

Redefinition of the *vittata* species group of *Epicauta* Dejean (1834) (Coleoptera: Meloidae) and taxonomic revision of the species from southern South America

MARÍA PAULA CAMPOS-SOLDINI¹ & SERGIO ALBERTO ROIG-JUÑENT²

¹Laboratorio de Entomología CICyTTP-CONICET, Diamante, Entre Ríos, CP: 3105, Argentina; Materi y España.

E-mail: mariapaulacampos@gmail.com

²Laboratorio de Entomología IADIZA-CONICET; Mendoza CC507, 5500, Argentina; Av. A. Ruiz Leal s/n, Parque Gral. San Martín.

E-mail: saroig@mendoza-conicet.gov.ar

Abstract

The *Epicauta vittata* group are commonly known as striped blister beetles and was defined by previous authors to include 32 species, 18 from North America, Central America and northern South America, and 14 from southern South America. In the present revision we revised 22 species from South America, excluding the following southern South American species: *E. borgmeieri* Denier, 1935; *E. floydwernerii* Martínez, 1955; *E. franciscana* Denier, 1935; *E. fulginosa* (Oliver, 1795); *E. purpureiceps* (Berg, 1889); *E. rutilifrons* Borchmann, 1930; and *E. zebra* (Dohrn, 1876) because they do not have the diagnostic characters of the group. The species of the *E. vittata* group from southern South America are: *E. bosqi* Denier, 1935; *E. clericalis* (Berg, 1881); *E. grammica* (Fischer, 1827); *E. leopardina* (Haag-Rutenberg, 1880); *E. luteolineata* Pic, 1933; *E. missionum* (Berg, 1881); *E. monachica* (Berg, 1883); *E. rutilifrons* Borchmann, 1930; plus two more species *E. excavata* (Klug, 1825); and *E. semivittata* (Fairmaire, 1875) until now not included in other groups. We provide a complete diagnosis of the *E. vittata* group from southern South America, redescribing and illustrating all included species. Detailed descriptions and illustrations of female and male genitalia are presented for the first time for these species. Finally, we provide an identification key for the ten species presently included in the *E. vittata* group, and update the geographic distribution of each species.

Key words: *Epicauta*, *vittata* group, southern South America, biodiversity, blister beetles

Introduction

The genus *Epicauta* Dejean (1834), with about 360 recognized species, is one of the largest genera of Meloidae. It is found on all continents except Australia. Within the Americas it is widely distributed, with its highest species diversity in semi-arid temperate regions. It is poorly represented in boreal habitats, at high elevations, and in those arid and semi-arid regions lacking predictable summer precipitation (Pinto, 1991).

The *E. vittata* group was defined by Adams and Selander (1979), who placed 32 species in the group distributed throughout the Americas. They characterized this group by the color pattern of the elytra, and with other anatomical characters in the adult stage. They also presented information on the ecology, behavior, and reproductive biology of seven endemic species from North America, and three species from South America (Adams and Selander, 1979).

Pinto (1991) divided the genus *Epicauta* into 18 species groups; one of them the *E. vittata* group. He studied eight species from North and Central America, but he did not mention any species from South America. He characterized the *E. vittata* group by the color pattern of the elytra, (expressed by vestiture and underlying cuticle), and also used morphological and genital structures, as well as characters of first-instar larvae and courtship of the Northern and Central American species.

The main purpose of the present study is to redefine the *E. vittata* group from South America and to redescribe and illustrate 10 species from southern South America, including illustrating the morphology of the genitalia in both sexes. Finally, we provide an identification key for the ten species from southern South America, and update their geographic distributions.

Material and methods

Specimens. The specimens herein studied belong to the following Argentinean collections:

CICyTTP-CONICET	Centro de Investigaciones Científicas y Transferencia de la Tecnología a la Producción, Diamante, Entre Ríos, Argentina.
IADIZA, CCT-CONICET	Instituto Argentino de Investigaciones de las Zonas Áridas, Mendoza, Argentina.
IMLA	Instituto Miguel Lillo, San Miguel de Tucumán, Argentina.
MLP	Museo de La Plata, La Plata, Argentina.
MCNFA	Museo Provincial de Ciencias Naturales “Florentino Ameghino”, Santa Fe, Argentina.
MACN	Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina.

Dissection methods. Redescrptions of the species were based on the external morphology of male and female genitalia. The specimens were softened to relax their anatomical structures. Subsequently the abdomen was removed, and cleared using KOH 10% for approximately 12 hours. The *aedeagus* was then dissected from the abdomen and washed in water and in alcohol 80% and glycerin.

All measurements were taken with an ocular micrometer. Body length was measured from the occiput to the apex of the elytra. The following ratios are given: length/width of head (length was measured from the frontal-clypeal suture to the top of the occiput, and width, at dorsal margin of the eyes); length/width of the male and female antennae; length/width of pronotum and length/width of elytra. Once the examination and illustrations were completed, the genitalia and others parts were placed in a plastic microvial in glycerin, and pinned directly under each specimen. Drawings were done with a camera lucida adapted to the stereoscopic microscope. Terminology used in the description of the morphological structures follows Pinto (1991) and in the description of the morphological structures of male and female genitalia follows Gupta (1965, 1966) and Pinto (1991).

Taxonomic revision

Epicauta vittata group Adams and Selander, 1979

Diagnosis. *Vitta* expressed on underlying cuticle with a basic pattern from one to four vittae (Figs. 18 – 27). Fore tibia with a marked depression on inner apical third (as show by arrow in Fig. 1). Male gonoforceps incompletely sclerotized, apical portion membranous and largely unpigmented except for a Y-shaped sclerotization consisting of a narrow median strip which diverges apically and runs along the ventromedial surface of each parameral lobe (Figs. 2–2a).

Redescription. Moderate to large vittate beetles; maximum length varying from 7 to 23 mm. Pubescence of head, pronotum, and elytra: dense (28–34 setae by lineal mm) or sparse (13–19 setae by lineal mm). Pubescence of elytra mirrors color pattern of cuticle or not

Head and pronotum smooth to finely punctate. Head capsule with pale patches of different sizes or not (as in Figs. 12–17); frons impressed. Mouthparts labrum with distinct pale semicircular, central-apical spot, apical margin deeply emarginate; maxillary palpi large (three times the width), compressed dorso-ventrally, tapering to the base and expanding to apex (as in Fig. 7); labial palpi with segment III strongly expanded from the basal third to the apex (Fig. 6), prementum with apical margin having ample concavity, or straight; (as show by arrow in Figs. 8–9); mandible strongly curved to the apex, or relatively straight and gradually curved towards apex (as show by arrow in Figs. 10–11); eyes large, with anterior margin bisinuate, deep concavity in front of antennal insertions; ventral lobe having an ample concavity, tapering below, reaching mouthparts. Pronotum usually longer than wide and distinctly narrower than head, antero-lateral angles oblique, widest at apical third; lateral view with marked impression on apical third or relatively convex. Elytra with vittae expressed on the underlying cuticle, basic pattern from one to four vittae: pale vittae on a brown background or dark vittae on a pale background (Figs. 18–27). Fore tibia with a marked depression on inner apical third, apex of tibia with spine (shown by arrow, Fig. 1); hind tibial spurs subequal, robust, and truncate at apex, or acuminate and hollow with the inner spine rotated inwards. Dorsal

blade of claws slightly curved from base to apex, ventral blade broader than dorsal near apical third; or dorsal blade of claws abruptly curved, ventral blade straight and much narrower and divergent. Pygidium narrowly emarginate, with apex incised or entire (Figs. 3–5). Abdomen with last abdominal tergite twice wide, apex having a small median incision.

Male genitalia. Parameres incompletely sclerotized; parameral lobes at least twice as long as falobase, tapering to the apex, subparallel, separated at apical third, membranous and unpigmented except for a Y-shaped sclerotization which diverges apically and runs along the ventromedial surface of each paramere (Figs. 2–2a); basal region distinctly emarginate or not.

Female genitalia. Spermathecal capsule very well developed, spermathecal duct long and thin, with a large and tubular accessory gland; vagina large, ovarioles Y-form (Fig. 28). Valvifer with ventrolateral basal stem large and straight; stylus with setae on apical third (Fig. 28a).

Included and excluded species: Adams and Selander (1979) examined in detail seven species (*E. abadona* Skinner, 1904; *E. occidentalis* Werner, 1944; *E. tamara* Adams and Selander, 1979; *E. temexa* Adams and Selander, 1979; *E. unilineata* Champion, 1892; *E. vittata* (Fabricius, 1775) and *E. viticollis* (Haag-Rutemberg, 1880)) from North America, two species (*E. apure* Adams and Selander, 1979; *E. aragua* Adams and Selander, 1979) ranging from Central America to northern South America, and three species (*E. leopardina* (Hagg-Rutember, 1880), *E. luteolineata* Pic, 1933; and *E. monachica* (Berg, 1883)) from northern South America. They also mentioned 18 species (*E. borgmeieri* Denier, 1935; *E. bosqi* Denier 1935; *E. clericalis* (Berg, 1881), *E. floydwerner* Martínez, 1955; *E. franciscana* Denier, 1935; *E. fulginosa* (Oliver, 1795), *E. grammica* (Fischer, 1827), *E. kraussi* (Haag-Rutemberg, 1880), *E. purpureiceps* (Berg, 1889), *E. missionum* (Berg, 1881), *E. nattereri* (Hagg-Rutemberg, 1880), *E. philaemata* (Klug, 1825); *E. rutilifrons* Borchmann, 1930; *E. strigata* (Gyllenhal, 1817), *E. subvittata* (Erichson, 1848), *E. xanthocephala* (Klug, 1825), *E. yungana* Denier, 1935; and *E. zebra* (Dohrn, 1876)) from South America. Pinto (1991) examined eight species from North and Central America (*E. abadona* Skinner, 1904; *E. aragua* Adams and Selander, 1979; *E. occidentalis* Werner, 1944; *E. tamara* Adams and Selander, 1979; *E. temexa* Adams and Selander, 1979; *E. unilineata* Champion, 1892; *E. vittata* (Fabricius, 1775) and *E. viticollis* (Haag-Rutemberg, 1880)), but did not provide any information on South American species.

The elytra with the vittate pattern expressed on underlying cuticle is a unique characteristic within this genus and could be considered a synapomorphic character for the *E. vittata* group. Other characters that appears as exclusive within *Epicauta* to the *vittata* group are the marked depression on inner apical third of fore tibia; male gonoforceps incompletely sclerotized on apical portion, membranous and largely unpigmented, except for a Y-shaped sclerotization.

We excluded eight species that lack these exclusive characters of the group: *E. borgmeieri* Denier, 1935, *E. floydwerner* Martínez, 1955, *E. franciscana* Denier, 1935, *E. fulginosa* (Olivier, 1795), *E. kraussi* (Haag-Rutemberg, 1880), *E. purpureiceps* (Berg, 1889), *E. philaemata* (Klug, 1825), *E. purpureiceps* (Berg, 1889), *E. rutilifrons* Borchmann, 1930 and *E. yungana* Denier, 1935, *E. zebra* (Dohrn, 1876). The species having these characters are: *E. bosqi* Denier, 1935; *E. clericalis* (Berg, 1881); *E. grammica* (Fischer, 1827); *E. leopardina* (Haag-Rutemberg, 1880); *E. luteolineata* Pic, 1933; *E. missionum* (Berg, 1881); *E. monachica* (Berg, 1883); *E. nattereri*, *E. rutilifrons* Borchmann, 1930; *E. strigata* (Gyllenhal, 1817), *E. subvittata* (Erichson, 1848), and *E. xanthocephala* (Klug, 1825), plus other two species: *E. excavata* (Klug, 1825); and *E. semivittata* (Fairmaire, 1875).

We revised the ten species mentioned by Adams and Selander (1979): *E. bosqi* Denier, 1935; *E. clericalis* Berg, 1881; *E. excavata* (Klug, 1825); *E. grammica* (Fischer, 1827); *E. leopardina* (Haag-Rutemberg, 1880); *E. luteolineata* Pic, 1933; *E. missionum* Berg 1881; *E. monachica* (Berg, 1883); *E. rutilifrons* Borchmann, 1930; and *E. semivittata* Fairmaire, 1875. All them have the synapomorphic character and are found in southern South America.

Courtship and behavior: Courtship and behavior of seven species of the *E. vittata* group from North America and three of South America (*E. leopardina*, *E. luteolineata*, and *E. monachica*) were described in detail by Adams and Selander (1979). Courtship and behavior are unknown for the other species herein treated.

Distribution: The species studied herein are distributed in the Chaco, a subregion ranging from southern Bolivia, western Paraguay, southern Brazil, and central and northern Argentina (Cabrera, 1971; Cabrera and Willink, 1973; Morrone, 1996, 2000). According to Morrone (1996, 2000), this biogeographical subregion is subdivided into five provinces; three of which correspond to the distribution of *Epicauta*: Chaco, Pampa and Monte. These biogeographical provinces are characterized by dry shrub or forest, and grasslands or steppes.

Key to species of *E. vittata* group from southern South America

1. Head capsule uniformly coloured; male with the central part of the head excavate. *E. excavata* (Klug, 1825).
- Head capsule with maculae or bicoloured; male with the head not excavate. 2
2. Elytra pale with dark vittae 3
- Elytra dark with pale vittae 4
3. Both inner vittae much abbreviated, the middle one much broadened distally to form irregular blotches, with additional basal blotch resulting from the fusion of the middle and outer vittae (Fig. 23). Legs pale, tinged with brown
. *E. leopardina* (Hagg-Rutemberg, 1880).
- Vittae thin and straight (Fig. 24). Legs pale. *E. monachica* (Berg, 1883).
4. Two vittae short, subparallel, interrupted on apical and basal third, slightly convex, lateral margins oblique (as in Fig. 25).
. *E. semivittata* (Fairmaire, 1875).
- With at least one complete longitudinal vitta from the base to the apical third 5
5. Only with one complete marginal vitta or with a marginal vitta and a vitta reduced at the humeral callus 6
- With two or more vittae from the base to apical third or from the base to the apex 7
6. Only marginal vitta, from base to the apex (Fig. 27); tarsal claws with straight ventral blade *E. missionum* (Berg, 1881).
- Marginal vitta from base to apical third and vitta on base of the humeral callus (Fig. 19); tarsal claws with dorsal and ventral blades wide, subequal *E. clericalis* (Berg, 1881).
7. Elytra with two vittae from the base to basal third; head with two colors. 8
- Elytra with three or more vittae; head dark with a pale patch of different size on front. 9
8. Head capsule brown with pale patch on forehead and two pale supra-ocular patches (Fig. 16); tarsal claws with ventral blade like dorsal blade, subequal and wide. *E. rutilifrons* Borchmann, 1930.
- Head capsule pale with two black patches extending from clypeus along each side of front bordering eyes (Fig. 17); tarsal claws with straight ventral blade. *E. grammica* (Fischer, 1827).
9. Four vittae (Fig. 18) *E. bosqi* Denier, 1935.
- Two large vittae and one short on apical third (Fig. 21) *E. luteolineata* Pic, 1933.

Species redescription

Epicauta bosqi Denier, 1935

Epicauta bosqi Denier, 1935: 135; Blackwelder, 1945: 482 (cat.); Bosq, 1942: 9 (cat.); Di Iorio, 2004: 168 (cat.).

Type material examined. Holotype male: [Rosario de S. Fe/ parque a la luz/ Denier 19.II.32] [*Epicauta/ bosqi*/ Denier/ HOLOTIPO] [MLP 555/ 1]. Paratype female: [Santa Fe/ Rafaela/ I.1933] [Coll. Bosq] [female] [*Epicauta/ bosqi* Denier/ PARATIPO] [MLP 555/ 3] MLP.

Diagnosis. Cuticle brown; head with pale patch on frons; pronotum with pair of pale patches on apical third; legs with trochanters pale; elytra with four pale vittae, marginal and sutural vittae extended from base to near apex, and two vittae on disc, the four vittae fused near apex.

Redescription. *Body length* 10–18mm.

Cuticle and pubescence. *Cuticle* brown; head with pale patch on frons (Fig. 15); pronotum with two pale patches on apical third; elytra with four pale vittae, marginal and sutural vittae extended from base to near apex, and two vittae on disc, the four vittae fused near apex (as in Fig. 18); legs brown tinged with light brown, trochanters pale; mesothorax bicolored. *Pubescence* of head, pronotum and elytra sparse (13–19 by lineal mm) and uniformly light brown; elytra pubescence not coincident with cuticle color; abdominal pubescence light brown.

Habitus. *Head* 0.80 as long as wide (L/A: 21–26); mandible strongly curved to the apex (as show by arrow in Fig. 10); antennae flattened dorso-ventrally; antennal segments of female with following proportions: 2.66 (I); 1.5 (II); 3.33 (III); 2.33 (IV); 2 (V); 2 (VI); 3 (VII); 3 (VIII); 3 (IX); 3 (X); 3.5 (XI); antennae of males 3 (I); 2 (II); 2.33 (III); 2 (IV); 2 (V); 2 (VI); 3 (VII); 3 (VIII); 2.5 (IX); 2.5 (X); 3 (XI). *Pronotum* 1.05 as long as wide (L/A: 20–19), slightly convex in lateral view. *Elytron* wider from the apical third to apex; apex one third wider than base. *Legs* with adhesive setae of tarsal pads of fore and medial legs uniformly distributed, distal region bilobed; hind legs with two longitudinal rows of adhesive setae. *Claws* with dorsal blade slightly curved from base to apex, ventral blade broader than dorsal near apical third. *Abdomen* with last abdominal tergite twice wide, with a small central emargination at apex.

Male genitalia. *Falobase* with superior margin deeply emarginate. *Spiculum gastrale* tridentate (as in Fig. 29). *Median lobe* slender, dorsal-hook, apex slightly curved; *uncus* (sensu Pardo Alcaide, 1948, 1950) slender, pointed apically (Fig. 37).

Intra-specific variation. Color variation occurs in the pronotum. The two pale patches of the pronotum can be of different sizes and there is a pale longitudinal central line in some specimens. Also, the mesothorax is darker in some specimens.

Remarks. Denier (1935) provided a diagnosis of the type of *Epicauta bosqi* but the species was never described in detail.

Distribution. Map (Fig. 45). Known from Argentina, where it has been recorded from Buenos Aires; Chaco; Corrientes; Formosa; Misiones; Salta; Santa Fe; Santiago del Estero. *New records:* Entre Ríos; Córdoba.

Host plant. The only known host plant is *Medicago sativa* (Bosq, 1942; Hayward, 1960; Di Iorio, 2004).

Material examined 31 specimens from Argentina belong to the following collections: MLP, MCNFA. **Córdoba.** Chaco: Colonia Castelli (26° 01' 34" S, 60° 53' 62" W); Cote Lai (27° 31' 97" S, 59° 34' 24" W); Villa Angela (27° 34' 16" S, 60° 42' 28" W). **Entre Ríos:** Victoria (32° 37' 37" S, 60° 09' 53" W). **Santa Fe:** Recreo (31° 29' 68" S, 60° 44' 44" W); Santo Tomé (31° 39' 99" S, 60° 45' 37" W).

Epicauta clericalis (Berg, 1881)

Cantharis clericalis Berg, 1881: 308.

Epicauta clericalis: Borchmann, 1917: 73 (cat.); Bruch, 1914: 404 (cat.); Denier, 1935: 154 (cat.); Blackwelder, 1945: 483 (cat.).

Epicauta luteolineata var. *brevebasalis* Pic, 1933: 26.

Epicauta luteolineata var. *discolineata* Pic, 1933: 26; Denier, 1935: 154 (cat.); Blackwelder, 1945: 483 (cat.).

Type material examined. Holotype, [Misio-/nes] [*Lytta/ clericalis/* Berg] [com. tipo/ comparat] [MLP 561/ 1]. MLP.

Type material remarks. This species was transferred to *Epicauta* by Borchmann (1917). The author indicated that the type material is from Misiones Province, Argentina, and it was deposited in his collection. According to Adams and Selander (1979: 257), the specimen from Misiones in the Berg collection of the MLP, labelled as "*Lytta clericalis* Berg", is perhaps the holotype. Based on this statement we consider this specimen as the holotype.

Diagnosis. Cuticle brown. Elytra with two pale vittae, marginal vitta extended from the base to near the apex, and one vitta reduced on the humeral callus.

Comparative remarks. *Epicauta clericalis* is similar to *E. luteolineata* in the color pattern of the cuticle of the head and pronotum, but differs in the color pattern of the elytra: *E. clericalis* has two pale vittae whereas *E. luteolineata* has three pale vittae.

Redescription. *Body length* 11–14 mm.

Cuticle and pubescence. *Cuticle* brown; head with a pale patch on frons (Fig. 14); elytra with two pale vittae, marginal vitta extended from the base to near the apex, and one vitta reduced on the humeral callus (Fig. 19). *Pubescence:* sparse (13–19 setae by lineal mm); pale on head, pronotum, and elytra; color pattern on head and pronotum with a yellow midline. Abdominal pubescence uniformly light brown.

Habitus. *Head* 0.86 as long as wide (L/A: 20–23); mandible relatively straight in basal half and gradually curved towards apex (as shown by arrow in Fig. 11); antennae flattened dorso-ventrally from VII to XI segment; antennal segments of female with following proportions: 4 (I); 2 (II); 5 (III); 4 (IV); 3.5 (V); 3.5 (VI); 3.5 (VII); 3 (VIII); 3 (IX); 3 (X); 3.5 (XI); antennal segments of male: 4 (I); 1.5 (II); 5.5 (III); 4 (IV); 4 (V); 3.5 (VI); 3 (VII); 3 (VIII); 3 (IX); 3 (X); 3.5 (XI). *Pronotum* 1.25 times as long as wide (L/A: 25–20); impressed on apical third in lateral view. *Elytron* wider from apical third to apex; apex one third wider than base. *Legs* with tarsal segments with two longitudinal rows of adhesive setae. Dorsal blade of claws slightly curved at apex, ventral blade wider and scarcely longer than dorsal blade.

Male genitalia. *Falobase* with superior margin with deep concavity. *Spiculum gastrale* with base bidentate, strongly bulged, extending the marginal prominence (as in Fig. 30). *Median lobe* short dorsal-hook; *uncus* moderately robust and short (Fig. 38).

Remarks. Berg (1881) provided a short diagnosis but the species has never been described in detail.

Intra-specific variation. Variation occurs in color of the cuticle and pubescence. In the same specimens the color of cuticle and pubescence vary from the light-brown to dark-brown: specimens from north of Argentina are lighter than specimens from central-south of Argentina.

Distribution. Map (Fig. 45). Known from Argentina, where is recorded from: Chaco; Misiones; San Juan. *New records:* Córdoba; Entre Ríos; Formosa; Mendoza; Santa Fe; Santiago del Estero and Tucumán.

Host plants. There is no available information about host plants for this species.

Material examined. 34 specimens from Argentina belong to the following collections: CICYTTP, MACN, MCNFA, IMLA. **Córdoba:** La Falda (31° 05' 30" S, 64° 29' 26" W). **Entre Ríos:** Diamante (32° 04' 03" S, 60° 38' 97" W). **Formosa;** **Mendoza:** Guaymallén (32° 53' 65" S, 68° 49' 75" W); San Martín (33° 48' 85" S, 68° 28' 06" W). **Tucumán:** Burreyacu (26° 29' 95" S, 64° 44' 95" W); Lamailá (27° 03' 88" S, 65° 24' 43" W). **Santiago del Estero:** Lago Muyo (28° 42' 03" S, 62° 49' 86" W).

Epicauta excavata (Klug, 1825)

Cantharis excavata Klug, 1825: 440; Gemminger and Harold, 1870: 2150 (cat.).

Cantharis sulcifrons Chevrolat, 1829: 135; Gemminger and Harold, 1870: 2154 (cat.).

Epicauta excavata: Borchmann, 1917: 74; Denier, 1935: 155 (cat.), 1940: 420 (cat.); Blackwelder, 1945: 483 (cat.). Martínez, 1992: 5–6 (dist.); Di Iorio, 2004: 168 (cat.).

Type material. Unknown.

Diagnosis. Head and pronotum dark. Head sexually dimorphic: that of male excavate from occiput to vertex. Elytra pale with three dark vittae on disk extended from base to near the apex, fused at apex. Pubescence of head and pronotum sexually dimorphic: female head with yellow setae extending from clypeus along each side of front bordering eyes and ventral area, pronotum pubescence yellow with two dark extended patches towards both sides of disk; head and pronotum of male with pale setae ventrally.

Comparative remarks. *Epicauta excavata* is similar to *E. semivittata* in cuticle color of the head, pronotum, and elytra, but differs in the pattern of color of legs: *E. excavata* is dark and *E. semivittata* is dark tinged with light brown.

Redescription. *Body length* 13–17 mm.

Cuticle and pubescence. *Cuticle* color dark; head sexually dimorphic: that of male excavate from occiput to vertex; elytra pale with three dark vittae on disk extended from base to near the apex, fused at apex (as in Fig. 22). *Pubescence:* head and pronotum sexually dimorphic: female head with yellow setae extended from clypeus along each side of front bordering eyes and ventral area, pronotum pubescence yellow with two dark extended patches towards both sides of disk; head and pronotum of male with pale setae on the inner side. Elytral pubescence coincident with cuticle color of vittae. Abdomen pubescence with yellow bands.

Habitus. *Head* quadrate; mandible relatively straight in basal half and gradually curved towards apex (Fig. 11); antennal segments of female with following proportions: 3 (I); 1.6 (II); 4.6 (III); 3.6 (IV); 4 (V); 4 (VI); 3.6 (VII); 3.3 (VIII); 3.3 (IX); 3.33 (X); 3.3 (XI), antennae male 6 (I); 2.7 (II); 4 (III); 5.5 (IV); 6 (V); 6 (VI); 6 (VII); 6 (VIII); 6 (IX); 6 (X); 5.5 (XI). *Pronotum* 1.1 times as long as wide (L/A: 22–20); impressed at apical third in lateral view. *Elytron* subequal in width throughout. *Legs* with adhesive setae of fore tarsal pads uniformly distributed, pads distally bilobed; medial and hind tarsal pads with two longitudinal rows of adhesive setae. *Claws* with dorsal blade slightly curved from base to apex, ventral blade broader than dorsal near apical third.

Male genitalia. *Falobase* with superior margin deeply emarginate. *Spiculum gastrale* with two marginal acuminate prominences directed inwards, deeply emarginate between prominences (Fig. 31). *Median lobe* rather long, dorsal-hook; *uncus* slender and pointed (Fig. 39).

Remarks. *Epicauta excavata* is a new inclusion in the *E. vittata* group.

Distributions. Map (Fig. 46), well-known in Brazil and less so in Argentina, where it has been recorded from: Jujuy; Salta. *New record:* Misiones.

Host plant. For Argentina the unique record is on Solanaceae (Martínez, 1992; Di Iorio, 2004). In Brazil the species is also cited on Solanaceae, as well for *Solanum melongena*; *Solanum nigrum*; *Lycopersicum esculentum*; *Capsicum* sp., and *Ipomea batata* (Martínez, 1992).

Material examined. 21 specimens from Brazil and 47 specimens from Argentina belong to the following collections: MACN and MLP. **Misiones:** Pindapoy 27° 35' 99" S, 55° 49' 71" O; Departamento de Santa María 27° 53' 88" S, 55° 21' 15" O; San Ignacio 27° 15' 88" S, 55° 21' 15" O.

***Epicauta grammica* (Fischer, 1827)**

Cantharis grammica Fischer, 1827: 19; Gemminger and Harold, 1870: 2151 (cat.).

Epicauta grammica: Borchmann, 1917: 75 (cat.); Denier, 1935: 155 (cat.), 1940: 420 (cat.); Blackwelder, 1945: 483 (cat.); Martínez, 1992: 6 (dist.).

Epicauta fidelis Brethes, 1925: 14.

Type material. Unknown.

Diagnosis. Cuticle brown. Head capsule pale, contrasting with brown pronotum and elytra; head with two dark patches extending from clypeus along each side of front bordering eyes. Elytra with two pale vittae: marginal vitta extended from the base to near apex, and one vitta on disk. Legs brown, trochanters and base of femora light-brown. Claws with dorsal blade abruptly curved; ventral blade straight and much narrower and divergent.

Redescription. *Body length* 8–13 mm.

Cuticle and pubescence. *Cuticle* of head capsule light, contrasting with brown pronotum and elytra; head with two dark patches extending from clypeus along each side of front bordering eyes (Fig. 17); maxillary palpi and antennae dark. Elytra with two pale vittae: marginal vitta extended from the base to near apex, and one vitta on disk (Fig. 20); legs brown, trochanters and base of femora light-brown. *Pubescence*: sparse (13–19 setae by lineal mm); head and pronotum pale; elytra pubescence coincident with cuticle color of vittae. Abdominal setae uniformly colored.

Habitus. *Head* 0.90 times as long as wide (L/A: 19–21); mandible externally strongly curved apically (as shown by arrow in Fig. 10); antennal segments of female with following proportions: 3.5 (I); 2 (II); 5 (III); 3.5 (IV); 3.5 (IV); 6 (VI); 6 (VII); 6 (VIII); 2.5 (IX); 2.5 (X); 6 (XI); antennal segments of male: 3.5 (I); 1.5 (II); 5 (III); 3.5 (IV); 3.5 (V); 3 (VI); 2.5 (VII); 2.5 (VIII); 2.5 (IX); 2.5 (X); 3.5 (XI). *Pronotum* 1.23 times as long as wide (L/A: 21–27); slightly convex in lateral view. *Elytron* subequal in width throughout. *Legs* with adhesive setae of tarsal pads of fore and medial legs uniformly distributed; hind tarsal pads with two longitudinal rows of adhesive setae. *Claws* with dorsal blade abruptly curved; ventral blade straight and much narrower and divergent.

Male genitalia. *Falobase* with superior border with deep concavity. *Spiculum gastrale* with three small rounded prominences; lateral area pointed (as in Fig. 32). *Median lobe* rather long, *dorsal-hook*, *uncus* moderately robust (Fig. 40).

Intra-specific variation. This species presents a wide size range, some almost double the size of others. The vitta on the disk can be of different lengths, varying from the central vitta interrupted in apical third to being complete from shoulder to apex.

Remarks. This species has been reported from an extensive geographical range (Central America to Argentina). For that reason, Adams and Selander (1979) segregated the specimens of *E. grammica* into three different species according to their distribution: *E. aragua* Adams and Selander (1979) from El Salvador and Nicaragua to Venezuela and Colombia, and *E. apure* Adams and Selander (1979) of the Orinoco Basin of southern Venezuela; and, *E. gammica*, ranging from Brazil, Bolivia, Paraguay to Argentina.

Distribution. Map (Fig. 48). Known from Argentina, Brazil, Paraguay, and Bolivia. In Argentina recorded from: Buenos Aires; Córdoba; Corrientes; Chaco; Formosa; Misiones; Salta; Santa Fe; Tucumán. *New records*: Río Negro.

Host plant. There is no available information about host plants for this species.

Material examined. Five specimens from Bolivia, three specimens from Paraguay, and 92 specimens from Argentina from the following collections: MLP, MCNFA, IMLA **Chaco**: Villa Ángela (27° 34' 78" S, 60° 42' 91" W); Saenz Peña (26° 42' 14" S, 60° 26' 90" W); Resistencia (27° 27' 63" S, 58° 59' 51" W). **Corrientes**: Goya (29° 08' 09" S, 59° 15' 57" W). **Formosa**: Río Tohué 15 km sur; **Misiones**: Puerto Aguirre (actually Puerto Iguazú: 25° 35' 83" S, 54° 34' 96" W). **Santa Fe**: Santo Tomé (31° 39' 99", 60° 45' 37" W); Rafaela (31° 15' 19" S, 61° 29' 17" W); Rosario (32° 57' 96" S, 60° 40' 84" W). **Río Negro**: San Javier (40° 45' 09" S, 63° 18' 44" W).

***Epicauta leopardina* (Hagg-Rutemberg, 1880)**

Lytta leopardina Haag-Rutemberg, 1880: 30.

Cantharis leopardina: Burmeister, 1881: 24 (rev.); Berg, 1881: 304 (rev.).

Epicauta leopardina: Bruch, 1914: 404 (cat.); Borchmann, 1917: 77 (cat.); Denier, 1935: 156 (cat.); Bosq, 1934: 327 (cat.); 1942: 11 (cat.); Blackwelder, 1945: 483 (cat.); Viana and Williner, 1974: 11 (dist.); Martínez, 1992: 7 (dist.); Di Iorio 2004: 169 (cat.).

Type material. Adams and Selander (1979) indicate that the type material is a series of syntypes from Córdoba, Argentina; it is deposited in the Haag-Rutemberg collection, in Zoologisches Sammlung der Bayerischen Stattes Munich. These specimens were not examined.

Diagnosis. Maxillary palpi, labrum, antennal segments I, II and part of segment III light. Elytra with three dark vittae on a pale background, both inner vittae much abbreviated, middle one much broadened distally to form irregular blotches, with additional basal blotch resulting from fusion of the middle and outer vittae; elytral pubescence is coincident with cuticle color.

Remarks. The pattern of elytra pale with three dark vittae like blotches, is quite distinctive and permits an easy recognition of this species.

Redescription. *Body length* 10–23 mm.

Cuticle and pubescent. *Cuticle* of head and pronotum brown; head with light patch on forehead, and two light supra-ocular patches (Fig. 16); maxillary palpi, labrum and segments I, II and basal third of segment III of antennae light. Elytra pale with three dark vittae, both inner vittae much abbreviated, and the middle one much broadened distally to form irregular blotches, with an additional basal blotch resulting from fusion of the middle and outer vittae (Fig. 23). Legs pale tinged with brown. *Pubescence* of head sparse (13–19 setae by lineal mm); pronotum and elytron dense (28–34 setae by lineal mm); pubescence of head dark brown with pale setae on marginal area, pronotum pale with two dark brown extended patches on disk, elytra pubescence is coincident with cuticle color. Abdominal pubescence uniformly light brown.

Habitus. *Head* 0.91 times as long as wide (L/A: 21–33); mandible strongly curved apically (as shown by arrow in Fig. 21); antennae sexually dimorphic, male with segments V, VI, and VII bulged; antennal segments of female with following proportions: 4 (I); 2 (II); 2 (III); 4.3 (IV); 3 (V); 2.3 (VI); 2.3 (VII); 2 (VIII); 3 (IX); 3 (X); 3.4 (XI); antenna of males: 4 (I); 1.6 (II); 4.3 (III); 2.6 (IV); 2.3 (V); 2 (VI); 2 (VII); 3 (VIII); 2.5 (IX); 2.5 (X); 4 (XI). *Pronotum* 0.8 times as long as wide (L/A: 40–50), impressed on apical third in lateral view. *Elytron* subequal in width throughout. *Legs* with tarsal segments with two longitudinal rows of adhesive setae. *Claws* with dorsal blade slightly curved from base to apex, ventral blade slightly curved, broader than dorsal near apical third.

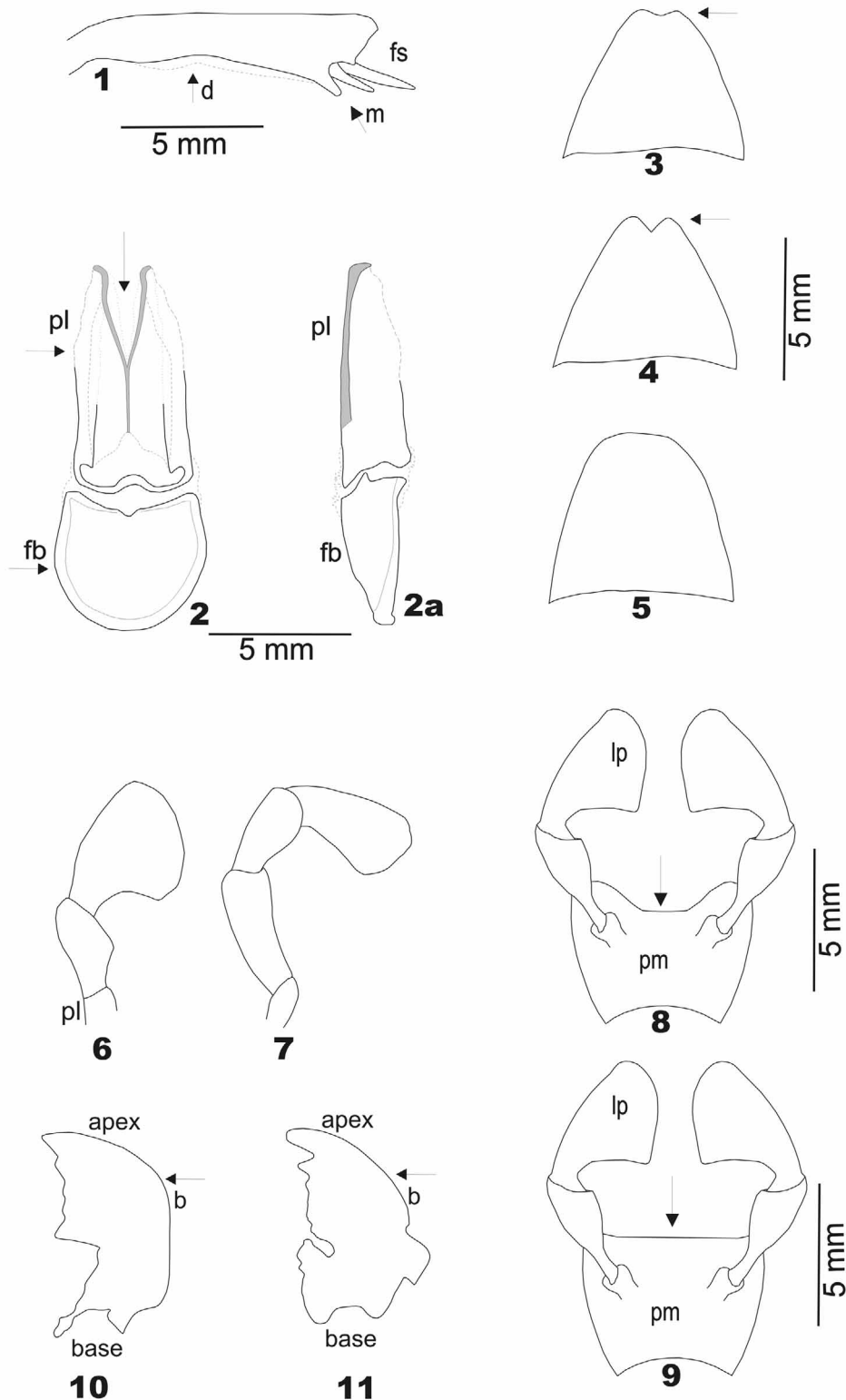
Male genitalia. *Falobase* with superior margin with deep concavity. *Spiculum gastrale* (as in Fig. 33). *Median lobe* slender, pointed at apex, dorsal-hook; *uncus* short, moderately robust (Fig. 41).

Intra-specific variation. Variation occurs in body length, form of head and pronotum patches. This species presents a wide range of size, some specimens double the size of others. In the same specimens different sizes of the pale patches are present on the forehead, supraocular patches and pronotum.

Distribution. Map (Fig. 47). Known from Argentina, Bolivia, and Brasil. In Argentina it is recorded from Buenos Aires; Catamarca; Chaco; Córdoba; Entre Ríos; La Rioja; Mendoza; Neuquén; Salta; San Luis; Santa Fe; Santiago del Estero; and Tucumán. *New records:* Misiones.

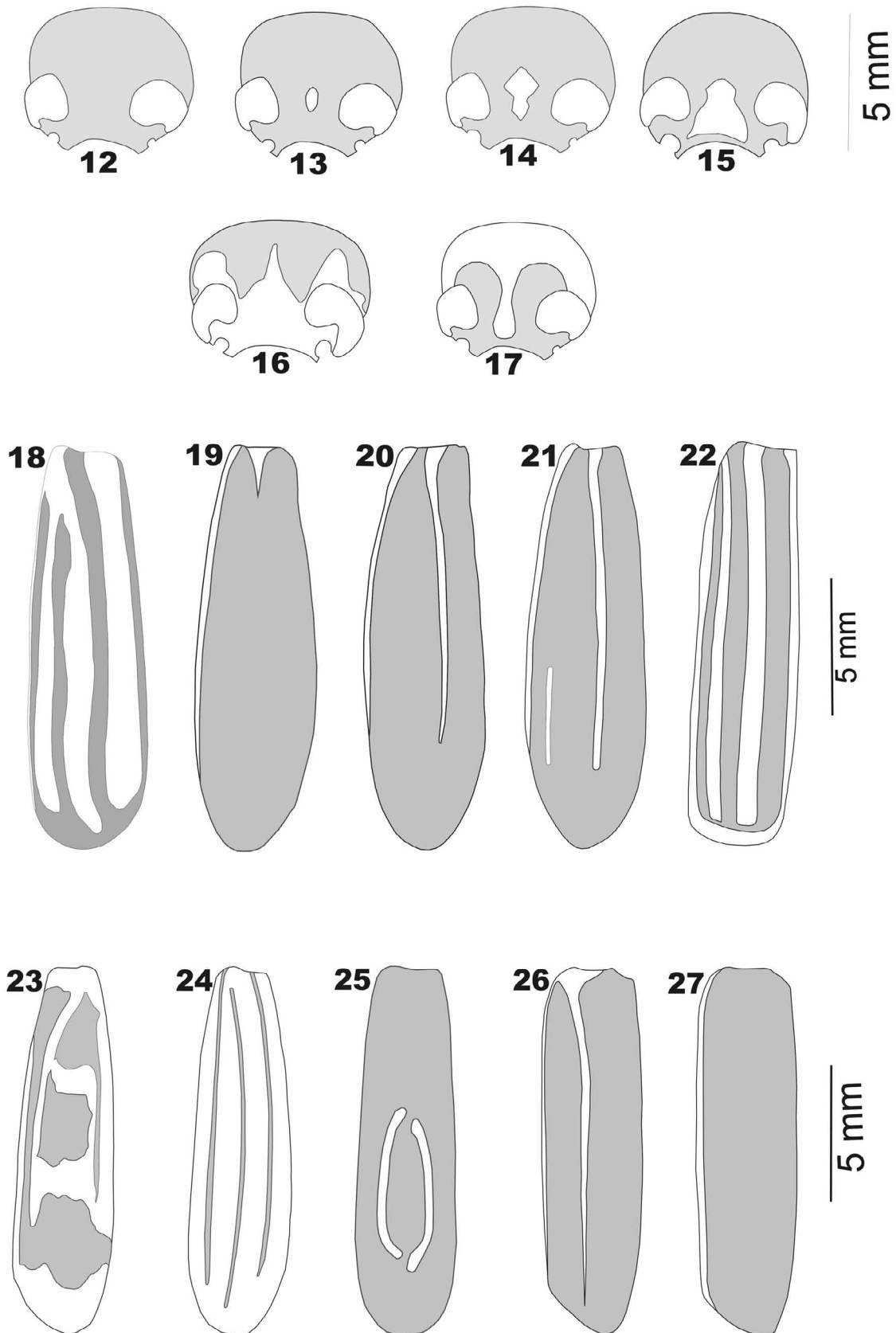
Host plant. Host plant citations for this species are: at native vegetation in *Amaranthus quitensis* and *Portulaca sp.* (Martínez, 1992); *Beta vulgaris L. var rapacea*, *Beta vulgaris var cyclo* and *Solanum tuberosum* (Hayward, 1942; 1960); *Cichorium endivia* (Hayward, 1942; 1960, Adams and Selander, 1979); *Helianthus annuus* (Rizzo, 1977); *Lycopersicon esculentum* (Hayward 1942, 1960; Adams and Selander 1979); *Medicago sativa* (Hayward, 1942; 1960); *Nicotiana tabacum* (Bosq, 1942; Hayward, 1942; 1960); *Portulaca sp.* (Adams and Selander, 1979); *Solanum dulcamara* (Adams and Selander, 1979); *Solanum eleagnifolium* (Adams and Selander, 1979).

Material examined. Fifty-six specimens are recorded from Argentina belonging to the following collections: MALP, MCNFA, IMLA. **Buenos Aires.** **Catamarca:** Córdoba: Villa María (32° 24' 82" S, 63° 14' 12" W). **Chaco:** Gancedo (27° 29' 48" S, 61° 40' 21" W). **Entre Ríos:** La Paz (30° 45' 02" S, 59° 38' 44" W). **Mendoza.** **Misiones:** El Dorado (26° 23' 88" S, 54° 37' 52" W); San José 27° 46' 27" S, 55° 46' 76" W). **Neuquén.** **Santa Fe:** Rosario (32° 57' 96" S, 60° 40' 84" W). **Salta:** Talapampa (25° 32' 66" S, 65° 34' 05" W). **Santiago del Estero:** San Ignacio (25° 41' 07" S, 62° 56' 74" W), Río Salado (27° 50' 59" S, 63° 28' 06" W), Negra Muerta (27° 30' 83" S, 64° 08' 95" W). **Tucumán:** San Pedro de Colalao (26° 13' 95" S, 65° 28' 89" W).



FIGURES 1–5. *Epicauta leopardina*: **1.** fore tibia with a marked depression on inner apical third; **2.** Male gonoforceps: ventral view and lateral view; pl (parameral lobes), fb (falobase), Y-shaped, arrow indicating a narrow median strip which diverges apically and runs along the ventromedial surface of each pl. *E. bosqi*: **3.** Pygidium: narrowly emarginated; *E. excavata*: **4.** Pygidium: apex incised; *E. clericalis*: **5.** Pygidium: entire.

FIGURES 6–11. *Epicauta lopardina*, **6.** Labial palpi with segment III strongly expanded from the basal third to the apex; **7.** Maxillary palpi large (three times width) compressed dorso-ventrally, tapering to the base and expanding to apex. *E. leopardina*: **8.** Prementum with central area having ample concavity; *E. clericalis*: **9.** Prementum straight. Mandible dorsal views: *E. leopardina*: **10** (b, see arrow); *E. clericalis* **11** (b, see arrow).



FIGURES 12–17. Head cuticle color: **12.** *E. excavata*; **13.** *E. semivittata*, *E. missionum*; **14.** *E. clericalis*, *E. luteolineata*; **15.** *E. bosqi*; **16.** *E. leopardina*, *E. monachica*, *E. rutilifrons*; **17.** *E. grammica*.

FIGURES 18–27. Elytra cuticle color: **18.** *E. bosqi*; **19.** *E. clericalis*; **20.** *E. grammica*; **21.** *E. luteolineata*; **22.** *E. excavata*; **23.** *E. leopardina*; **24.** *E. monachica*; **25.** *E. semivittata*; **26.** *E. rutilifrons*; **27.** *E. missionum*.

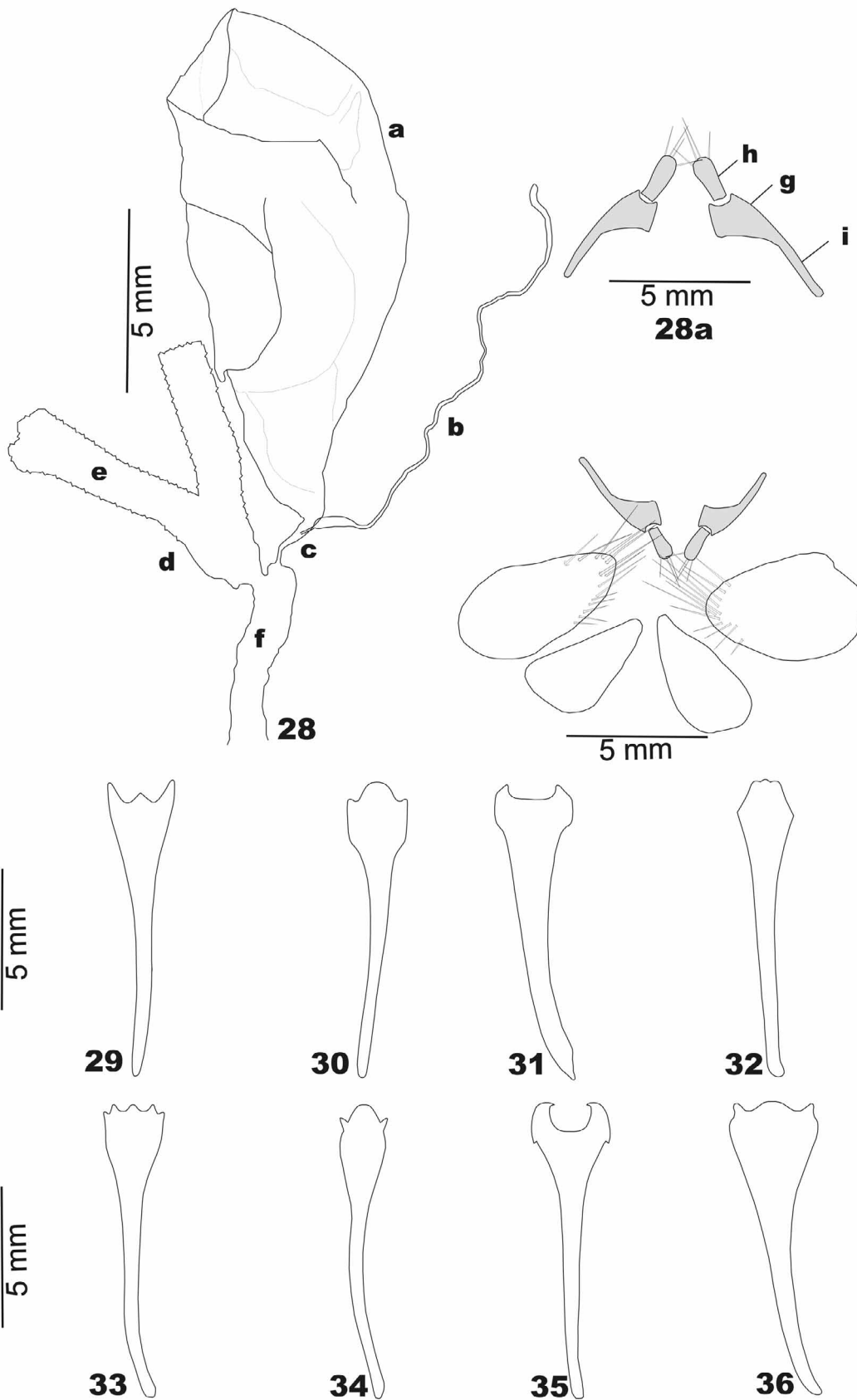
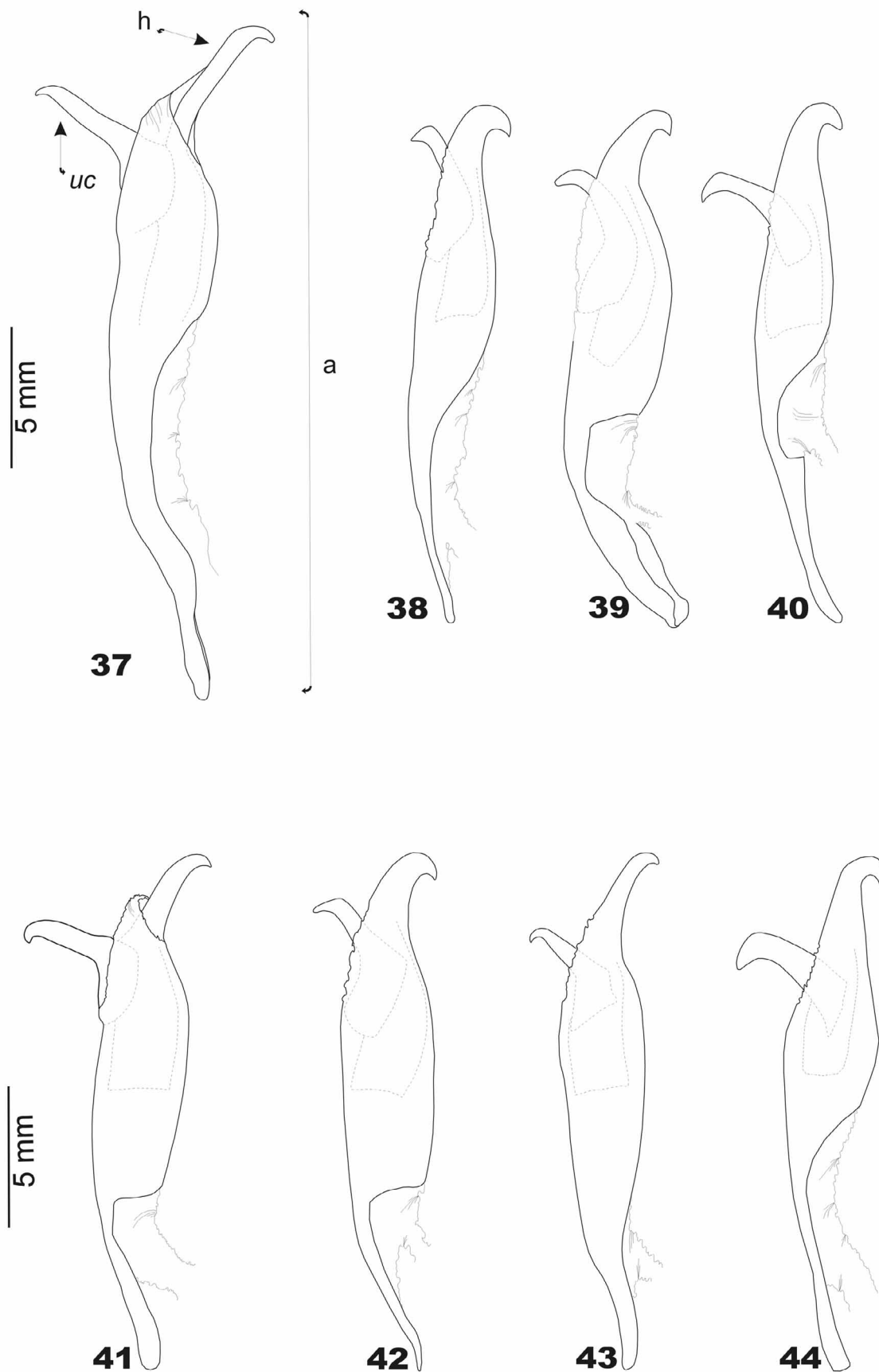


FIGURE 28. Female genitalia: (a) spca: spermathecal capsule; (b) ga: accessory gland; (c) spdu: spermathecal duct; (d) ca: calyx; (e) ov: ovary; (f) va: vagina; (g) va: valvifer; (h) stylus; (i) bsva: ventrolateral basal stem.

FIGURES 29–36. Spiculum gastrale: **29.** *E. bosqi*; **30.** *E. clericalis*; **31.** *E. excavata*; **32.** *E. grammica*; **33.** *E. leopardina*; **34.** *E. luteolineata*; **35.** *E. monachica*; **36.** *E. semivittata*.



FIGURES 37–44. Aedeagus, lateral view: **37.** *E. bosqi*: (**a**) aedeagus, (**dt**) dorsal tooth, (**h**) hook; **38.** *Epicauta clericalis*; **39.** *E. excavata*; **40.** *E. grammica* **41.** *E. leopardina*; **42.** *E. luteolineata*; **43.** *E. monachica*; **44.** *E. semivittata*.

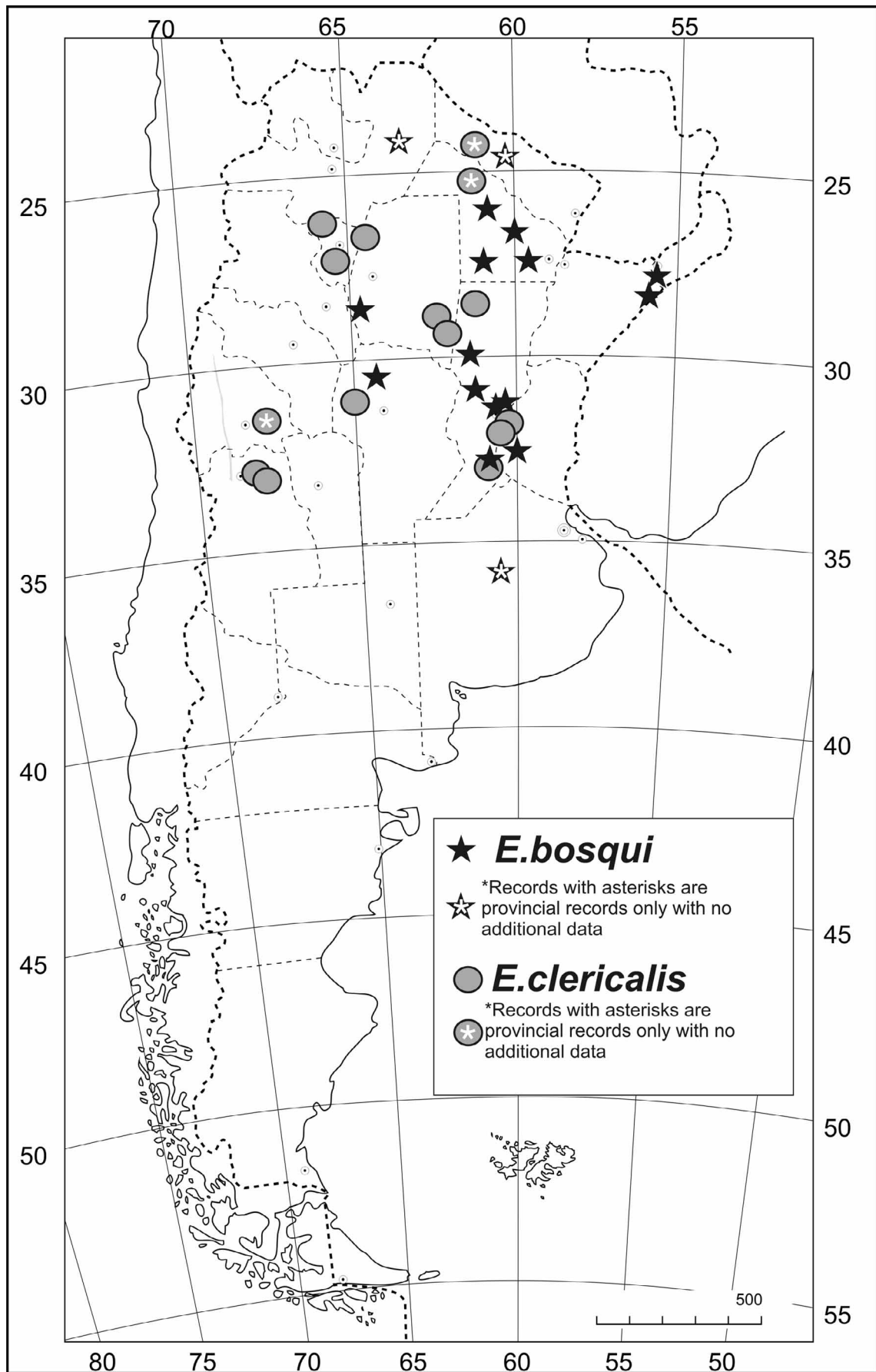


FIGURE 45. Distribution map of *Epicauta bosqi* and *E. clericalis*.

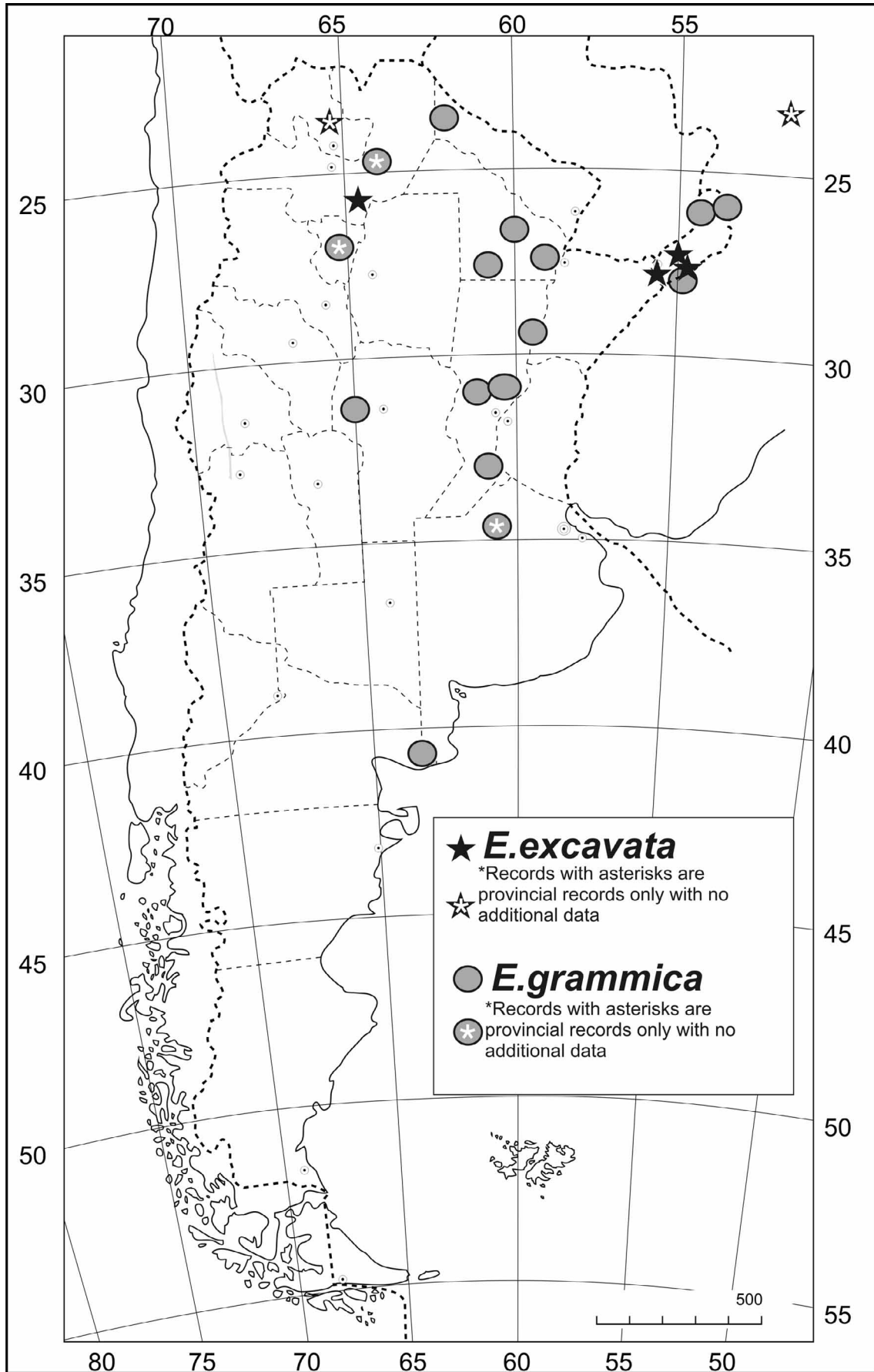


FIGURE 46. Distribution map of *Epicauta excavata* and *Epicauta grammica*.

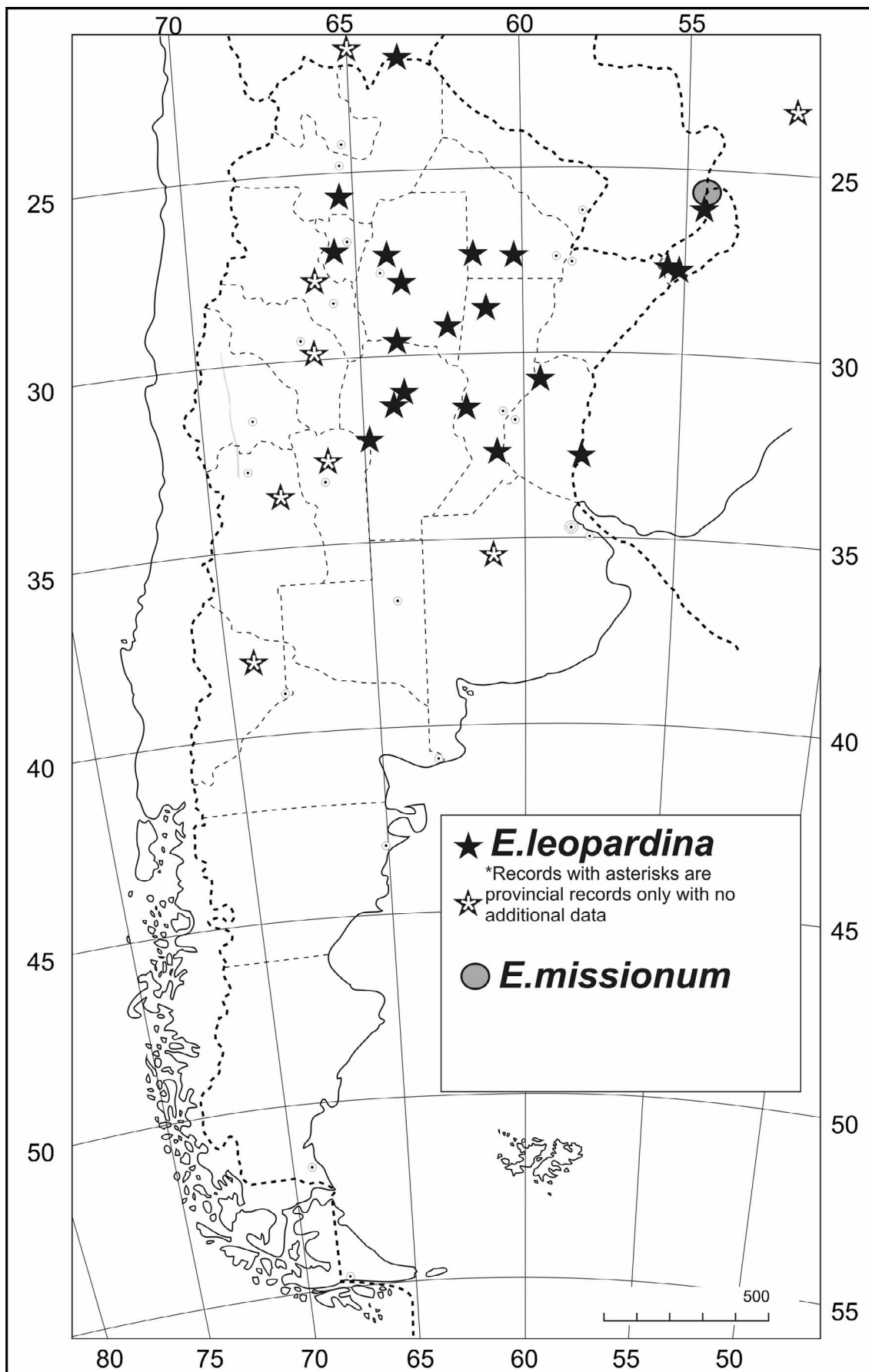


FIGURE 47. Distribution map of *Epicauta leopardina* and *Epicauta missionum*.

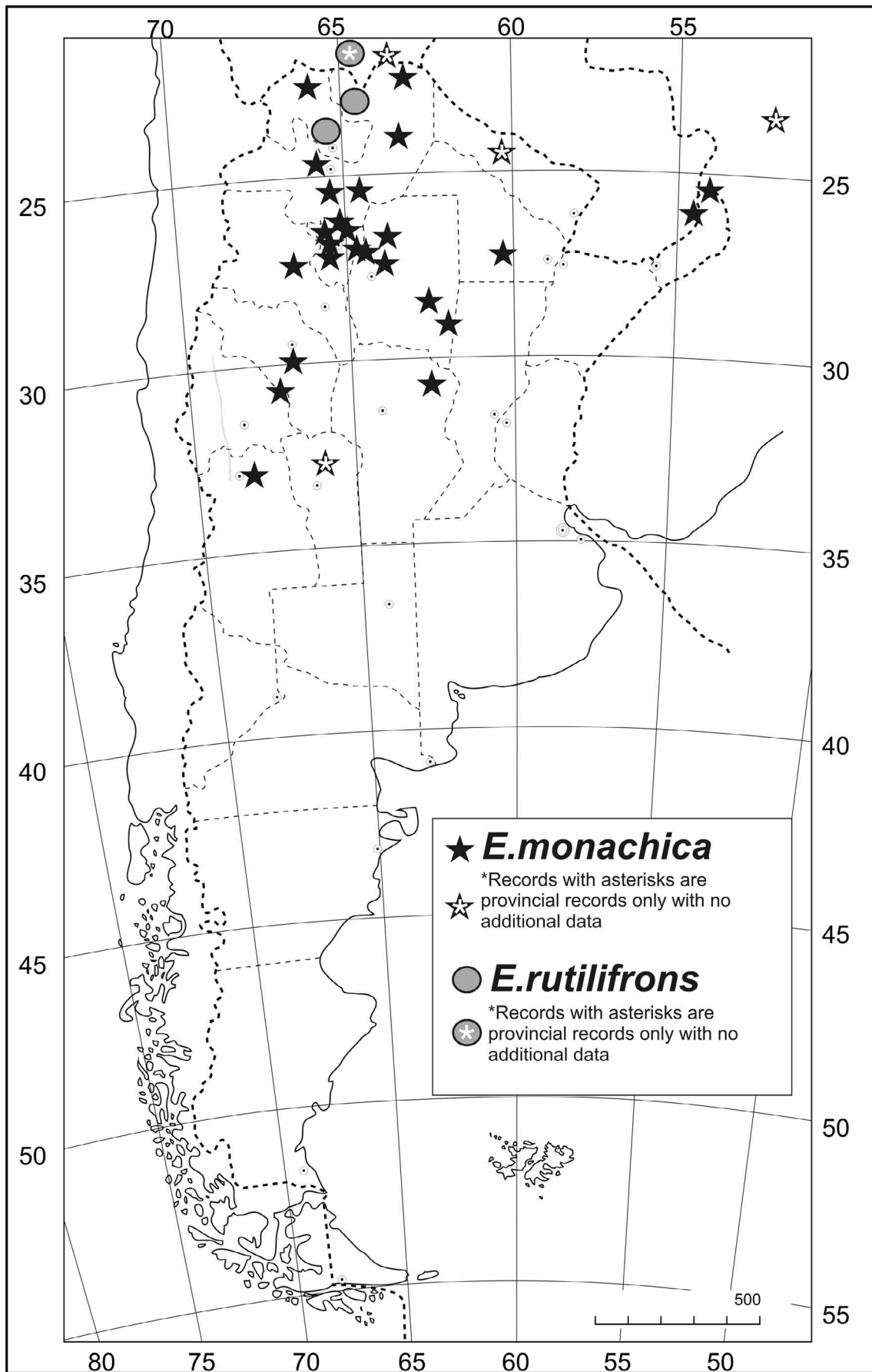


FIGURE 48. Distribution map of *Epicauta monachica* and *Epicauta rutilifrons*.

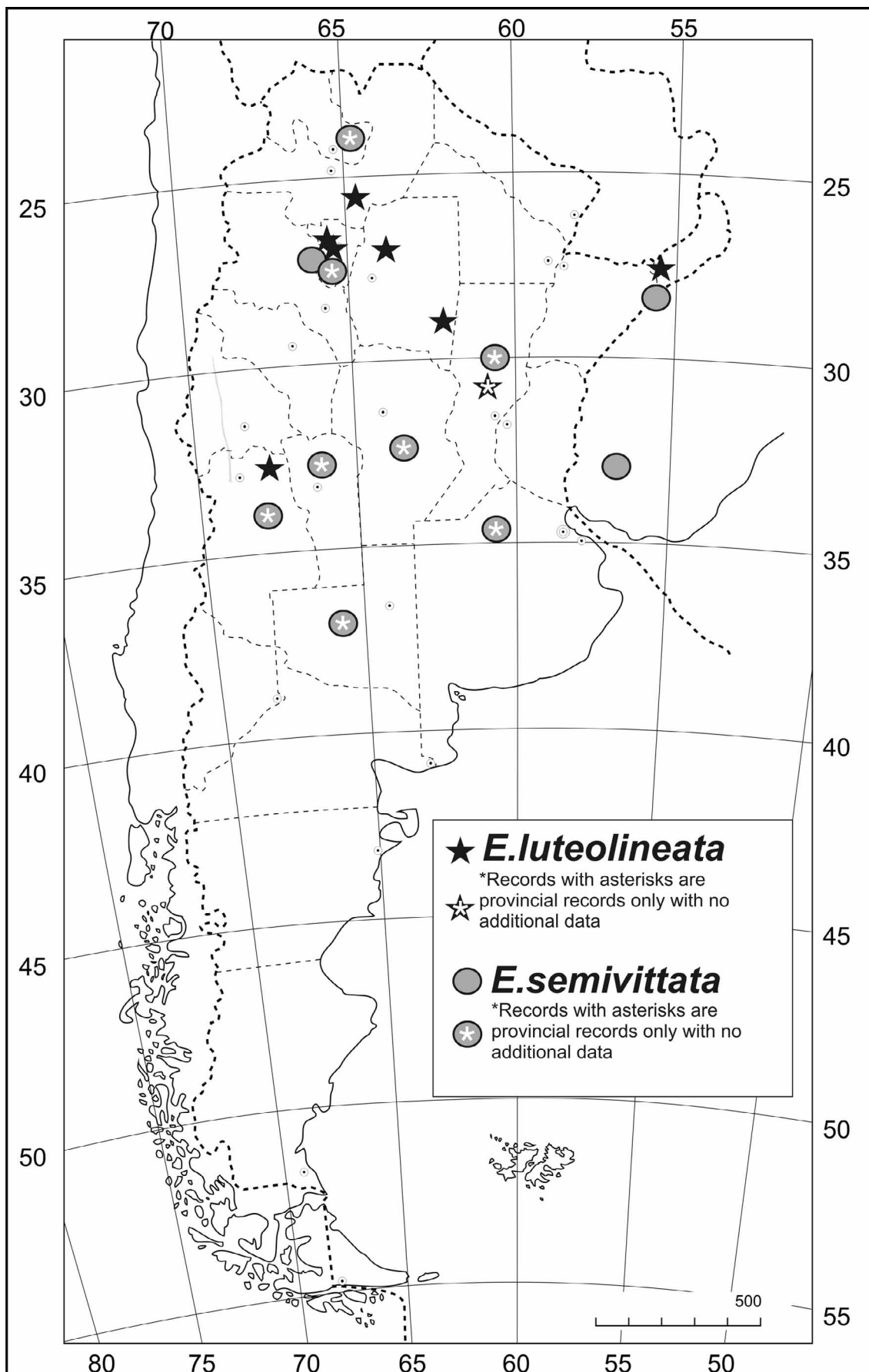


FIGURE 49. Distribution map of *Epicauta luteolineata* and *Epicauta semivittata*.

***Epicauta luteolineata* Pic, 1933**

Epicauta luteolineata Pic, 1933: 25.

Epicauta missionum var *luteolineata*: Denier, 1935: 157 (cat.); 1940: 421 (cat.); Blackwelder, 1945: 483 (cat.); Di Iorio, 2004: 169 (cat.).

Taxonomic remarks. *Epicauta luteolineata* var. *discolineata* Pic, 1933 and *E. luteolineata* var. *brevebasalis* Pic, 1933, were assigned to *E. clericalis* (Berg) by Denier (1935).

Type material. Adams and Selander (1979) indicated that syntypes are deposited in the Museum National d'Histoire Naturelle (Paris), from "Río Salado" Argentina. These specimens were not examined.

Diagnosis. Cuticle brown, elytra with three pale vittae; marginal vitta extended from the base to near apex and two central vittae, one extended from the base to near the apex and the other very short from almost middle of elytra and interrupted near apex. Head and pronotal pubescence light brown; elytral pubescence is coincident with cuticle color.

Comparative remarks. *Epicauta luteolineata* is similar to *E. clericalis* in the cuticle color of head and pronotum, but differs in the color pattern of the elytra: *E. luteolineata* with three light vittae whereas *E. clericalis* has the elytra with two pale vittae.

Redescription. *Body length:* 11–20 mm.

Cuticle and pubescent. *Cuticle* brown; head with pale patch on frons (Fig. 14); elytra with three pale vittae; marginal vitta from the base to near apex and two central vitta, one extended from the base to near the apex and the other very short from almost middle of elytra, interrupted near apex (as in Fig. 21). *Pubescence* of head, pronotum and elytron sparse (13–19 setae by lineal mm), light-brown colored. Head with pale pubescence on lateral parts and on the midline of occiput; pronotum with light setae on midline and margin.

Habitus. *Head* 0.75 times as long as wide (L/A: 22–29); mandible strongly curved apically (Fig. 10); antennal segments of male with following proportions: 2.6 (I); 1.5 (II); 3.6 (III); 3.3 (IV); 2.6 (V); 2.6 (VI); 2.6 (VII); 4 (VIII); 3 (IX); 2.5 (X); 3 (XI); antenna of female: 4.5 (I); 2 (II); 4.5 (III); 5 (IV); 2.6 (V); 2.6 (VI); 4 (VII); 3 (VIII); 3 (IX); 2.5 (X); 3 (XI). *Pronotum* 1.26 times as long as wide (L/A: 29–23); slightly impressed at apical third in lateral view. *Elytron* wider from apical third to apex; apex one third wider than base. *Legs* with adhesive setae of fore tarsal segments uniformly distributed; medial and hind tarsal segments with two longitudinal rows of adhesive setae. *Claws* with dorsal blade curved at apex, ventral blade slightly curved, wider than dorsal blade near apical third.

Male genitalia. *Falobase* with superior border with deep concavity. *Spiculum gastrale* with two small acuminate protuberances and inner area strongly bulged, extending the prominences outward (Fig. 34). *Median lobe* robust, dorsal-hook; *uncus* short and moderately robust (Fig. 42).

Intra-specific variation. Variation in body length and tonality color of pubescence occurs. This species has a wide range of size. The pubescence varies between brown and light brown.

Distribution. Map (Fig. 49). Known from Argentina (Adams and Selander, 1979), is recorded from: Santa Fe; Santiago del Estero. *New records:* Mendoza, Misiones, Salta, and Tucumán.

Host plants. *Amaranthus* sp.; *Apium graveolens* *Beta vulgaris*; *Chenopodium* sp.; *Chenopodium endivia*; *Lycopersicum esculentum*; *Medicago sativa*; *Nicotina* sp.; *Portulaca* sp.; *Solanum dulcamara*; *Solanum elaeagnifolium* (Adams and Selander, 1979; Di Iorio, 2004)

Material examined. Fifty-five specimens are recorded from Argentina belong to the following collections MLP, MCNFA, IMLA: **Mendoza:** Lavallo (32° 51' 63" S, 68° 59' S, 68° 59' 28" W); **Misiones:** San José (27° 46' 39" S, 55° 46' 76" W). **Salta:** Coronel Moldes (25° 16' 50" S, 65° 28' 33" W). **Santiago del Estero. Tucumán:** Lamailla (27° 03' 88" S, 65° 24' 43" W); Abra del Infiernillo (26° 43' 73" S, 65° 46' 15" W), San Miguel de Tucumán (26° 48' 50" S, 65° 13' 36" W).

***Epicauta missionum* (Berg, 1881)**

Cantharis missionum Berg, 1881: 306.

Epicauta missionum: Bruch, 1914: 404 (cat.); Borchmann, 1917: 78 (cat.); Denier, 1935: 157 (cat.); Blackwelder, 1945: 483 (cat.).

Type material examined. Holotype female: [Typus] [Misio-/ nes] [Foto Bruch] [*Lytta/ missionum/ Berg*] [MLP 575/ 1].

Type material remarks. In his original publication Berg (1881) indicates that the species is based on a single female from Misiones, deposited in his collection. Since part of this collection is now at the MLP, we conclude that this specimen labelled as type is the holotype. This is the only specimen of *E. missionum* available for study.

Diagnosis. Cuticle brown; head with a small pale patch on frons; elytra with pale marginal vitta; legs with trochanters and base of femora light-orange. Pubescence of elytra is coincident with cuticle color.

Comparative remarks. *Epicauta missionum* is similar to *E. clericalis* and *E. luteolineata* in cuticle color, but differs in color pattern of elytra and legs: *E. clericalis* has elytra with two light vittae and legs are brown; *E. luteolineata* has elytra with three light vittae and legs are brown; and *E. missionum* has light marginal elytral vittae and legs are brown with trochanters and basal part of femur light-orange.

Redescription. *Body length:* 16 mm.

Cuticle and pubescence. *Cuticle* brown; head with pale patch on frons (Fig. 13), elytra with pale marginal vitta (Fig. 27), legs with trochanter and base of femur light-brown. *Pubescence* sparse (13–19 setae by lineal mm); head and pronotum light brown, elytra pubescence coincident with cuticle color. Abdominal setae uniformly light brown.

Habitus. *Head* 0.9 times as long as wide (L/A: 19–21); mandible strongly curved apically (Fig. 10). *Pronotum* 1.2 times as long as wide (L/A: 21–19), slightly impressed at apical third in lateral view. *Elytron* wider from apical third to apex; apex one third wider than base. *Legs* with adhesive setae of tarsal segments uniformly distributed. *Claws* with dorsal blade curved at apex, ventral blade slightly curved, broader than dorsal blade near apical third; hind tibia spurs acuminate, hollow; inner spine rotated inwards.

Distribution. Map (Fig. 47). Known from Misiones, Argentina (Adams and Selander, 1979).

Host Plants. There is no available information about plant associations for this species.

Material examined. One specimen from Argentina belongs to the following collection MLP: Misiones, Puerto Aguirre.

Epicauta monachica (Berg, 1883)

Lytta monachica Berg, 1883: 68.

Epicauta monachica Blanchard, 1891: 495; Bruch, 1914: 404 (cat.); Borchmann, 1917: 78 (cat.); Denier, 1935: 157 (cat.); Bosq, 1934: 327 (cat.); 1942: 11 (cat.); Hayward, 1942: 23 (cat.); Blackwelder, 1945: 483 (cat.); Viana and Williner, 1973: 87 (dist.); Martínez, 1992: 7 (dist.); Di Iorio, 2004: 170 (cat.).

Type material examined. Syntype, sex not determined: [Typus] [Men-/doza] [Foto Bruch] [*Lytta/ monachica/ Berg*] [MLP 576/ 1]. Lectotype, sex not determined [Typus] [Mend-/doza] [MLP 576/ 2].

Type material remarks. In the original publication there is no indication of the type status of the specimens examined by the author, for this reason we consider them as syntypes.

Diagnosis. Cuticle of elytra pale, contrasting with that of head and pronotum which are brown, with three dark vittae on disk. Pubescence pale; pronotum with two short and dark longitudinal vittae. Antennae and legs pale.

Comparative remarks. *Epicauta monachica* is similar to *E. leopardina* in the cuticle color of head and pronotum, and color pattern of elytra, but differs in the form of the elytral vittae. *Epicauta monachica* and *E. leopardina* have light elytra and dark vittae, but *E. monachica* shows longitudinal vittae and *E. leopardina* has vitta-like irregular blotches (see diagnosis).

Redescription. *Body length:* 10–20 mm.

Cuticle and pubescence. *Cuticle* of head and pronotum brown, head with light patch on front and two light supra-ocular patches (Fig. 16); maxillary palpi, labrum and antennal segments light. Pronotum with two pale patches on disk in the apical third. Elytra pale with three dark vittae on disk extended from base to near apex (Fig. 24); legs pale. *Pubescence* of head sparse (13–19 setae by lineal mm); pronotum and elytra dense (28–34 setae by lineal mm); head pubescence pale with two dark-brown patches of different sizes on vertex; pronotum pale with two short and dark longitudinal vittae; elytra with pubescence coincident with cuticle color.

Habitus. *Head* 0.78 times as long as wide (L/A: 25–32); mandible strongly curved at apex (Fig. 10). *Pronotum* square; impressed at apical third in lateral view. *Elytron* wider from apical third to apex. *Legs* with tarsal segments

with two longitudinal rows of adhesive setae. *Claws* with dorsal blade curved from base to the apex, ventral blade slightly curved, wider than dorsal blade near apical third.

Male genitalia. *Falobase* with superior border with a deep emargination. *Spiculum gastrale* with two marginal and robust acuminate prominences directed inwards, inner area with deep emargination; lateral face with small acuminate prominences (Fig. 35). *Median lobe* large and thin, dorsal-hook; *uncus* slender and curved at apex (Fig. 43).

Intra-specific variation. Variation occurs in body length with some specimens double the size of the others.

Distribution. Map (Fig. 48). Known in Bolivia, Brazil, and Argentina. In Argentina is recorded from: Catamarca; Chaco; Córdoba; Formosa; Jujuy; La Rioja; Mendoza; Misiones; Salta; Santiago del Estero; San Juan; San Luis; Tucumán.

Host plants. Host plant associations for this species are (Di Iorio, 2004): *Amaranthus* sp.; *Brassica oleracea* (Adams and Selander, 1979); *Brassica oleracea* var. *acephala* (Hayward, 1942); *Cichorium endivia* (Hayward, 1942; 1960); *Gossypium hirsutum* (Denier, 1935; Bosq, 1942; Hayward, 1942; 1960); *Gossypium* (Adams and Selander, 1979); *Helianthus* sp. (Martínez, 1992); *Lycopersicon esculentum* (Adams and Selander, 1979) *Medicago sativa* (Bosq, 1942; Hayward, 1942; 1960; Adams and Selander, 1979); *Nicotina* sp. (Adams and Selander, 1979); *Nicotina tabacum* (Bosq, 1942; Hayward, 1942; 1960; Martínez, 1960); *Portulaca* sp. (Adams and Selander, 1979); Solanaceae (Bosq, 1934); *Solanum dulcamara*, *S. eleagnifolium* (Adams and Selander, 1979); *Solanum tuberosum* (Hayward, 1942; 1960).

Material examined. Sixty-five specimens from Argentina belong to the following collections MACN, MLP, MCNFA, IMLA. **Catamarca. Córdoba:** Marull (30° 59' 23" S, 62° 49' 10" W). **Chaco:** Villa Ángela (27° 34' 16" S, 60° 42' 28" W). **La Rioja:** Patquia (30° 02' 52" S, 66° 52' 73" W). **Salta. Santiago del Estero:** Río Salado (27° 50' 59" S, 63° 28' 06" W), San Ignacio (25° 41' 07" S, 62° 56' 74" W). **San Juan.**

Epicauta rutilifrons Borchamnn, 1930

Epicauta rutilifrons Borchamnn, 1930: 91; Blackwelder, 1945: 484 (cat.); Martínez, 1992: 8 (dist).

Type material examined. [Rep. ARGENTINA/ Prov. Jujuy/ C. Bruch] [C.Bruch/ dedit 1931] *Epicauta/ rutilifrons/* Borchm. / PARATIPO] [MLP 583/ 3].

Diagnosis. Cuticle brown. Head with light patch on frons, two light supra-ocular patches; elytra with two pale vittae, one marginal vitta and one on disk, both extended from base to near apex.

Redescription. Body length 17–19 mm.

Cuticle and pubescence: Cuticle brown. Head with pale patch on forehead, and two pale supra-ocular patches; elytra with two pale vittae, one marginal vitta and one on disk, both from the base to near apex (Fig. 26). Pubescence of head, pronotum and abdomen light brown; elytral pubescence coincident with cuticle color.

Habitus. Head 0.8 times as long as wide (L/A: 16–20); mandible strongly curved apically (Fig. 10). *Pronotum* 1.2 times as long as wide (L/A: 21–18); slightly convex in lateral view. *Elytron* wider from apical third to apex. *Legs* with adhesive setae of fore and medial tarsal segments uniformly distributed, hind tarsal segment with two longitudinal adhesive segments. *Claws* with dorsal blade curved at apex, ventral blade slightly curved, broader than dorsal blade near apical third.

Distribution. Map (Fig. 48). Known from Bolivia and Argentina, in Argentina is recorded from Jujuy.

Host plants. There is no available information about host plant associations for this species.

Material examined. Only one specimen from Argentina belongs to the following collection MLP: Jujuy (province label only).

Epicauta semivittata (Fairmaire, 1875).

Lytta virgata Klug, 1825: 441 (nomen nudum).

Cantharis semivittata Fairmaire, 1875: 200.

Cantharis hemigramma Makl, 1875: 632.

Cantharis virgata: Gemminger and Harold, 1870: 2155 (cat.) (nomen nudum).

Cantharis virgata Burmeister, 1881: 25 (desc.).

Epicauta semivittata: Bruch, 1914: 404 (cat.); Borchmann, 1917: 82 (cat.); Denier, 1935: 159 (cat.); Bosq, 1934: 327 (cat.); 1940: 12 (cat.); Blackwelder, 1945: 484 (cat.); Viana and Williner, 1973: 16 (dist.); Di Iorio, 2004: 171 (cat.).

Pyrotta virgata: Borchmann, 1917: 69 (cat.) (nomen nudum).

Type material. Unknown.

Diagnosis. Cuticle dark. Elytra brown with two pale vittae on disk: both central vittae are short, interrupted on apical and basal third, with slightly convex subparallel borders.

Redescription. *Body length:* 7–10 mm.

Cuticle and pubescence. *Cuticle* color dark; head with pale patch on frons (Fig. 13); elytra with two pale vittae on disk; both central vittae are short, interrupted on apical and basal third, slightly and subparallel convex borders (Fig. 25). *Pubescence* dense (23–29 setae by lineal mm), elytral pubescence coincident with cuticle color. Legs pale. Abdominal pubescence light brown.

Habitus. *Head* 0.8 times as long as wide (L/A: 16–20); mandible strongly curved (Fig. 10); antennae without sexual dimorphism. *Pronotum* square, impressed at apical third in lateral view. *Elytron* subequal in width throughout. *Legs* with adhesive setae of fore tarsal pads uniformly distributed, with distal region bilobed; medial and hind tarsal pads with two longitudinal rows of adhesive setae. *Claws* with dorsal blade curved from base to apex, ventral blade slightly curved, broader than dorsal blade near apical third.

Male genitalia. Spiculum gastrale with two marginal acuminate prominences, inner area bulged, not extending beyond the marginal spines; lateral face slightly bulged (Fig. 36). Median lobe rather long, dorsal-hook; *uncus* robust (Fig. 44).

Remarks. *Epicauta semivittata* is a new inclusion in the *E. vittata* group.

Distribution. Map (Fig. 49). Known from Chile, Uruguay, and Argentina. In Argentina it is reported from Buenos Aires; Córdoba; La Pampa; Mendoza; San Luis; Santa Fe; *New records:* Catamarca; Corrientes; Tucumán.

Host plants. Host plant associations for this species are: Solanaceae, *Solanum tuberosum* (potato) and *Lycopersicon esculletum* (tomato) (Bosq, 1942; Di Iorio, 2004).

Material examined. Eight specimens from Argentina belong to the MLP collection. **Buenos Aires. Catamarca. Aconquija** (27° 29' 09" S, 66° 01' 44" W). **Córdoba. La Pampa. San Luis. Santa Fe. Tucumán.**

Conclusion

We redefined the *E. vittata* group primarily on the basis of the vittae pattern of cuticle, independent of pubescence. The characters of foreleg with femur with marked depression on inner side of apical third, and male gonoforceps incompletely sclerotized on apical portion, membranous and largely unpigmented, except for a Y-shaped sclerotization, are not present in other species of *Epicauta*. This supports the hypothesis that these species constitute a natural, monophyletic group; allowing its redefinition and confirming the inclusion of South American species in the *E. vittata* group.

We revised over 30 species mentioned by Adams and Selander (1979) mainly from Northern South America: *E. clericalis*, *E. floydwerneri*, *E. grammica*, *E. kraussi*, *E. monachica*, *E. nattereri*, *E. philaemata*, *E. strigata*, *E. subvittata*, *E. xanthocephala*; and Southern South America: *E. borgmenieri*, *E. bosqi*, *E. franciscana*, *E. leopardina*, *E. missionum*, *E. purpureiceps*, *E. rutiliformis*, and included two other species: *E. excavata*, and *E. semivittata*. Of the reviewed species we excluded eight South American species (*E. borgmeieri*; *E. floydwerneri*, *E. franciscana*, *E. kraussi*, *E. philaemata*, *E. purpureiceps*, *E. yungana*, and *E. zebra*) because they lack the distinguishing characters of the group. The *E. vittata* group is constituted by the species cited by Pinto (1991) plus the following South American species: *E. abadona*, *E. aemula*, *E. apure*, *E. bosqi*, *E. clericalis*, *E. excavata*, *E. fulginosa*, *E. grammica*, *E. leopardina*, *E. luteolineata*, *E. monachica*, *E. nattereri*, *E. occidentalis*, *E. rutilifrons*, *E. strigata*, *E. subvittata*, *E. temexa*, *E. semivittata*, *E. unilineata*, *E. vittata*, *E. vitticolis*, and *E. xanthocephala*.

In our taxonomic revision we included: *E. bosqi*, *E. clericalis*, *E. excavata*, *E. grammica*, *E. leopardina*, *E. luteolineata*, *E. missionum*, *E. monachica*, *E. rutilifrons*, and *E. semivittata*. All are restricted to Southern South America and have never been redescribed nor illustrated.

The geographic ranges of these species are seven species in North-Central America, one species extended from Central to Northern South America and the remaining in South America (northern and southern). Of the South

American species most are concentrated in southern South America: four species are endemic to Brazil, distributed in Amazonia: *E. nattereri* (Goiás, 15°55'70"S, 50°08'37"O), *E. strigata* (locality not labelled), *E. subvittata* (locality not labelled), and *E. xanthocephala* (Jataí, 17°52'70"S, 51°43'28"O); three species are known in Brazil (south) and Argentina: *E. clericalis*, *E. excavata*, *E. kraussi*; one species from Bolivia and Argentina, *E. monachica*; and the widely distributed species, *E. grammica* (Brazil, Bolivia, Paraguay, and Argentina). The following southern South American species: *E. bosqi*, *E. leopardina*, *E. luteolineata*, *E. missionum*, *E. rutilifrons*, are endemic to Argentina, and *E. semivittata* is distributed in Uruguay, Argentina and Chile.

All the austral South American species inhabit warm and moderately dry regions, being mainly distributed in the biogeographical regions known as Chaco Province (Morrone, 1996, 2000) and Central Chile. Within Southern South America the largest concentrations of specimens come from Argentina, from the provinces of Entre Ríos, Córdoba, Chaco, Mendoza, Salta, Santa Fe, and Tucumán. It is also important that many large regions of Southern South America are still poorly explored and because of this the distributional ranges of many species look patchy. Although we have updated the distributional data for our group, much more work is needed to have an accurate idea of the species distributions.

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