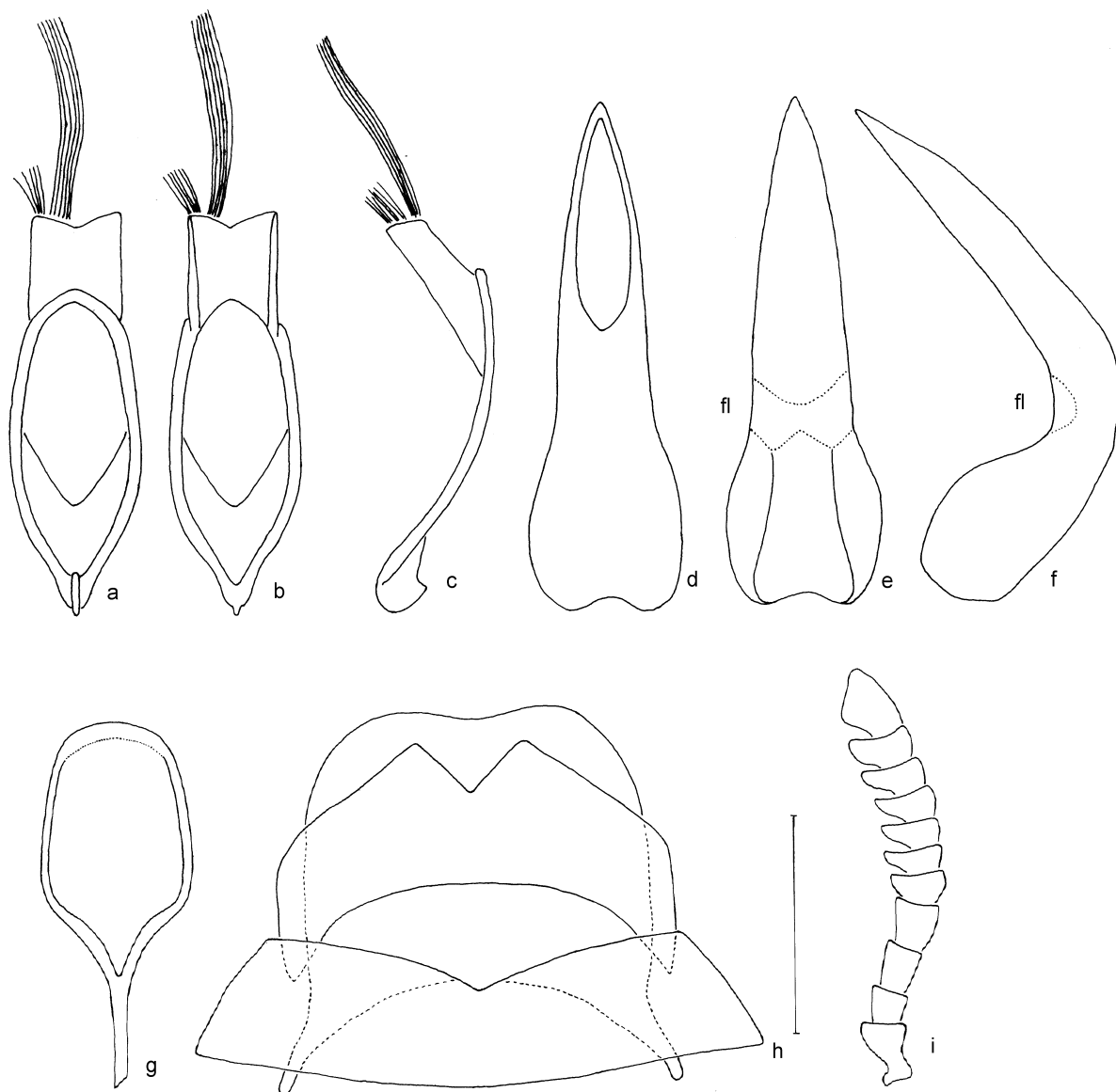


FIGURE 9. *Arthrobrachus solervicensi* n. sp: Male genitalia: Tegmen and parameres: **a**: dorsal view; **b**: ventral view; **c**: lateral view; Median lobe: **d**: dorsal view; **e**: ventral view; **f**: lateral view. Terminal segments of the abdomen: **g**: IX segment; **h**: V, VI ventrites and last tergite; Antenna: **i**. Scale 0.5 mm.

Thorax: Pronotum wider than long (1.4:1), moderately convex transversely and longitudinally, base wider than the apex (1.52:1) and narrower than the humeral region (0.875:1), anterior margin slightly convex, anterior and posterior margins very fine, lateral margins curved, lateral edges of disc flattened, circular impression slightly marked near basal angles; elytra 1.59 (± 0.06) longer than wide, sides subparallel, rounded toward the apex, disc moderately convex, slightly declined in the distal fourth, lateral edges marked, somewhat flattened, almost as wide as the epipleura and of uniform width until the apex; epipleura wide, sides convergent at the apex; metasternum with two brush-like short rows of setae located on elevated base; legs scarcely punctate and subglabrous, all the tibiae with thin spines in the outer margin.

Abdomen: Male ventrite 5 moderately curved ventrally, distal margin lightly emarginated at center; ventrite 6 with a single transverse sclerotized plate, distal edge with a strong V shaped emargination, base with subtriangular less sclerotized central area; last tergite subsquare with rounded distal angles and less sclerotized basal central area, distal margin lightly emarginated (Fig. 9h); segment 9 with tergum almost membranous, like a narrow strip, with fine sternal arms and moderately long apodema (Fig. 9g). Genitalia: Parameres short and wide, moderately convex, sides subparallel, apical margin truncated with light central V shaped emargination and with a long mesal and a short lateral tuft of hairs on each side, lateral margins slightly bent mesally, from a lateral view its ventral margin forming an obtuse angle with the tegmen, base of parameres with marked dorsal flange; lateral arms of tegmen moderately thick and parallel, convergent at the base, tegminal plate flat, weakly sclerotized, distal margin emarginated, apodeme flat, hooklike (Fig. 9a–c); median lobe sclerotized, subcylindrical, sides strongly convergent toward the apex, straight from a lateral view, forming an obtuse angle with the apodeme, apex acuminate, dorsal surface membranous at apical half, flection area wide, apodeme long (Fig. 9d–f).

Distribution. ARGENTINA (Fig. 10): Provinces of Neuquén (IPCN, MACN) and Río Negro (IPCN, MACN).

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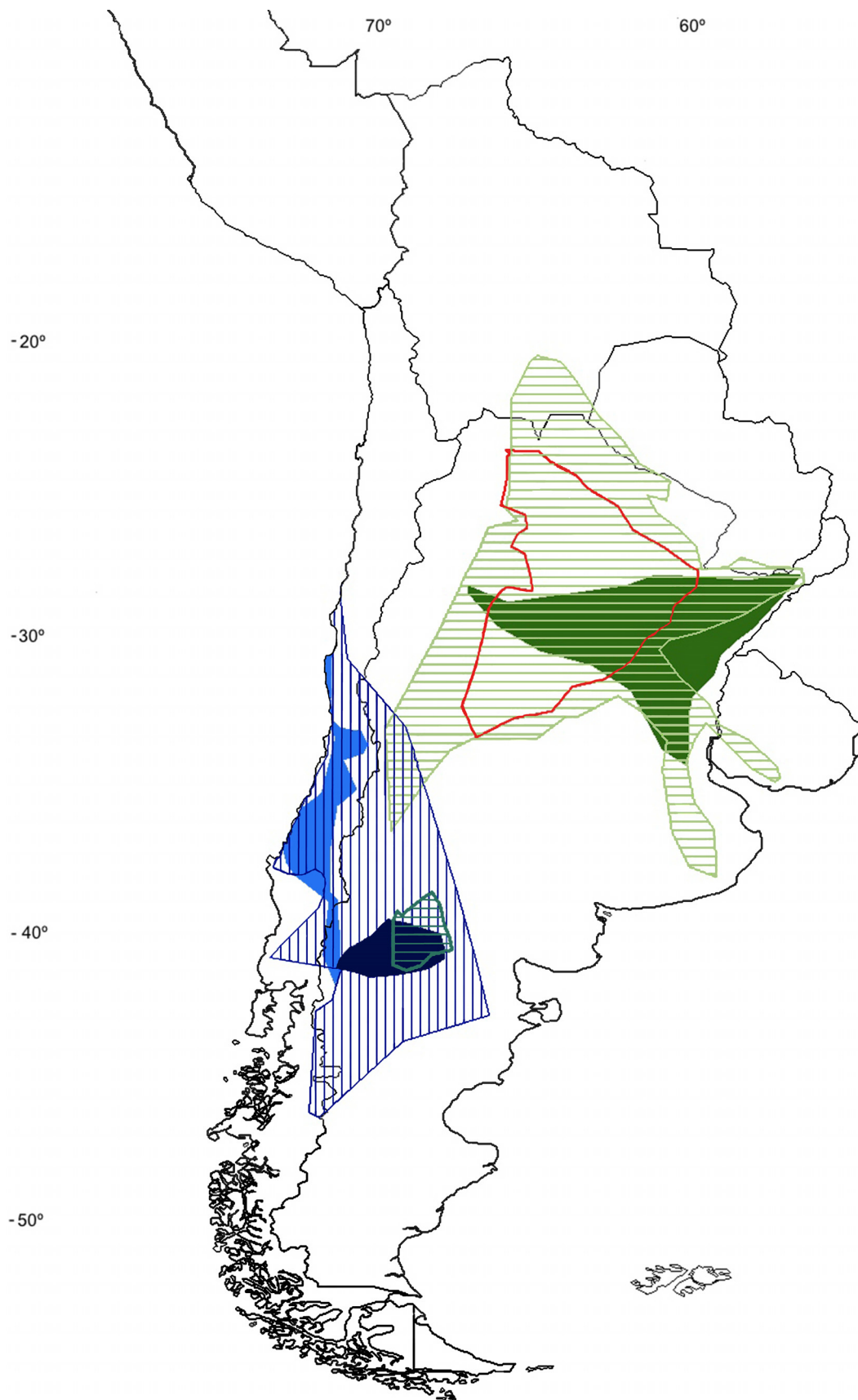


FIGURE 10. Geographic distributions of: *A. antonioi* n. sp. red line area; *A. armandoi* n. sp. dark blue solid area; *A. eloisae* n. sp. green solid area; *A. flavomarginatus*, light green horizontal lines area; *A. nigromaculatus*, blue vertical lines area; *A. ruftarsis*, light blue solid area; *A. solervicensi* n. sp. dark cyan horizontal lines area.