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***Austrelmis* Brown (Coleoptera: Byrrhoidea: Elmidae) from Argentina: five new species**

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Abstract

Material belonging to the genus *Austrelmis* Brown, from different localities from northwestern Argentina, is studied and described. Five new species are described and illustrated from adults of both sexes: *Austrelmis argentinensis* sp. nov., *A. catamarcensis* sp. nov., *A. talampayensis* sp. nov., *A. tafi* sp. nov. and *A. robustus* sp. nov. The new species are compared to other known species of the genus. A comparative table summarizing the most important characters used to identify the Argentine species of *Austrelmis* and a distributional map for Argentina are included.

Key words: Elminae, riffle beetles, Neotropical Region, aquatic insects, taxonomy

Introduction

The genus *Austrelmis* Brown, 1984 belongs to the subfamily Elminae, and includes 21 species and 2 subspecies, most of them described originally in the genus *Macrelmis* Motschulsky, 1860. Brown (1984) transferred all the species previously included in *Macrelmis*, except the type species, to the new genus *Austrelmis*, and provided a list of all known species of the new genus. *Austrelmis* is endemic to the Neotropical Region and appears to be confined to the Andes and related foothills of western South America (Brown 1984; Manzo & Archangelsky 2012). Their distribution includes Ecuador, Peru, Bolivia, Chile, Argentina and Uruguay (although this last site seems doubtful). Of the 21 known species, one species is recorded from Ecuador: *A. leleupi* (Delève 1968); seven species are recorded only from Peru: *A. condimentaria* (Philippi 1864), *A. confluenta* (Hinton 1940), *A. confusa* (Hinton 1940), *A. dorotae* Więźlak (1987), *A. glabra* (Hinton 1940), *A. lata* (Hinton 1940) and *A. steineri* (Spangler 1980); two subspecies and three species are recorded only from Bolivia: *A. consors mooni* (Hinton 1940), *A. gardineri* (Hinton 1940), *A. thermarum* (Hinton 1940), *A. tibialis* (Grouvelle 1896) and *A. woytkowskii bicolor* (Janssens 1957); three species are recorded from Peru and Bolivia: *A. consors* (Hinton 1940), *A. gilsoni* (Hinton 1940) and *A. peruana* (Hinton 1937); four species are recorded only from Chile: *A. anthracina* (Germain 1892), *A. chilensis* (Germain 1854), *A. costulata* (Janssens 1957) and *A. elegans* (Janssens, 1957); one species is recorded from Peru, Chile and Bolivia: *A. woytkowskii* (Hinton 1937, Janssens 1957) and one species is recorded from Argentina: *A. patagonicus* Manzo & Archangelsky (2012). Finally there is a doubtful record from Bolivia; when Więźlak (1987) transferred *Austrelmis flavitarsis*, described by Grouvelle (1987) within the genus *Elmis*, he mentions Bolivia as type locality for this species. However in the original description by Grouvelle, the type locality says Uruguay, and not Bolivia. The catalogues of Blackwelder (1944) and Junk (1910) also mention Uruguay as the type locality of *Elmis flavitarsis*. Considering that all known species of the genus have an Andean distribution, it is probable that this species could belong to another genus.

In this work, we describe and illustrate five new species of *Austrelmis* from northwestern Argentina; we include a comparative table summarizing the most important characters used to identify the species of *Austrelmis* from Argentina and a distributional map for this country.

Material and methods

The material was fixed in the field and stored in 75% ethyl alcohol. Specimens were dissected to illustrate male and female genitalia. Genitalia of all species were cleared with concentrated lactic acid for several days before examination. Drawings were done with an Olympus BH-2 microscope and a Leica Wild M3Z stereomicroscope, both with camera lucida. We follow the adult morphological nomenclature of Hinton (1940) and Kodada & Jäch (2005). Drawings were scanned and digitally edited. All available geographical records of the *Austrelmis* from Argentina were mapped with DIVA-GIS (Hijmans *et al.*, 2012).

Holotypes and paratypes are deposited in the collection of Instituto de Biodiversidad Neotropical (IBN), Tucuman, Argentina. For comparative observations, adults of *Austrelmis patagonicus* Manzo & Archangelsky were borrowed from Instituto–Fundación Miguel Lillo (IFML), Tucuman, Argentina.

Results and discussion

Austrelmis argentinensis sp. nov.

(Figs 1a; 2 a–c)

Diagnosis. This new species may be distinguished from all the other known *Austrelmis* species by the following combination of characters: 1) pronotum with sublateral carinae deeply and completely divided at basal 2/3 by a broad oblique impression; 2) prosternum with short and basal lateral carinae; 3) metaventrite without lateral carinae; 4) disc of ventrite I with complete lateral carinae; 5) hind legs as long as or longer than length of body; 6) sixth and eighth elytral intervals carinate; 6) aedeagus long; penis elongate, apex rounded, fibula and corona present; basolateral apophyses short; parameres distinctly shorter than penis; phallobase longer than penis and closed.

Description. Holotype: male. Body elongated, moderately convex. Length: 2.10 mm; greatest width: 0.90 mm (at midlength of elytra).

Color: pronotum and elytral suture dark brown, ventral body and legs reddish brown; elytra reddish.

Plastron: covering genae, sides of prosternum, meso- and metaventrite, inner face of coxae, femora, epipleura and sides of all ventrites.

Head: partially retractable, surface microreticulated, rugose, with sparse golden setae; two longitudinal narrow impressions on lateral inner margins of eyes. Fronto–clypeal suture deep; clypeus broad, surface like that of head. Labrum subrectangular, transverse, anterolateral margins with long golden setae, surface microreticulate. Antennae 11-segmented, apical segment longest with cluster of apical setae.

Thorax. Pronotum: wider than long (length: 0.70 mm; width: 0.75 mm) at base (Fig. 1a); lateral margins subparallel and sinuate, with acute and long anterolateral angles, posterolateral angles acute and short. Base trisinate, with two small suboval depressions on each side of scutellum. Sublateral carinae present, extending from base to anterior margin; carinae completely divided by a broad oblique impression. Disc without impressions, surface punctured, punctures smaller than the facets of eyes, separated by 1–2 times their diameter, surface between punctures microreticulated and rugose, with golden and long dispersed setae. Surface on basal third and lateral area of pronotum with large and deep punctures, separated by ½ their diameter. Hypomeron: surface microreticulated and rugose. Prosternum wider than diameter of procoxa; short basal carinae; prosternal process almost as wide as long, subquadrate; apex straight. Mesoventrite: with groove for reception of prosternal process. Metaventrite: surface smooth, with large punctures separated by 1–1½ times their diameter and short golden setae; with complete median longitudinal line; disc without lateral carinae.

Legs: elongate, those of metathorax longest; legs as long as length of body (forelegs 2.10 mm) or longer than body length (middle legs 2.20 mm, hind legs 2.30 mm). Tibiae densely setose. Pro- and metatibiae with a single apicolateral cleaning fringe on apical half; mesotibia with apicolateral and lateroventral cleaning fringe on 1/3 and 2/3 respectively. Tarsi 5-segmented, tarsomeres with golden setae, fifth tarsomere longest; tarsal claws long, not modified.

Elytra: length: 0.70mm; greatest width 0.90 mm (at midlength); with ten punctuate striae; striae formed by punctures smaller than the facet of eyes, separated by 3–4 times their diameter; intervals flat, with micropunctures;

sixth interval with short basal carinae; eighth interval with complete carinae; elytral apex protruded. Scutellum subtriangular, surface with large and deep punctures.

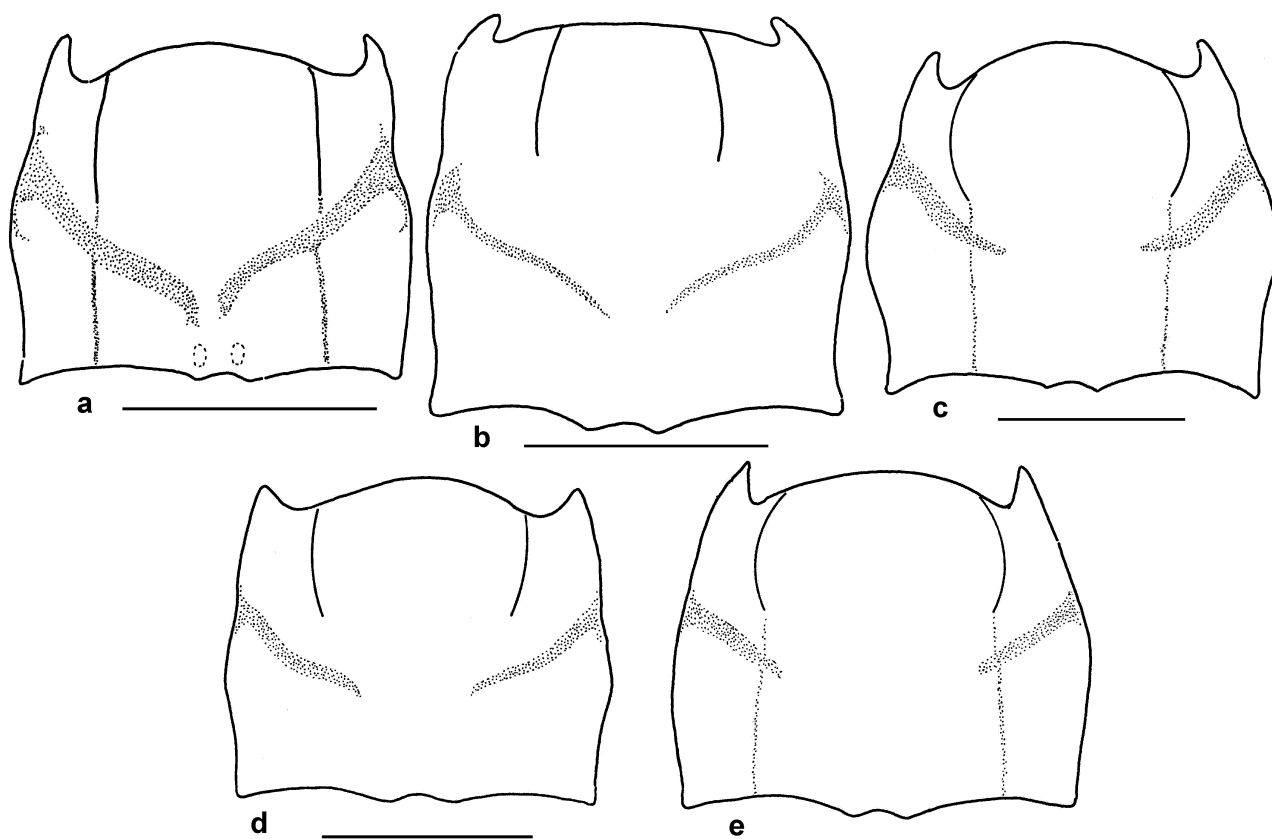


FIGURE 1. Pronota of *Austrelmis* species: a) *A. argentinensis* sp. nov.; b) *A. catamarcensis* sp. nov.; c) *A. tafi* sp. nov.; d) *A. talampayensis* sp. nov.; e) *A. robustus* sp. nov. Scale bars 0.5 mm.

Abdomen: ventrites weakly convex; surface with punctures like those on metaventrite; disc of ventrite I with complete lateral carinae; ventrite V with lateral margin produced as prominent tooth; apex rounded, apical margin with short golden setae.

Male genitalia: aedeagus (Figs 2 a–b) long and moderately broad. Penis elongate, subtriangular, apex rounded; fibula and corona present; basolateral apophyses short. Parameres subtriangular, distinctly shorter than penis. Phallobase large, longer than penis, closed.

Female: externally similar to male except: 1) surface of metaventrite and all ventrites with small punctures separated by 2–3 times their diameter; setae very dispersed.

Female genitalia: as in Fig. 2c.

Intraspecific variation: 1) elytral cuticle of the some examined specimens dark brown and with a humeral reddish spot; 2) some females with long and golden setae on apex of ventrite V.

Type series. Holotype (dissected and illustrated): Male. Argentina: Jujuy Province, Parque Nacional Calilegua, Aguas Negras River, 23°45'44" S 64°50'56" W, 31-V-2000, V. Manzo leg. Paratypes: 52 males and 43 females, same data as holotype; 25 males and 26 females, Departamento El Bananal, Las Piedras River, 23°30'47" S 64°33'09" W, 580 m, 1-VI-2000, V. Manzo leg.; 22 males and 22 females, 11 km before PN Calilegua, Zora River, 23°45'04" S 64°41'27" W, 410 m, 2-VI-2000, V. Manzo leg. Salta Province, 1male, Tala River, 17-IX-1998, E. Domínguez leg.; 2 males and 1 female, PN El Rey, La Sala stream, 24°43'35" S 64°39'44" W, 9 specimens, Los Noques stream, 24°47'52" S 64°37' W, 23-III-1999 H. Fernández and F. Romero leg., 15 specimens, La Sala stream (Intendencia, PN El Rey), 24°43'33" S 64°38'36" W, 23-III-1999, H. Fernández and F. Romero leg.; 12 specimens, Rosario de la Frontera, tributary of Horcones River, 25°50'13" S 64°56'14" W, 2-III-2000, V. Manzo, F. Romero and C. Molineri leg. Catamarca Province, 6 specimens, Pampichuelas stream, 28°40'18" S 66°04'44" W, 980 m, 20-XII-2000, H. Fernández, F. Romero and V. Manzo leg.; 7 males and 4 female, El Arbolito stream, 28°37'13" S 66°02'05

"W, 1040 m, 20-XII-2000, H. Fernández, F. Romero and V. Manzo leg.; 3 male and 3 female. Tucumán Province; 15 specimens, Departamento Taf Viejo, Raco, RP 341 (km 19), Palangana stream, 26°39'59"S 65°24'49"W, 1000 m, 28-XII-2000, C. Molineri leg.; 27 specimens, Liquimayo stream, 26°39'5"S 65°26'42"W, 29-XII-2000, C. Molineri leg.; La Hoyada River, 26°46'15" S 65°28'4" W 29-XII-2000, 53 specimens, Lules River basin, 26°21'56" S 65°54'12" W, 2-VII-1999, H. Fernández, F. Romero y V. Manzo leg.; 38 specimens, Lules River 26°51'32" S 65°25'31" W, 7-XII-1999, H. Fernández, F. Romero and V. Manzo leg., 58 specimens, Departamento Burruyacu, Artaza stream, 26°36'13" S 65°02'36", 30-VIII-2008, V. Manzo and F. Romero leg.; 66 specimens, Medina River, 26°32'29" S 65°01'42" W, 740 m, 8-V-2000, H. Fernández, F. Romero, V. Manzo and M. Orce leg.

Etymology. Named *argentinensis* for the country where the type specimens were collected.

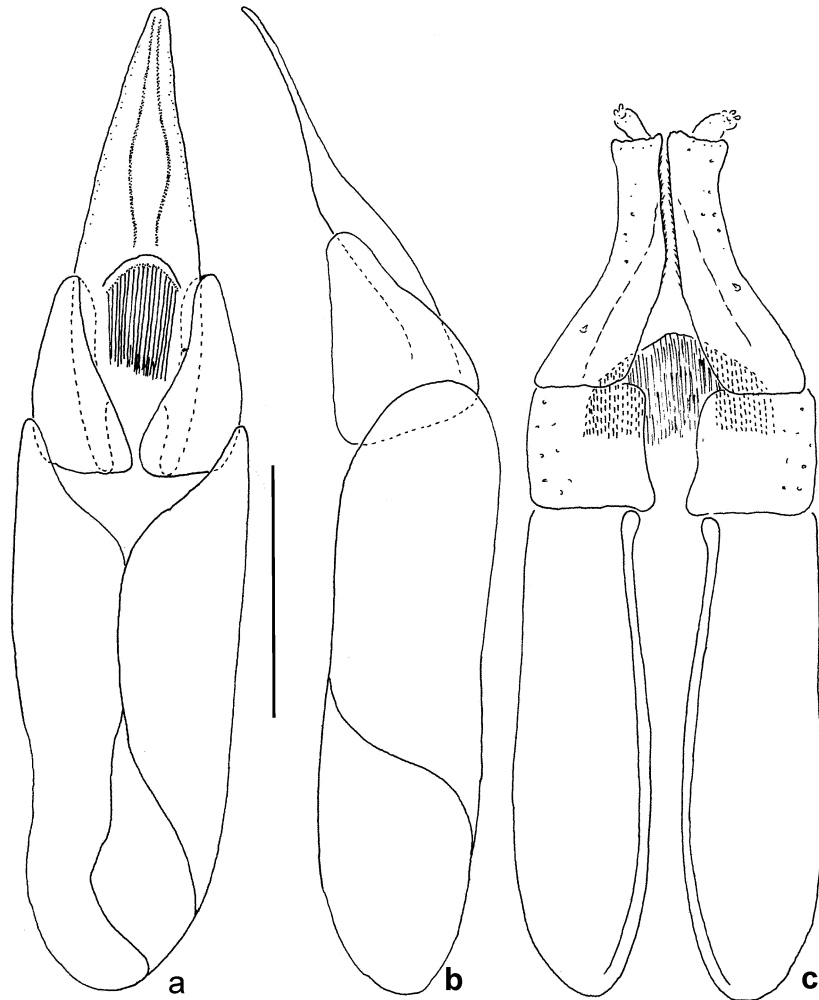


FIGURE 2. *Austrelmis argentinensis* sp. nov. (holotype): a) male genitalia, dorsal view; b) male genitalia, lateral view; c) female genitalia, ventral view. Scale bars 0.2 mm.

***Austrelmis catamarcensis* sp. nov.**

(Figs 1b; 3 a–c)

Diagnosis. This new species may be distinguished from all the other known *Austrelmis* species by the following combination of characters: 1) pronotum with sublateral carinae present on apical 1/3; 2) prosternum with lateral carinae on basal 2/3; 3) metaventrite and disc of ventrite I without lateral carinae; 4) elytral carinae absent; 5) aedeagus long; penis elongate, constricted on basal third; fibula and corona absent; basolateral apophyses long; parameres shorter than penis; phallobase longer than penis, closed.

Description. Holotype: male. Body elongated, sides subparallel, moderately convex. Length: 3.40 mm; greatest width: 1.30 mm (posterior third of elytra).

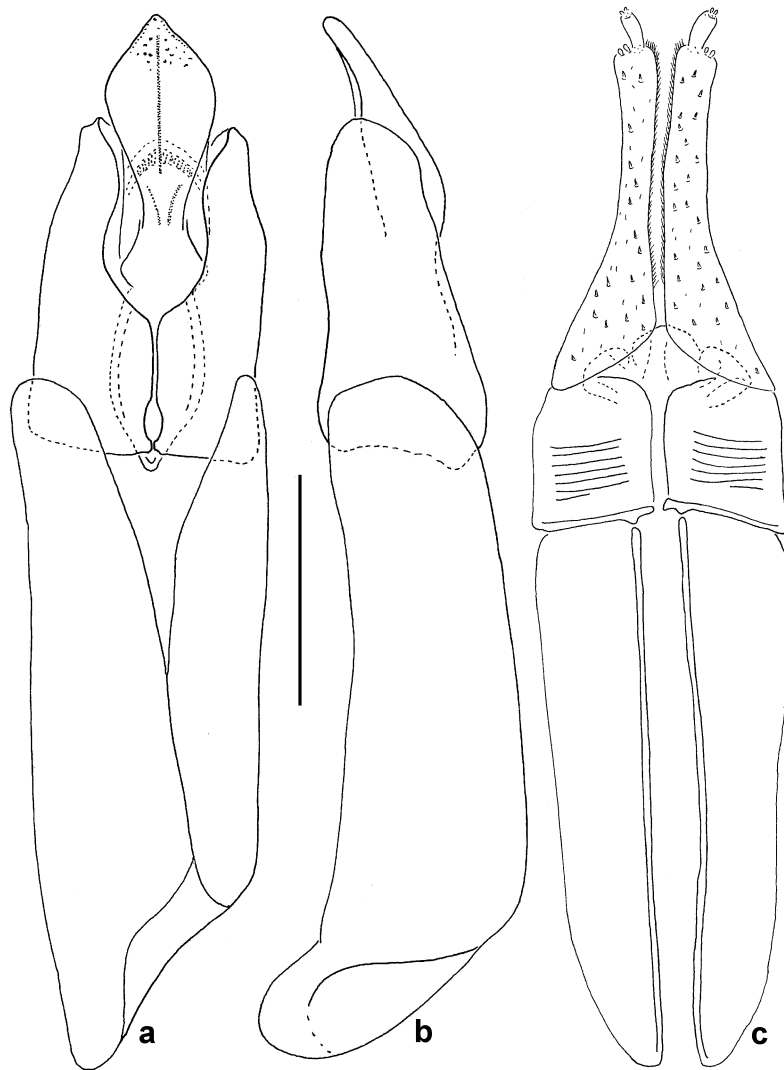


FIGURE 3. *Austrelmis catamarcensis* sp. nov. (holotype): a) male genitalia, dorsal view; b) male genitalia, lateral view; c) female genitalia, ventral view. Scale bars 0.2 mm.

Color: pronotum and scutellum dark brown; elytra reddish brown; antennae, mouthparts, ventral body and legs reddish dark.

Plastron: covering sides of prosternum, meso- and metaventrite, inner face of coxae, femora, epipleura and sides of all ventrites.

Head: retractable, surface microreticulated, punctured with sparse golden setae; punctures as large as facets of eyes, separated by 2 times their diameter. Fronto-clypeal suture straight and deep; clypeus broad, surface with punctures like those on head. Labrum subquadrangular, surface smooth without punctures, with sparse golden setae, anterolateral margins with numerous golden setae. Antennae with 11 antennomeres, apical segment longest.

Thorax. Pronotum: almost as long as wide (length: 0.90mm; width: 0.91 mm) (Fig. 1b). Anterior margin almost straight; lateral margins subparallel, anterolateral angles acute, posterolateral angles blunt; base trisinate. Disc convex with weak and oblique impression on basal sides; surface punctured, punctures as wide as facets of eyes separated by 1–2 times their diameter. Surface between punctures shiny and smooth, with sparse golden setae. Sublateral carinae present only on apical 1/3; moderately arcuate outwards. Surface between sublateral carinae and lateral margins densely punctured, punctures smallest than those on disc, separated by 2–3 times their diameter.

Hypomeron: surface microreticulated and rugose. Prosternum more than twice the diameter of procoxa; with lateral carinae extending on basal 2/3; prosternal process almost as wide as long, subquadrate; apex straight. Mesoventrite with groove for reception of prosternal process. Metaventrite with smooth surface and deep punctures, punctures larger than facet of eyes, separated by 1–2 times their diameter and with short golden setae;

without sublateral carinae; with complete median longitudinal line; posterior third of disc with a depression in middle.

Legs: elongate. Tibiae with two apical cleaning fringes; pro- and metatibiae with lateral and lateroventral cleaning fringes on apical 2/3 and 1/3 respectively; mesotibia with lateral and anteroventral cleaning fringes on apical 2/3. Length: forelegs 1.98 mm, middle legs 2.25 mm, hind legs 2.40 mm. Tarsi 5-segmented, tarsomeres with golden setae, fifth tarsomere longest; tarsal claws long and slender; not modified.

Elytra: more than twice as long as pronotum (length: 2.40 mm; greatest width: 1.30 mm); ten punctuate striae formed by punctures larger than facet of eyes, separated by one time their diameter; intervals flat, surface microreticulated, with short golden setae; without carinae; elytral apex moderately protruded. Scutellum subtriangular, longer than wide, surface microreticulated.

Abdomen: ventrites convex; surface deeply punctured, punctures larger than facet of eyes, separated by 1–2 times their diameter and with short golden setae; surface smooth; disc of ventrite I without carinae; ventrite V with lateral margin produced as a tooth; apex rounded, margin with densely distributed golden setae.

Male genitalia: aedeagus (Figs 3 a–b) long and moderately broad. Penis elongate, apex rounded; constricted at basal third; fibula and corona absent; ventral sac well developed; basolateral apophyses slender and long. Parameres subtriangular, shorter than penis. Phallobase asymmetrical, longer than penis, closed.

Female: externally similar to male except for surface of metaventrite and ventrite I with small punctures, separated by 2–3 times their diameter.

Female genitalia: as in Fig. 3c.

Type series. Holotype (dissected and illustrated): Male. Argentina: Catamarca Province: 4.5 km before Las Peladas, near Paso San Francisco (Pozón), 27°02'00S 68°04'11W, 3925 m, 24-II-2001, M. Archangelsky col. Paratypes: 6 females and 8 males same data as holotype.

Etymology. Named *catamarcensis* for the province (Catamarca) where the type specimens were collected.

***Austrelmis tafi* sp. nov.**

(Figs 1c; 4 a–c)

Diagnosis. This new species may be distinguished from all the other known *Austrelmis* species by the following combination of characters: 1) pronotum with complete sublateral carinae, divided at basal 2/3 by oblique impression; carinae more evident on apical half, hardly perceptible basally; 2) prosternum with lateral carinae on basal two thirds; 3) metaventrite without lateral carinae; 4) disc of ventrite I with complete lateral carinae; 5) aedeagus long; penis wide, fibula and corona present, basolateral apophyses short; parameres shorter than penis; phallobase longer than penis, open.

Description. Holotype: male. Body elongated, sides subparallel. Length: 3.40 mm; greatest width: 1.30 mm (posterior third of elytra).

Color: cuticle dark brown; antennae, mouthparts and legs reddish dark.

Plastron: covering genae, sides of prosternum, meso- and metaventrite, epipleura (except apical area), inner face of coxae, femora and sides all ventrites.

Head: surface punctured, punctures as wide as facet of eyes, punctures separated by 1–2 times their diameter, surface between punctures smooth and shiny. Fronto-clypeal suture straight; clypeus subrectangular, surface with punctures like those on head. Labrum rounded, lateral margins with long golden setae. Antennae with 11 antennomeres, apical segment longest.

Thorax. Pronotum: wider than long (length: 0.80 mm; width: 1.00 mm) (Fig. 1c). Lateral margins sinuous, anterior margin arcuate, anterolateral angles long and acute; posterolateral angles short and weakly acute, base trisinate. Surface punctured, shiny and smooth between punctures; disc convex, surface with punctures of two sizes: larger and smaller than facets of eyes, both separated by 1–1½ times their diameter, randomly distributed. Surface on lateral and basal area microreticulated with punctures larger than facet of eyes and dispersed golden setae. Sublateral carinae complete, divided at basal 2/3 by the oblique impression; carinae more prominent on apical half and moderately arcuate outwards, hardly perceptible at base. Hypomeron: surface microreticulated and rugose. Prosternum wide, with sublateral carinae present on basal 2/3. Prosternal process almost as wide as long, apex straight. Metaventrite: with groove for reception of prosternal process; punctured, punctures like those on

pronotum, separated by 1–2 times their diameter, surface between punctures smooth; with dispersed setae; with complete median longitudinal line and without lateral carinae.

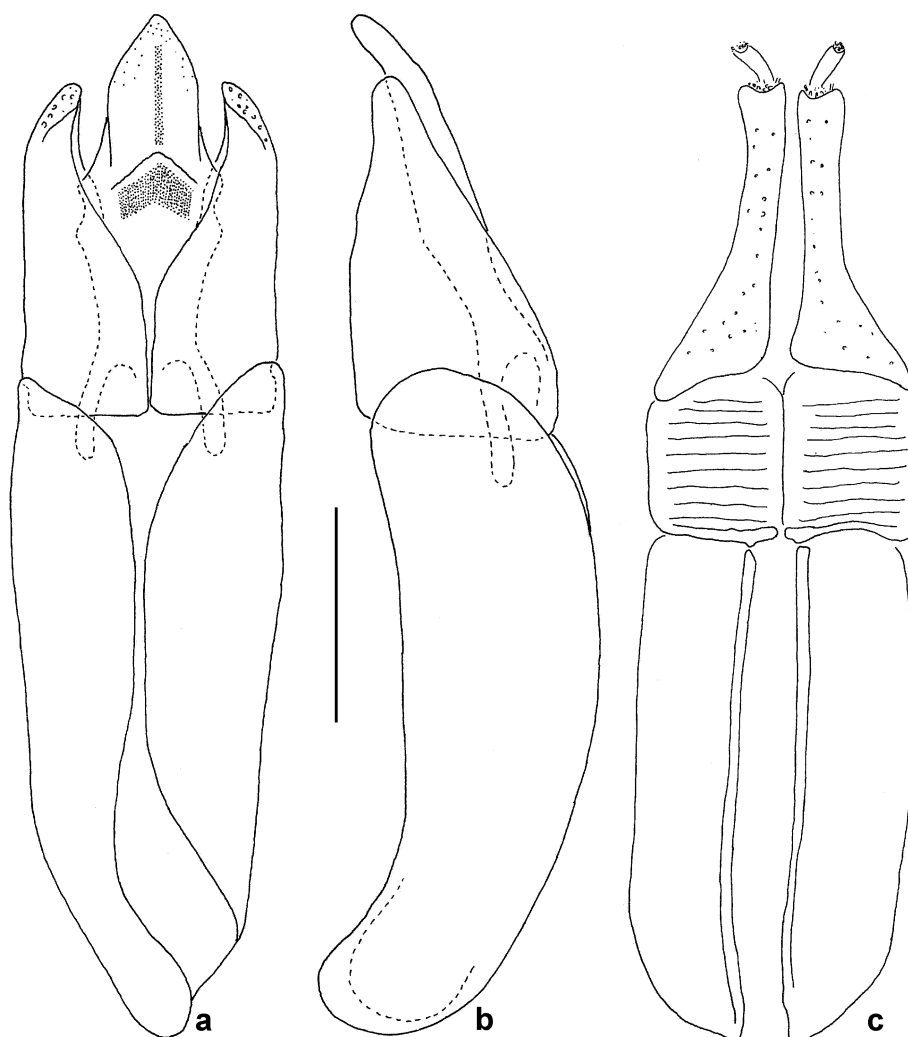


FIGURE 4. *Austrelmis tafi* sp. nov. (holotype): a) male genitalia, dorsal view; b) male genitalia, lateral view; c) female genitalia, ventral view. Scale bars 0.2 mm.

Legs: elongated. Pro- and metatibiae with lateral cleaning fringe on apical 2/3; mesotibia with lateral and lateroventral cleaning fringes on apical 1/3 and 2/3 respectively. Length: forelegs 2.25 mm, middle legs 2.26 mm, hind legs 2.40 mm. Tarsi 5-segmented, tarsomeres with golden setae, fifth tarsomere longest; tarsal claws long and slender; not modified.

Elytra: more than twice as long as pronotum (length: 2.35mm, greatest width: 1.30 mm), with ten punctate striae, punctures larger than facet of eyes, separated by 1–1½ times their diameter; elytral intervals flat, surface microreticulated and punctured with dispersed punctures and golden setae; sixth interval with carina present on basal half; eighth interval with carina extending from base to apical 4/5; elytral apex rounded. Scutellum trapezoidal, almost as wide as long; surface with small and dispersed punctures.

Abdomen: ventrites weakly convex; surface with punctures like those on metaventrite, with long and dispersed golden setae. Disc of ventrite I with complete lateral carinae; ventrite V with lateral margin produced as prominent tooth; rounded apex with golden setae.

Male genitalia: aedeagus (Figs 4 a–b) long and moderately broad. Penis wide, narrower at acute apex; fibula and corona present; basolateral apophyses slender and short. Parameres subtriangular, shorter than penis. Phallobase asymmetrical, longer than penis, open.

Female: externally similar to male.

Female genitalia: as in Fig. 4c.

Type series. Holotype (dissected and illustrated). Male. Argentina: Tucumán Province, Taf del Valle (near El Infiernillo), Amaicha River, 26°42'17"S65°47'59"W, 2860 m, 11-X-2000, V. Manzo and L. Oroño leg. Paratypes: 110 females and 34 males same data as holotype; 4 males and 10 females, Santa Cruz, Cerro Muñoz, 26°54'00" S 65°47'50"W, 2620 m. 7-I-2001, C. Molineri leg.; 9 males and 14 females, El Infiernillo, 26°42'50" S 65°47'45" W, 2900 m. 30-VIII-2000, E. Domínguez, C. Molineri, W. Flowers and C. Nieto leg.

Etymology. Named *tafi*, for the locality Tafi del Valle, intermountain valley, from which the type specimens were collected.

***Austrelmis talampayensis* sp. nov.**

(Figs 1d; 5 a–c)

Diagnosis. This new species may be distinguished from all the other known *Austrelmis* species by the following combination of characters: 1) pronotum with sublateral carinae on apical 2/5; 2) prosternum with lateral carinae on basal half; 3) metaventrite and disc of ventrite I with complete lateral carinae; 4) sixth elytral interval with short basal row of granules and eighth interval with complete carina; 5) aedeagus long; penis elongate, apex slightly folded forward; fibula and corona present; basolateral apophyses short; parameres shorter than penis; phallobase longer than penis, open.

Description. Holotype: male. Body elongated, sides subparallel. Length: 3.15 mm; greatest width: 1.30 mm (at midlength of elytra).

Color: pronotum dark, elytra reddish dark; antennae, mouthparts and legs reddish.

Plastron: covering genae, sides of prosternum, sides of meso- and metaventrite, sides of all ventrites, epipleura, inner face of coxae and all femora.

Head: surface punctured, punctures as wide as facets of eyes, separated by 2–3 times their diameter; surface between punctures microreticulated and rugose, with dispersed long golden setae. Fronto-clypeal suture deep and straight; surface of clypeus like head. Labrum subrectangular, lateral margin rounded; surface with dispersed golden setae and punctured, small punctures separated by 2–3 times their diameter; surface between punctures shiny. Antennae with 11 antennomeres, apical segment longest.

Thorax. Pronotum: wider than long (length: 0.75 mm; width: 0.90 mm) (Fig. 1d) with oblique and lateral impression at 3/5 of pronotum; lateral margins moderately sinuate, anterior margin arcuate, anterolateral angles long and acute; posterolateral angles short, subacute; base trisinuose; surface punctured and microreticulated, with dispersed long and golden setae. Disc convex; surface with punctures larger than the facet of eyes, separated by 2–2½ times their diameter. Sublateral carinae on apical half, curved outwards and very evident. Surface on lateral margin and base granulated; granules as wide as facets of eyes, separated by 1–1½ times their diameter.

Hypomeron: surface microreticulated, with dispersed granules. Prosternum wide; lateral carinae present on basal half; prosternal process subquadrangular, almost as wide as long, apex straight. Mesoventrite: with groove for reception of prosternal process. Metaventrite: surface punctured, punctures larger than facet of eyes, separated by 2–3 times their diameter; surface between punctures smooth and shiny; lateral surface with dispersed oval granules; lateral carinae complete, disc with complete median longitudinal line.

Legs: elongated. Surface of all tibiae and femora with dispersed oval granules. Tibiae with a single lateral cleaning fringe on apical 2/3. Length: forelegs 2.10 mm, middle legs 2.15 mm, hind legs 2.50 mm. Tarsi with 5-segmented; fifth tarsomere longest; tarsal claws long and slender, not modified.

Elytra: (length: 2.15 mm; greatest width: 1.30 mm) with ten punctate striae, striae formed by large punctures, punctures separated by one time their diameter; elytral intervals punctured, punctures small, separated by 2–3 times their diameter; sixth interval with short basal row of subovate granules; eighth interval with complete carina; elytral apex weakly protruded. Scutellum subtriangular, surface punctured, punctures small, separated by 2–3 times their diameter.

Abdomen: ventrites convex; surface with punctures like those on metaventrite. Disc of ventrite I with complete lateral carinae; surface of ventrite V with dispersed granules; lateral margin produced as prominent tooth; apex rounded with short golden dense setae.

Male genitalia: aedeagus (Figs 5 a–b) long and moderately broad. Penis elongate, subtriangular, apex rounded and slightly folded forward (in dorsal view); fibula and corona present; basolateral apophyses slender and short.

Parameres subtriangular, shorter than penis, with rounded apices. Phallobase asymmetrical, longer than penis, open.

Female: externally similar to male.

Female genitalia: as in Fig. 5c.

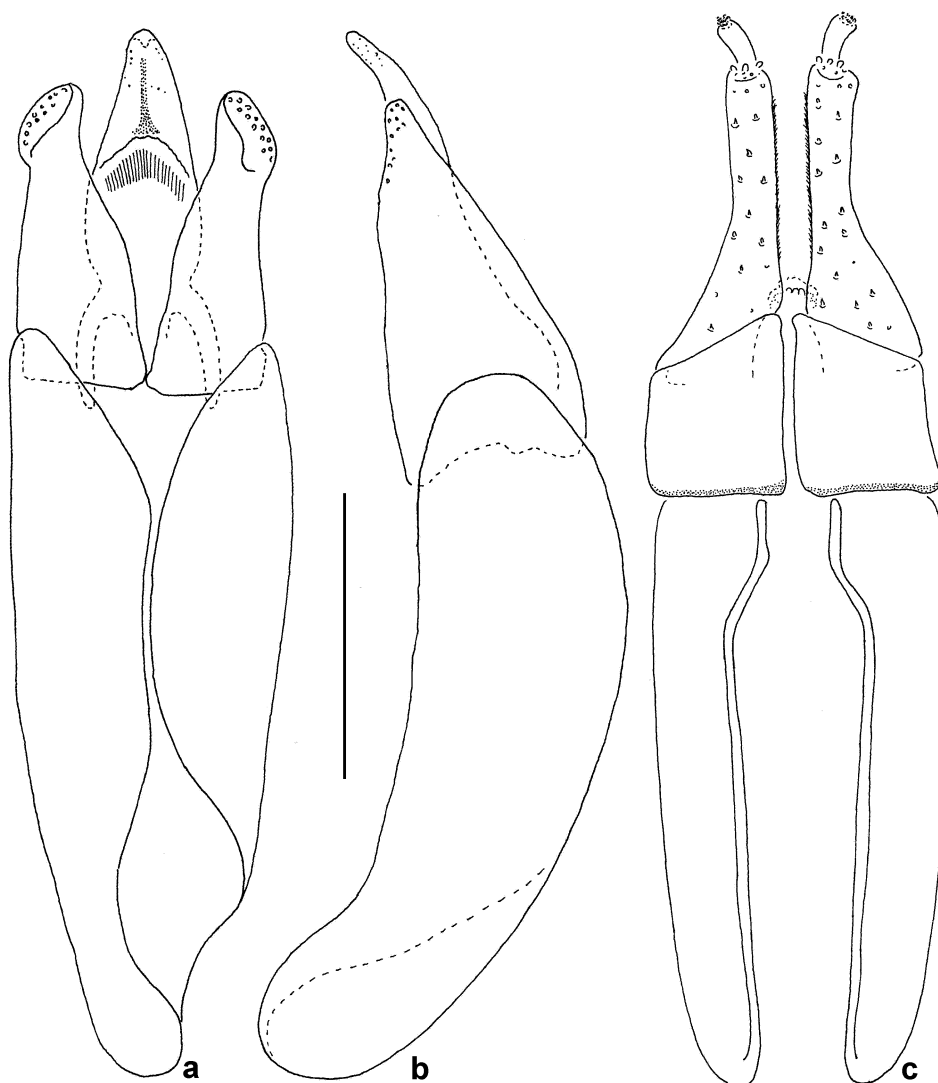


FIGURE 5. *Austrelmis talampayensis* sp. nov. (holotype): a) male genitalia, dorsal view; b) male genitalia, lateral view; c) female genitalia, ventral view. Scale bars 0.2 mm.

Intraspecific variation: cuticle of some specimens light brown, almost yellow, except anterior margin of pronotum (dark brown); surface of pronotum punctured, punctures large, separated by 2–3 times their diameter; elytral striae with large punctures.

Type series. Holotype (dissected and illustrated): Male. Argentina: La Rioja Province, Parque Nacional Talampaya, Shimpa River (estación I), 3- VIII-1999, M. Archangelsky leg. Paratypes: 19 males and 46 females, same data as holotype.

Etymology. Named *talampayensis*, for the locality, Talampaya, where the type specimens were collected.

***Austrelmis robustus* sp. nov.**

(Figs. 1e; 6 a–c)

Diagnosis. This new species may be distinguished from all the other known *Austrelmis* species by the following combination of characters: 1) pronotum with complete sublateral carinae, more prominent on apical 2/5 and hardly

perceptible at base; 2) prosternum with lateral carinae in basal half; 3) metaventrite and disc of ventrite I with complete lateral carinae; 3) eighth elytral intervals with complete carinae; 4) aedeagus long; penis elongate, apex slightly folded forward (in dorsal and lateral view); fibula and corona present; basolateral apophyses short; parameres subtriangular, shorter than penis; phallobase asymmetrical and open.

Description. Holotype: male. Body subovate, robust, convex. Length: 2.60 mm; greatest width: 1.30 mm (at midlength of elytra).

Color: cuticle shiny, dark; antennae, mouthparts and legs reddish dark.

Plastron: covering genae, sides of prosternum, meso- and metaventrite, inner face of coxae, femora, epipleura and sides of all ventrites.

Head: surface microreticulated and rugose, with disperse golden setae. Fronto-clypeal suture straight; clypeus broad, surface as that of head. Labrum subrectangular, lateral angles with long golden setae; surface smooth; anterior margin smooth and shiny. Antennae with 11 antennomeres, apical segment longest.

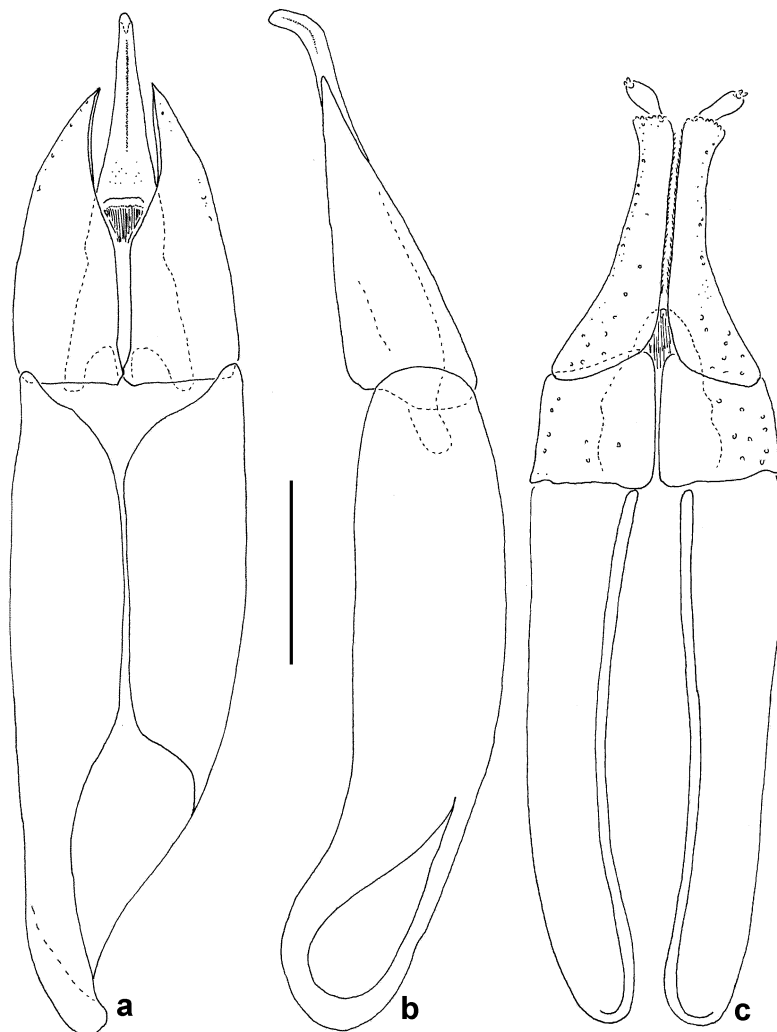


FIGURE 6. *Austrelmis robustus* sp. nov. (holotype): a) male genitalia, dorsal view; b) male genitalia, lateral view; c) female genitalia, ventral view. Scale bars 0.2 mm.

Thorax. Pronotum: wider than long (length: 0.75 mm; width: 0.97 mm) (Fig. 1e), with oblique and lateral impression at 3/5 of pronotum; anterior margin arcuate; lateral margins subparallel, with anterolateral angles acute and long; posterolateral angles blunt; base trisinate. Surface punctured, space between punctures shiny and smooth; disc punctured, punctures deep and larger than facet of eyes, separated by 1–2 times their diameter; surface between sublateral carinae and lateral margin with punctures separated by 1/2 time their diameter. Sublateral carinae present, extending from apical margin to base, hardly perceptible at base. Hypomeron microreticulated and rugose. Prosternum wider than diameter of procoxa; lateral carinae on basal half; prosternal

process subquadrangular, almost as wide as long; apex acute. Mesoventrite with groove for reception of prosternal process. Metaventricle with median longitudinal line extending from base to anterior 2/3; surface microreticulated and punctured; punctures larger than facet of eyes, separated by 1½ times their diameter; disc with basal third depressed; lateral carinae complete.

Legs: elongated; pro- and mesotibiae with lateral cleaning fringe on apical 2/3, metatibia with lateral and lateroventral cleaning fringes on apical 2/3. Length: forelegs 1.95 mm, middle legs 2.05mm, hind legs 2.15 mm. Tarsi 5-segmented, tarsomeres with golden setae, fifth tarsomere longest; tarsal claws long and slender, not modified.

Elytra: more than twice as long as pronotum (length: 1.80 mm; greatest width: 1.30 mm); eight punctate striae formed by punctures larger than facets of eyes, separated by 1–1½ times their diameter; intervals convex, surface punctured, punctures small separated by 2–3 times their diameter, with disperse golden setae; eighth interval carinated; elytral apex moderately protruded. Scutellum subtriangular, almost as wide as long, surface punctured, punctures small, separated by 2–3 times their diameter.

Abdomen: ventrites convex; surface of all ventrites punctured, punctures like those on metaventricle; disc of ventrite I with complete lateral carinae; surface of ventrite V punctured, punctures separated by their diameter; lateral margin produced as prominent tooth; apex rounded, and margin with long golden setae.

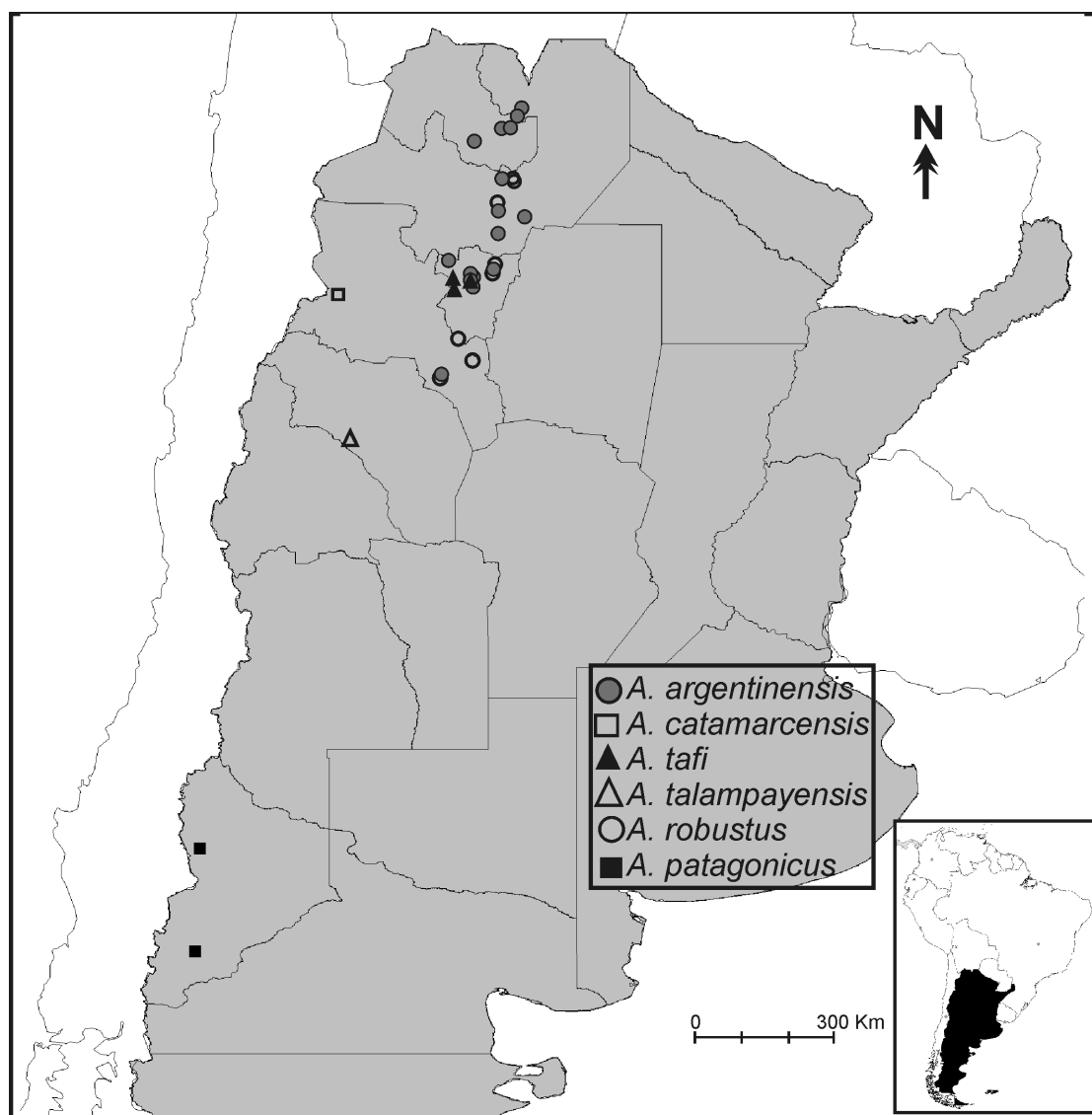


FIGURE 7. Distributional map of *Austrelmis* species from Argentina.

Male genitalia: aedeagus (Figs 6 a–b) long and moderately broad. Penis elongate, subtriangular tapering towards apex; apex slightly folded forward (in dorsal and lateral view); fibula and corona present; basolateral apophyses short. Parameres subtriangular, shorter than penis, apices acute. Phallobase asymmetrical, longer than penis, open.

Female: externally similar to male except for: 1) small punctures of metaventricle and all ventricles separated by 2–3 times their diameter; 2) surface of posterior half of ventrite V with large, deep and contiguous punctures. Female genitalia: as in Fig.6c.

Type series. Holotype (dissected and illustrated): Male. Argentina: Salta Province, El Tala River, 17-IX-1998, E. Domínguez leg. Paratypes: 5 females and 3 males, same data as holotype; 15 specimens, PN El Rey, nameless stream, 24°43'29S 65°26'42' W, 23-III-1999, H. Fernández and F. Romero leg. Jujuy Province: 5 specimens, Sierra de Santa Bárbara, between Santa Ana and El Fuerte, nameless river (E), 16-IX-1998, E. Domínguez and C. Molineri leg.; 2 females, Los Toldos, Vallecito River, 25°13'0' S 64°56'0' W, 27-X-1999, C. Molineri leg. Catamarca Province, 95 specimens, Departamento El Alto, afluyente El Durazno River, 28°21'06" S 65°25'53" W, 8-II-2000, H. Hernández, F. Romero V. Manzo leg.; 20 males and 11 females, Balcozna, s/n stream, 27°53'26" S 65°43'48" W, 1200 m, 11-XI-1999, C. Molineri and V. Manzo leg.; 1 female, A Pampichuelas, 28°40'18" S 66°04'44" W, 980 m, 20-XII-2000, H. Fernández, F. Romero and V. Manzo leg.; Tucuman Province, 16 males and 7 females, Departamento Burruyacu, A Artaza, 26°36'13" S 64°59'20" W, 30-VIII-2008, V. Manzo and F. Romero leg.; 28 specimens, Nio River, 26°26'28" S 64°59'20" W, 30-VIII-2008, V. Manzo and F. Romero leg.

Etymology. *robustus* latin word it meaning “robust” in reference to the strong and compact appearance of this species.

Additional material examined

Austrelmis patagonicus Manzo & Archangelsky: Argentina: Neuquén Province, NE Junín de Los Andes y Ruta 40, 39°59'12 S 70°52'53 W, 750 m, 29-X-2000, M. Archangelsky coll: 1 male (Type) and 1 female (Paratype), (IFML); 2 males from Neuquén province, Ruta 26 (to Copahue), 37°57'37 S 70°47'49 W, 1345 m, 30-X-2000, M. Archangelsky coll.

Comparative notes

All species of the genus *Austrelmis* are quite similar in external morphology and differ mainly in the male genitalia. Their identification using only external morphological characters it usually difficult, therefore characters of the male genitalia are of the greatest importance. However, general proportions, size and distribution of punctures and granules, shape of sublateral carinae on pronotum, prosternum, metaventricle and ventrite I and shape of elytral intervals can be helpful to separate species too (Hinton 1940).

The new described species were compared with *A. confluenta*, *A. confusa*, *A. consors*, *A. costulata*, *A. dorotae*, *A. elegans*, *A. gardineri*, *A. gilsoni*, *A. glabra*, *A. lata*, *A. leleupi*, *A. peruana*, *A. steineri*, *A. thermarum* and *A. woytkowskii*, on the basis of original descriptions and drawings (Hinton 1937, 1940, Janssens 1957, Delève 1968, Spangler 1980 and Więźlak 1987); the new species were compared with *A. patagonicus* on the basis of type and paratype material. All known species can be distinguished from the new species by the unique morphology of the male genitalia.

Austrelmis anthracina, *A. chilensis*, *A. condimentaria* and *A. tibialis* were originally described within the genus *Elmis*, in the 18th century, and later transferred to *Austrelmis* by different authors (Hinton 1937, 1940; Brown 1984 and Więźlak 1987). No redescriptions of these species are available, and no illustrations of the male genitalia have been published. Nonetheless the original descriptions published by Grouvelle (1896) and the comparative notes published by Hinton (1940) and Brown (1980) mention distinctive characters that allow to separate them from the new species.

None of the described species have transverse depression on the pronotum, this condition allows to separate the new species from *A. chilensis*, which has a transverse depression on each side of the disc of the pronotum.

The presence of elytral carinae in *A. argentinensis* **sp. nov.**, *A. robustus* **sp. nov.**, *A. tafi* **sp. nov.**, and *A. talampayensis* **sp. nov.** distinguishes these species from *A. anthracina*.

Austrelmis catamarcensis **sp. nov.** and *A. anthracina* lack elytral carinae, but the new species has the apex of the prosternal process straight, ten elytral striae with conspicuous punctuations and a subtriangular scutellum, while *A. anthracina* has the apex of the prosternal process rounded, elytral striae with punctuations hardly perceptible and a rounded scutellum.

Austrelmis condimentaria differs from all new species by the following combination of characters: *A. argentinensis* **sp. nov.** has 1) complete sublateral carinae on pronotum, 2) ventrite I with lateral carinae, 3) sixth elytral interval with short basal carina; *A. catamarcensis* **sp. nov.** has: 1) sublateral carinae of pronotum present only on apical 1/3, 2) elytral carinae absent; *A. robustus* **sp. nov.** has: 1) complete sublateral carinae on pronotum, 2) metaventrite and ventrite I with lateral carinae; *A. tafi* **sp. nov.** has 1) complete sublateral carinae on pronotum, 2) ventrite I with lateral carinae, 3) elytral carinae on sixth interval; *A. talampayensis* **sp. nov.** has: 1) metaventrite and ventrite I with lateral carinae, 2) a short basal carina on sixth elytral interval.

Austrelmis argentinensis **sp. nov.** and *A. robustus* **sp. nov.** resemble *A. tibialis* due to their small size (2.10 mm and 2.60 mm respectively) and characteristics of pronotum (complete sublateral carinae and oblique impression), but they differ by having a sublateral carina on the eighth elytral interval (*A. tibialis* has a carina on the sixth elytral interval). *Austrelmis catamarcensis* **sp. nov.** differs from *A. tibialis* by its large size (3.40 mm), sublateral pronotal carinae only on apical 1/3 and elytral carinae absent. *Austrelmis talampayensis* **sp. nov.** differs from *A. tibialis* by its large size (3.15 mm), sublateral pronotal carinae only in apical 2/5 and eighth elytral interval with a complete carina; *A. tafi* **sp. nov.** also differs by its large size (3.40 mm) and eighth elytral interval carinate.

Finally, there is no redescription of *A. flavitarsis*, and since this species was transferred to a different genus (*Elmis*) and probably does not belong into *Austrelmis*, we do not consider it necessary to compare *A. flavitarsis* with the new species.

TABLE 1. Comparative table summarizing the most important characters used to identify the species of *Austrelmis* from Argentina.

Character	<i>A. argentinensis</i>	<i>A. catamarcensis</i>	<i>A. patagonicus</i>	<i>A. robustus</i>	<i>A. tafi</i>	<i>A. talampayensis</i>
Tibiae enlarged	no	no	yes	no	no	no
Size	2.10 mm	3.40 mm	3.50 mm	2.60 mm	3.40 mm	3.15 mm
Legs	as long/longer than body	shorter	shorter	shorter	shorter	shorter
Pronotal carinae	complete divided on basal 2/3	present on apical 1/3	present on apical 1/3	present, hardly perceptible basally	present, hardly perceptible basally	present on apical 2/5
8 th elytral interval	carinated	not carinated	carinated	carinated	carinated	carinated
Carinae on metaventrite	absent	absent	absent	present, complete	absent	present, complete
Carinae on ventrite I	present, complete	absent	present, complete	present, complete	present, complete	present, complete

Conclusions

Since only one species of *Austrelmis*, *A. patagonicus*, was previously known from Argentina (Manzo & Archangelsky 2012), this study is a good example that the knowledge of the elmid fauna in Argentina is far from being complete. The study of material from northwestern Argentina raises the number of known species of *Austrelmis* to six, and also the distributional range of this genus is greatly increased (Fig. 7). Additionally, the number of elmid species for Argentina is increased to twenty six, and we expect that further studies will result in the description of numerous new species due to the richness of biogeographical regions of this country. To help with the identification of *Austrelmis* from Argentina, diagnostic characters of the species are summarized in Table 1. Finally, this study corroborates that this genus seems to be an Andean element, with most of the known records confined to the Andes Mountains and related foothills of western South America.

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