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SYSTEMATICS, MORPHOLOGY AND PHYSIOLOGY

A New Species Group of the Genus *Epicauta* Dejean of Southern South America, the *bella* Group (Coleoptera: Meloidae)

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Abstract

Epicauta includes two subgenera, and within the nominotypical subgenus several species groups. Analyzing species of southern South America, a set of species of *Epicauta* has the particularity to present two distinctive characters which separates this group from the other species groups of American *Epicauta*: color pattern of pubescence in elytra is not coincident with color pattern of tegument and *endophalic hook* robust. Based on these characters I propose a new group of species herein named *bella* group. This group includes the Neotropical species *Epicauta bella* Mäklin, *E. brunneipennis* (Haag-Rutemberg), *E. diagramma* (Burmeister), *E. griseonigra* (Fairmaire), *E. luctifera* (Fairmaire), *E. riojana* (Fairmaire) **(new status)**, and *E. zebra* (Dohrn). This group is endemic of southern South America, inhabiting the Chaco biogeographical subregion, mainly in the arid northern areas of Argentina. Here we redefine the species of the *bella* group, consider new characters, illustrate the species in the group, provide maps of their distribution, and a key to identify them.

Introduction

The American species of *Epicauta* from North and Central America belonging to both the nominate and *Macrobasis* subgenera were subdivided in several groups of species (Horn 1873, Werner 1944, 1955, MacSwain 1956, Selander & Mathieu 1969, Pinto 1972ab, Adams & Selander 1979, Agafitei & Selander 1980, Selander 1981ab, 1982abc, Pinto 1991). However, most species of *Epicauta* from South America were treated individually and several of them were not included in any of the formal species groups. Seven of these species belonging to the nominate subgenus, *E. bella* Mäklin, *E. brunneipennis* (Haag-Rutemberg), *E. diagramma* (Burmeister), *E. griseonigra* (Fairmaire), *E. luctifera* (Fairmaire), *E. riojana* (Fairmaire) **(New status)**, *and E. zebra* (Dohrn), form a distinctive, previously unrecognized group herein proposed as the *bella* group. This group is endemic of southern South America, including Argentina, Bolivia, and Uruguay, with the highest species diversity in central-northern Argentina.

The main purpose of the present study is to describe this new South American species group of the genus *Epicauta*, redescribing and illustrating its species, including both external morphology and female and male genitalia, which are described and illustrated for the first time. Finally, this contribution provides an identification key to the species of this group, and updates the knowledge on the geographical distribution of each species.

Material and Methods

The examined specimens belong to the following collections: **CICyTTP - CONICET:** collection, 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). **MACN:** Museo Argentino de Ciencias Naturales, Buenos Aires (Argentina).

The comparisons between the different species were based on the external morphology, and male and female genitalia. Specimens were placed in a wet camera to soften their anatomical structures. Subsequently the abdomen was extracted, and cleared using 10% KOH for approximately 12h, and then the aedeagus was dissected from the abdomen; finally the aedeagus was washed in water and passed through 80% ethanol and glycerin for a few minutes. Body length was measured from the occiput to the apex of the elytra with a Vernier Calipter. Other morphological measurements (length, width) were obtained using an ocular micrometer. In order to determine the ratio of head length/width head length was measured from the front-clypeal suture to the top of the occiput and width was measured on the level of the dorsal margin of the eyes. Other measurements included length/width of male and female antennae; and length/width of pronotum. Once the examination and illustrations were completed, the genitalia and other parts were placed in a plastic microbial capsule in glycerin, and pinned directly under each specimen. Drawings were done with a camera lucida adapted to the stereoscopic microscope.

The terminology used in the description of the morphological structures of male genitalia and female genitalia follows previous authors, such as Bologna (1991), Pinto (1991) and Selander (1964). The primary sources of the terms used were Torre Bueno (1937) and Tuxen (1970). Most of the geographic distribution and host plant data was based on museum specimens and bibliographic data.

Geographic Distribution

The *bella* species group is primarily distributed in the Chaco subregion, ranging from southern Bolivia, western Paraguay, southern Brazil, and central and northern Argentina (Cabrera, 1971; Cabrera & Willink, 1973; Morrone, 1996, 2000). The Chaco region has a characteristic physiography consisting in plains of low elevation with continental warm climate (below 1,200 masl). According to Morrone (1996, 2000), this biogeographical subregion is subdivided into five provinces; three of which correspond to the distribution of this group: Chaco, Pampa, and Monte. These biogeographical provinces are characterized by dry shrubs or xerophytic forests, and grasslands or steppes.

Taxonomy

A preliminary morphology based phylogenetic analysis that included different species of *Epicauta* from the Americas (Campos-Soldini *et al* 2008) showed that the color pattern of elytral pubescence not coincident with that of the integument and a robust endophallic hook, are the principal morphological features that define this new species group.

The species belonging to the new *bella* group are: *Epicauta bella*, *E. brunneipenis*, *E. diagramma*, *E. griseonigra*, *E. riojana* (**New status**), *E. luctifera*, and *E. zebra*. *Epicauta zebra* is the unique species that was included in a formal group by Adams & Selander (1979), the *vittata* species group.

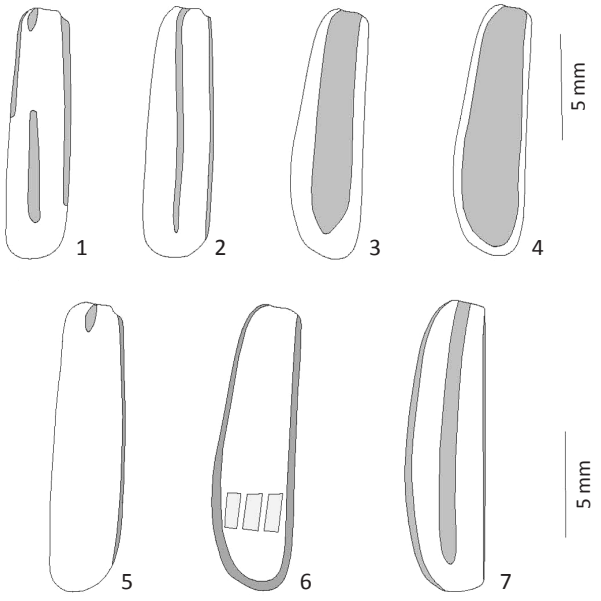
The *bella* Species Group

Diagnosis

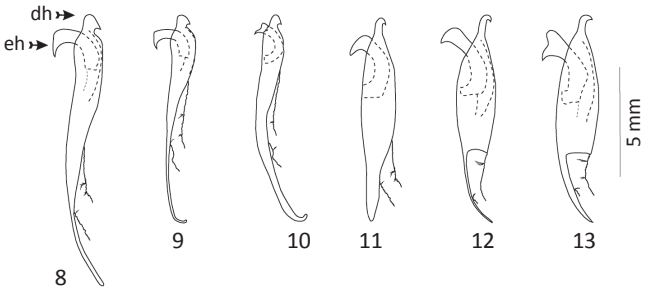
Tegument uniformly colored, brown or black. Vittae are expressed in pubescence, not coincident with the color from the basal integument, with basic pattern of one to three vittae (Figs 1-7); endophallic hook [sensu Pinto & Selander 1999, 2001 (Pinto & Bologna 1999 and Bologna & Pinto 2001) robust (Figs 8-13, see arrow)].

Comparative remarks

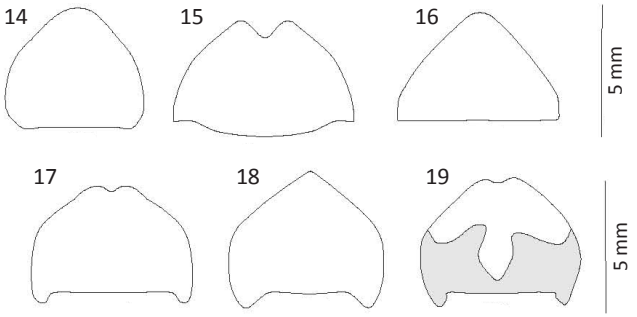
The *bella* group is morphologically similar to the *vittata* group as redefined by Campos-Soldini and Roig in press



Figs 1-7 Elytral pattern of coloration: 1) *Epicauta bella*; 2) *Epicauta diagramma*; 3) *Epicauta griseonigra*; 4) *Epicauta riojana*; 5) *Epicauta brunneipennis*; 6) *Epicauta luctifera*; 7) *Epicauta zebra.*



Figs 8-13 Median lobe (lateral view). 8) *Epicauta riojana:* a) dorsal hook (dh); b) endophallic hook (eh); 9) *Epicauta griseonigra;* 10) *Epicauta luctifera*; 11) *Epicauta brunneipennis*; 12) *Epicauta zebra* and *Epicauta diagramma;* 13) *Epicauta bella.*



Figs 14-19 Last abdominal sternite: 14) *Epicauta luctifera*; 15) *Epicauta bella*; 16) *Epicauta riojana*; 17) *Epicauta diagramma* and *Epicauta zebra*; 18) *Epicauta griseonigra*; 19) *Epicauta brunneipennis*.

and *caustica* group as defined by Selander (1981); the differences between these three groups are: in the *vittata* and *caustica* groups the vittae are expressed in the integument indistinctly to the color pattern of the pubescence, in the *bella* group the vittae are expressed in the pubescence, not coincident with the color from the basal integument. The eyes differ between the *vittata* and *bella* groups, in the *vittata* group the anterior margin is bisinuate, with ventral lobe reaching mouthparts; in the *bella* group the anterior margin has an emargination in front of the antennal insertion, with ventral lobe not reaching mouthparts.

Description

Length. 6-13 mm. Cuticle color mostly brown or black; head with pale patch on frons or not. Head and pronotum sculpture *foveata* (set with fine, impressed points or punctures appearing as pin-pricks) or punticulate (sparsely punctuate with very fine widely spaced punctures). Elytra sculpture granulated (covered with or made up of very small grains or granules). Pubescence varying in density; color mainly pale, head with black midline vitta or dark patch distributed on frons and vertex; palpomeres and labrum with or without elongate setae; pronotum with dark midline vitta and two lateral small and dark patches, pronotum vittae, or uniformly colored, elytral pubescence with vittae numbers of one to three.

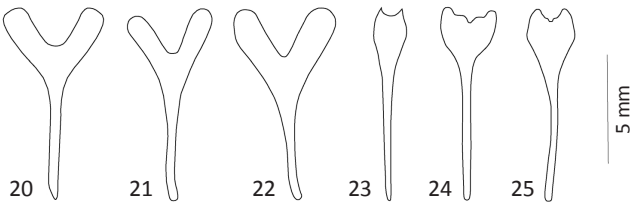
Habitus. *Head*: subquadrate, rather wider than pronotum; frons indistinctly impressed; eyes with ample emargination in front of the antennal insertion, slightly bulged, ventral lobe rounded or tapering to base not reaching mouthparts. Antennae are similar in both sexes, subfiliform, typically tapering towards apex. *Mouthparts*: maxillary palpomeres widening towards apex, labial palpomere II with the same width throughout; mandibles robust, strongly curved at apex; prementum with superior border straight, having broad emargination, or with smooth central projection. *Pronotum*: as long as wide (wider than long in *E. luctifera*); disk with slight depressions on apical or basal third, or convex. *Elytra*: with sides subparallel or moderately divergent towards apical third. *Legs*: fore tibiae with or without *mucro*, tibiae spurs acuminated, subequal straight, subparallel or divergent; hind tibiae with spurs acuminated and rather robust. *Pygidium*: subtriangular. *Last visible sternite* subtriangular (Figs 14-16) or subpentagonal (Figs 17-19).

Male genitalia. *Spiculum gastrale*: evidently biarmed (Figs 20-22); or almost not biarmed (Fig 23-25). Parameral lobes completely sclerotized with setae on apical third; rather bulged or tapering to apex; apex divergent or pointed inwards; phallobase with the same width as parameral lobes, or with maximum width at basal third (Figs 26-31). Aedeagus with apical hook slender or robust; *endophallic hook* (sensu Pinto & Bologna 1999, Bologna & Pinto 2001) robust (Figs 8-13).

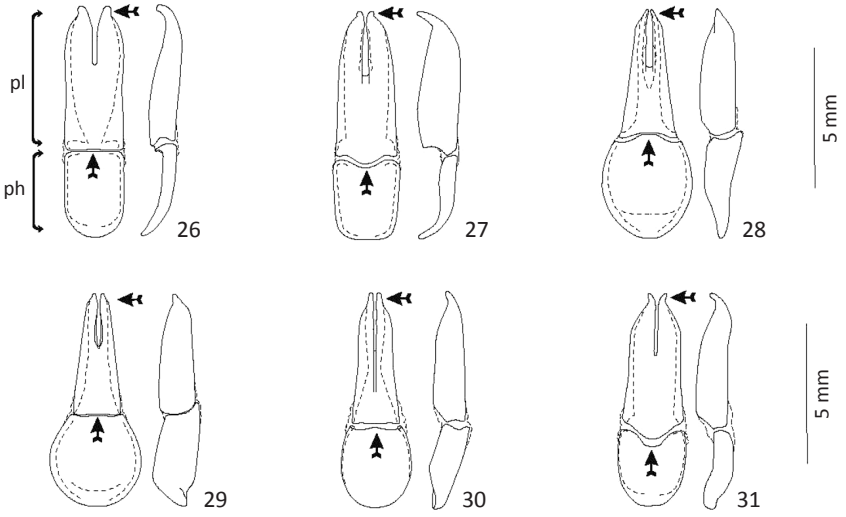
Female genitalia. Spermathecal capsule large, in some species with well developed basal diverticulum; spermathecal duct rather short and wide, or long and thin; accessory gland large and tubular (Figs 32-34, see arrow).

Distribution

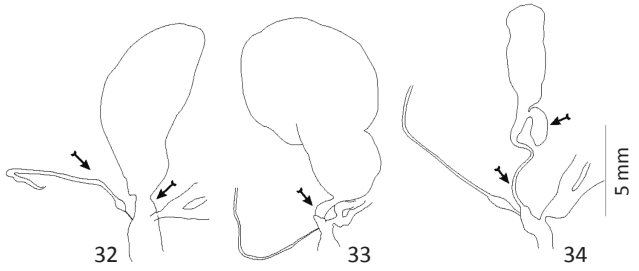
The *bella* group is endemic to southern South America: *E. riojana* and *E. zebra* are endemic to Argentina; *E. luctifera* is endemic to Uruguay, and *E. bella* is recorded from Argentina, Bolivia and Uruguay. The remaining species are distributed in Argentina and Uruguay. The area with



Figs 20-25 *Spiculum gastrale*: 20) *Epicauta bella* and *Epicauta brunneipennis*; 21) *Epicauta diagramma*; 22) *Epicauta zebra*; 23) *Epicauta luctifera*; 24) *Epicauta riojana*; 25) *Epicauta griseonigra*.



Figs 26-31 Tegmen: parameral lobes (pl), phallobase (ph) (dorsal and lateral view). 26) *Epicauta bella*; 27) *Epicauta zebra* and *Epicauta diagramma*; 28) *Epicauta griseonigra*; 29) *Epicauta riojana*; 30) *Epicauta luctifera*; 31) *Epicauta brunneipennis*.



Figs 32-34 Female genitalia: 32) *Epicauta luctifera*; 33) *Epicauta diagramma* and *Epicauta zebra*; 34) *Epicauta brunneipennis, Epicauta griseonigra* and *Epicauta riojana.*

the highest species diversity of the *bella* group is the North-Central region of Argentina.

Key to the species of the bella *group*

1) - Cuticle mainly brown; pubescence sparse (13-19 setae in one mm)……..2
- Cuticle mainly black; pubescence very sparse (6-7 setae in one mm) or dense (28-34 in one mm)……3
2) - Cuticle of head dark brown; pronotum and elytra pale brown. Elytra with three dark vittae (Fig 1)……*E. bella*
- Cuticle of head and pronotum dark brown; elytra pale brown with two dark vittae, one sutural from the base to near the apex, and one short on humeral callus (Fig 5)……*E. brunneipennis*
3) - Pubescence very sparse (6-7 setae in one mm). Pubescence mainly dark; head with cinereus setae on frons and undersides; pronotum and elytra with yellow setae on the margin; elytra with three short and cinereous vittae on apical third (Fig 6)……*E. luctifera*
- Pubescence dense (28-34 setae in one mm) setae mainly pale or reddish Head, pronotum and elytra not setated as above……4
4) - Elytra with a single broad vitta from the base to near the apex (Figs 3-4). Pronotum without vittae. Head with dark patch on frons……5
- Elytra with two or three vittae. Pronotum with vittae. Head with dark vitta of different length, not forming patch……6
5) - Pubescence mainly reddish...*E. riojana* (New status)
- Pubescence mainly pale……*E. griseonigra*
6) - Elytra with two vittae (Fig 2). Pronotum with one dark middle vitta and two small lateral patches. Head with one dark thin midline vitta extended from the base of occiput to the half of forehead……*E. diagramma*
- Elytra with three vittae (Fig 7). Pronotum with three dark vittae. Head with one dark midline vitta extended from base of occiput to the base of clypeus……*E. zebra*

Epicauta bella **Mäklin**

Epicauta bella Mäklin 1875: 631; Borchmann 1917: 71; Denier 1935: 153; Blackwelder 1945: 482.
Lytta exclamationis Berg 1889: 120; Bruch 1914: 405; Borchmann 1917: 94.
Type material of Lytta exclamationis. Deposited in the Museum de La Plata entomological collection. Lectotype: [Typus] [Uruguay] [MLP 564/ 2]. [Typus] [Banda/ Oriental] [MLP 564/3]. Syntype sex not determined. [Typus] [Tandil] [Foto Bruch] [Lytta/ exclamationis/ 1889] [MLP 564/1].
Type of *Epicauta bella* not examined.
Type material remarks. In Berg (1889) is indicated that the autor studied three specimens from Tandil (Argentina) and Uruguay. Based on this information, Campos-Soldini *et al* (2009) concluded that the material deposited at the MLP are the syntypes of *Lytta exclamationis*.
Taxonomic remarks. Denier (1935) considered *Lytta exclamationis* as a junior synonym of *Epicauta bella* Mäklin, 1875.
Diagnosis. Cuticle of head dark brown, pronotum and elytra pale brown. Pubescence of elytra with three dark

vittae: one sutural vitta from elytral base to near elytral apex, one marginal vitta from base of elytra to half of the elytra, and one interrupted vitta divided in two portions, the former on humeri and the second on posterior half, ending near apex (Fig 1). Abdomen dark-brown, except last three tergites pale-brown.

Habitus. Length 6-10 mm. Brown color predominant. Cuticle of head dark brown, pronotum and elytra pale brown; legs with femora and tibiae pale-brown, tarsal segments dark. Abdomen dark brown, except three last tergites pale brown. Pubescence sparse (13-19 setae on one mm), mostly pale with the following pattern: head with dark brown midline vitta from occiput to the base of clypeus; pronotum with three dark vittae, two marginal, one on the midline; elytra with three dark vittae, one sutural from base to near apex, one marginal from base to half of the elytra, and one interrupted vitta divided in two portions, the former on the humerus and the second on the posterior half of elytra, ending near apex (Fig 1); legs with dark setae on femur-tibia junction. Pygidium with sparse dark setae at base.

Head as long as wide (0.87; 0.21-0.24); sides subparallel; occiput concave. *Pronotum* as long as wide (0.93; 0.15-0.16); disk rather convex, sides subparallel. *Elytra*: uniform in width. *Legs*: fore tibial spurs acuminated, subequal, apically divergent; hind tibial spurs subequal and acuminated, apex of inner spur rounded; tarsomeres with tarsal pads located in two longitudinal rows. *Last abdominal sternite*: subtriangular, apex marked impressed (Fig 15).

Female genitalia. Unknown.

Male genitalia. *Spiculum gastrale* short and biarmed (Fig 20). *Parameral lobes*: uniform in width, apex divergent. *Phallobase*: fore margin straight (Fig 26, see arrow). *Median lobe*: basally short and curved; dorsal hook very thin and short; *endophallic hook* robust, with distal area as in Fig 13.

Distribution (Fig 35). Argentina (Buenos Aires: Tandil; Berg 1889), Bolivia, and Uruguay.

Material examined. (3 ♂♂) Two specimens from Uruguay and one from Argentina: Buenos Aires.

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

Epicauta brunneipennis (Haag-Rutenberg)

Lytta brunneipennis Haag-Rutemberg 1880: 29.

Cantharis brunneipennis: Burmeister 1881: 24; Berg 1881: 304.

Epicauta brunneipennis: Bruch 1914: 403 (cat.); Borchmann 1917: 72; Denier 1935: 154, 1940: 419; Blackwelder 1945: 482; Viana & Williner 1973: 14; Di Iorio 2004: 168.

Type material. Berg (1881) indicates that the type material

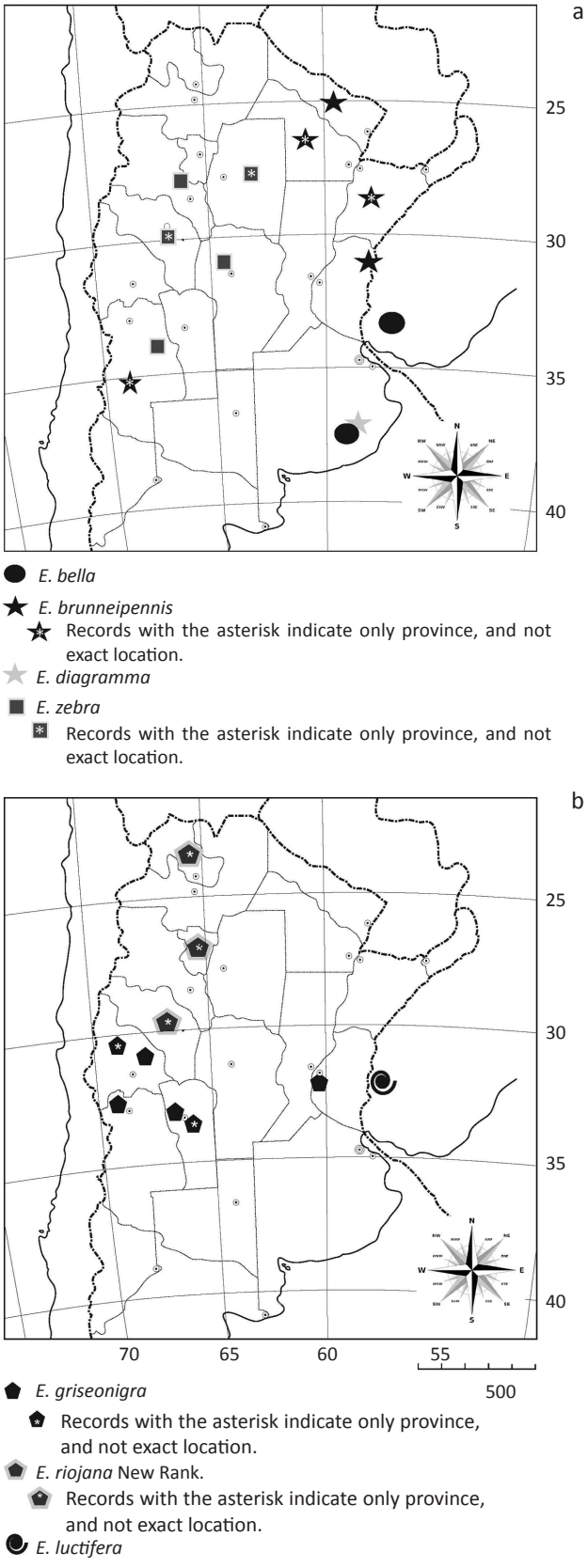


Fig 35 Species distribution in Argentina and Uruguay: a) *Epicauta bella*, *Epicauta brunneipennis*, *Epicauta diagramma* and *Epicauta zebra*; b) *Epicauta griseonigra*, *Epicauta riojana* and *Epicauta luctifera*.

is deposited in the Haag-Rutemberg and Dr. Clemens Müller collection in Dresden (Germany).

Diagnosis. Cuticle of head and pronotum dark brown, elytra pale brown. Pubescence of head with dark thin midline vitta from the base of occiput to half of forehead; pronotum with two dark lateral patches, and dark midline vitta; elytra with two dark vittae, one sutural from base to near the apex, and the other very short on humeral callus.

Habitus (Fig 36). Length: 7-10 mm. Brown color predominant. Cuticle of head and pronotum dark brown, elytra pale brown. Pubescence sparse (13-19 setae on one mm); mostly pale; head with dark thin midline vitta from base of occiput to half of forehead; pronotum with two dark lateral patches and one dark midline vitta; scutellum dark; elytra with two dark vittae, one sutural from base to near the apex, and the other very short on humeral callus (Fig 5); coxae and trochanters pale; legs pale brown tinged with dark brown. The last abdominal sternite unpigmented at the apical third as in Fig 19.

Head as long as wide (0.80; 0.17-0.21); rather wider at temples; occiput convex. Eyes with apex of ventral lobe rounded, reaching mouthparts. Female antennomeres with the following ratios: 1.66 (I); 1.33 (II); 2.66 (III); 2 (IV); 1.66 (V); 1.66 (VI); 1.66 (VII); 1.66 (VIII); 1.66 (IX); 1.33 (X); 3.33 (XI); male: 1.75 (I); 1.33 (II); 3 (III); 2.33 (IV); 2 (V); 2 (VI); 2 (VII); 2 (VIII); 1.66 (IX); 1.66 (X); 2.66 (XI). *Pronotum* as long as wide (0.95; 0.19-0.20), rather wider at apical third; disk slightly convex. *Elytra* with the same width throughout. *Legs*: hind tibiae spurs acuminated, subequal. Female: tarsomeres I- IV with pads of setae divided in two longitudinal rows, and on tarsomere V developed only on the basal third; male: tarsomeres I and II with pads of setae uniformly distributed on the surface, tarsomeres III and IV located in two longitudinal rows, and on tarsomere V developed only on basal third. *Last abdominal sternite* subpentagonal, base with lateral prominences (Fig 19).

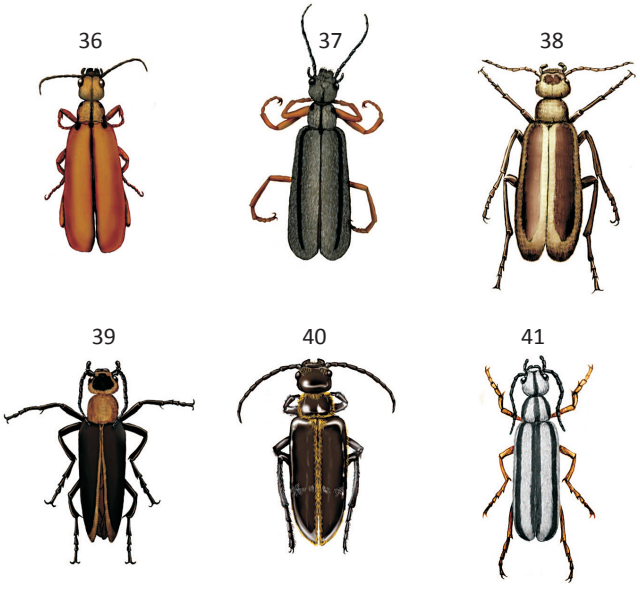
Female genitalia. Spermathecal capsule with duct rather longe, accessory gland large and tubular (Fig 34, see arrow). Valvifer with ventrolateral basal stem straight; stylus rather robust, with setae on apical third.

Male genitalia. *Spiculum gastrale* biarmed (Fig 20). *Parameral lobes* robust, with same width throughout, apex divergent. *Phallobase* suboval, fore margin largely emarginate (Fig 31, see arrow). *Median lobe*: short and stright; with dorsal hook small, *endophallic hook* robust (Fig 11).

Distribution (Fig 35). Argentina and Uruguay. In Argentina recorded from: Mendoza (Bruch 1914); Buenos Aires (Bruch 1914); San Luis: San Gerónimo (Viana & Williner 1973); Corrientes; Chaco: Pampa del Infierno; Entre Ríos: Concordia; Formosa: Ibarreta.

Material examined. (3 ♂♂, 1 ♀♀) Argentina: Corrientes; Chaco: Pampa del Infierno; Entre Ríos: Concordia; Formosa: Ibarreta.

Host plant. Di Iorio (2004) cited *E. brunneipennis* feeding on *Cercidium praecox* (Fabaceae), *Prosopis* sp. (Fabaceae), *Senna aphylla* (Fabaceae), plant locally known as pichanilla.



Figs 36-41 Adults in dorsal view: 36) *Epicauta brunneipennis;* 37) *Epicauta diagramma;* 38) *Epicauta griseonigra;* 39) *Epicauta riojana;* 40) *Epicauta luctifera;* 41) *Epicauta zebra.*

Epicauta diagramma (Burmeister)

Cantharis diagramma Burmeister 1881: 24.
Cantharis griseonigra: Berg. 1881: 304 (*partim*).
Lytta griseonigra: Bruch.1914: 405 (*partim*).
Epicauta griseonigra: Borchmann 1917: 76 (*partim*).
Epicauta diagramma: Denier 1935: 154; 1940; 419; Blackwelder 1945: 483.
Type material: Not examined.
Taxonomic remarks. Berg (1881) considered *Cantharis diagramma* Burmeister 1881, as a junior synonym of *Cantharis griseonigra* Fairmare 1873. I follow here the decision of Denier (1935) in considering both species as distinct, based on differences of external morphology and male genital structures.
Diagnosis. Pubescence mostly dark gray with following pattern: head with thin and dark midline vitta from occiput to half of forehead; pronotum with dark midline, and two lateral small and dark patches; elytra with two dark vittae, both vittae extending from base to near apex. Legs pale orange.
Habitus (Fig 37) Length 8-10 mm. Black color predominant. Pubescence dense (28-34 on one mm), mostly dark grey; head with a thin and dark midline vitta from occiput to the half of forehead; pronotum with one dark patch on midline, and two lateral small and dark patches; elytra

with two dark vittae, both from base to near the apex (Fig 2). Cuticle of legs pale orange.
Head as long as wide (0.55; 11-20); occiput convex, sides subparallel. Female antennomeres with the following ratios: 2 (I); 1.5 (II); 3 (III); 2.5 (IV); 2.5 (V); 2.5 (VI); 2.5 (VII); 2.5 (VIII); 2.5 (IX); 2.5 (X); 3.5 (XI); male: 2 (I); 1 (II); 2.5 (III); 2.5 (IV); 2 (V); 2 (VI); 2 (VII); 2 (VIII); 2 (IX); 2 (X); 3 (XI). *Pronotum* as long as wide (1.06; 0.15-0.16), sides slightly oblique; disk with a depression on both fore and basal third. *Elytral* sides divergent to apical third. *Legs* hind tibial spurs acuminated, inner spur rotated inwards; tarsomerers with tarsal pads composed by two longitudinal rows of setae; legs with last tarsomerers slightly curved. *Last abdominal sternite* subpentagonal, apex with slighly emarginate; base having lateral prominences (Fig 17).
Female genitalia. spermathecal duct rather long, accesory gland large and tubular (Fig 33, see arrow). Ventrolateral basal stem of valvifer not well developed; stylus with setae uniformly distributed.
Male genitalia. *Spiculum gastrale* biarmed (Fig 21). *Parameral lobes* with uniform width; apex divergent. *Phallobase* with fore margin concave (Fig 27, see arrow). *Median lobe*: basally short and curved; with dorsal hook small and rather long; *endophallic hook* robust (Fig 12).
Distribution (Fig 35). Argentina and Uruguay.
Material examined. Two ♀♀ Uruguay; one ♂ Argentina, Buenos Aires, Tandil.
Host plant. *Larrea* sp. (Zygophyllaceae), locally known as "jarilla" (new host record).
Comparative remarks. *Epicauta diagramma* differs from *E*. *griseonigra* and *E*. *zebra* by they color pattern of pubescence: *E*. *diagramma* has a thin and dark midline vitta extending from the occiput to the half of the forehead, pronotum with one dark midline vitta and two lateral patches, elytra with two dark vittae both from base to near the apex; *E*. *griseonigra* has a dark patch on frons, pronotum uniformly colored, and elytra with a single broad vitta from the base to near the apex; *E. zebra* head with one dark midline vitta extended from base of occiput to the base of clypeus, pronotum and elytra with three dark vittae (see Figs 37, 38, 41).

Epicauta griseonigra (Fairmaire)

Cantharis griseonigra Fairmaire 1873: 24; Berg 1881: 304 (*partim*)
Cantharis centralis Burmeister 1881: 25.
Lytta griseonigra: Bruch 1914: 405 (*partim*).
Epicauta centralis var. *ochraceocincta* Pic 1916: 22
Epicauta griseonigra: Borchmann 1917: 76 (*partim*); Denier 1935: 156 (*partim*); Blackwelder 1945: 483 (*partim*); Viana & Williner 1973: 15; Martínez 1992: 6-7.
Epicauta centralis: Borchmann 1917: 72; Bruch 1914: 404; Blackwelder 1945: 483; Di Iorio 2004: 168.
Type material. Not examined.
Diagnosis. Cuticle of head with a small pale patch on frons. Pubescence mostly pale; head with a wide dark patch extended from clypeus along frons to occiput, bordering eyes. Elytra with a broad vitta, extended from the base to near apex.
Habitus (Fig 38) Length 12-15 mm. Tegument black color; head with small pale patch on frons. Pubescence dense (28-34 setae on one mm), mostly pale; head with a wide dark patch extended from clypeus along frons to occiput, bordering eyes, labrum with elongate setae at apex, maxillary palpi sexually dimorphic: male underside of palpomere II with elongate setae, lacking in female; elytra with a dark broad vitta from the base to near the apex (Fig 3); legs pale pubescence tinged with dark brown setae.
Head as long as wide (0.86; 0.26-0.30); occiput slightly convex. Female antennomeres with the following ratios: 2.5 (I); 1.3 (II); 3.3 (III); 2.6 (IV); 2.3 (V); 2.3 (VI); 2.3 (VII); 2.3 (VIII); 2.3 (IX); 3 (X); 4.5 (XI); male: 2.6 (I); 1.3 (II); 2.6 (III); 2 (IV); 2.5 (V); 3 (VI); 2.5 (VII); 2.5 (VIII); 2.5 (IX); 2.5 (X); 3 (XI). *Pronotum* as long as wide (0.96; 0.29-0.28); sides subparallel; disk slightly convex. *Elytra* with the maximum width on apical third, tapering to apex. *Legs*: fore tibiae with mucro developed; tarsomerers with tarsal pads composed by two longitudinal rows of setae; both hind tibial spurs acuminated and robust, the inner one rotated inwards. *Last abdominal sternite* subpentagonal; apically rounded; basally having marginal prominences (Fig 18, see arrow).
Female genitalia. Spermathecal diverticulum developed; spermathecal duct large and thin; accessory gland large, bulged near the spermathecal duct then tubular (Fig 34, see arrow). Valvifer with ventrolateral basal stem not developed; stylus with setae on apical third.
Male genitalia. *Spiculum gastrale* as in Fig 25. *Parameral lobes* tapering to apex, pointed inwards (see arrow). *Phallobase* suboval, superior border with marked protuberance (Fig 28, see arrow). *Median lobe* basally straight, curved apically; dorsal hook very short and robust, *endophallic hook* robust, straight, pointed at apex as in Fig 9.
Intra-specific variation. These species present differences in: the tegument color varies from pale-brown to dark brown; pubescence varies from pale brown to pale grey. The patch of head with different sizes: dark brown patch from the base of clypeous extending to the frons, to near the occiput, with suboval dark brown patch in vertex; or lacking dark brown patch.
Distribution (Fig 35). Argentina and Uruguay. In Argentina recorded from: Catamarca, La Rioja, Tucumán (Bruch 1914) Salta: Departamento capital (Cerro San Bernardo) (Martínez 1992); Santiago del Estero (Martínez 1958); San Luis: San Jerónimo, Baldecito (Viana & Williner 1973) and

San Francisco (Viana & Williner 1973). ***New distribution records***: Córdoba: Lucio V. Mancilla; Mendoza: Cerro Cacheuta; San Juan: Las Tunas, Valle Fértil.
Material examined. (3♂♂, 2♀♀) plus 11 specimens of undetermined sex; Argentina: Entre Ríos: Diamante, Córdoba: Lucio V. Macilla; Mendoza: Cerro Cacheuta; San Juan: Las Tunas, Valle Fértil; San Luis: Alto Pencoso, San Jerónimo.
Host Plant. Di Iorio (2004) recorded as host plant *Solanum elaeagnifolium* (Solanaceae). ***New host records***: *Larrea* sp. (Zygophyllaceae), locally known as "jarilla".

Epicauta riojana (Fairmaire). *NEW STATUS*

Cantharis griseonigra v. *riojana* Fairmaire 1892: 252.
Lytta griseonigra v. *riojana*: Bruch 1914: 405.
Epicauta griseonigra v. *riojana*: Borchmann 1917: 76; Denier 1935: 156; Blackwelder 1945: 483.
Type material: Not examined.
Taxonomic remarks. In my opinion, the variety described by Fairmaire (1892) differs from *E. griseonigra* mainly because of the color of the pubescence, predominantly being reddish; abdomen with reddish setae conforming short apical and transversal bands; the last abdominal tergite subtriangular as in Fig 16. Aedeagus: parameral lobes subparallel, tapering to the apex, where they are slightly divergent (see arrow); phallobase similar in length to parameres but 1/3 wider; fore border straight (Fig 29). Median lobe with basal region straight (Fig 9).
Diagnosis. Pubescence mostly reddish, head with a wide dark patch extended from clypeus along frons to occiput, bordering eyes. Elytra with a broad vitta extended from the base to near apex. Abdomen with reddish setae forming short apical and transversal bands.
Habitus (Fig 39). Length 13-17 mm. Tegument dark color predominant; head with small pale patch on frons. Pubescence dense (28-34 setae on one mm), mostly reddish, head with a wide dark patch extended from clypeus along frons to occiput, bordering eyes; pronotum with a small dark patch near the base; coxal setae reddish, legs pubescence dark-brown, including trochanters; elytra with a broad vitta extended from the base to near the apex (Fig 4). Abdomen: with reddish setae with short apical and transversal bands.
Head as long as wide (0.86: 25-29); rather wide at templa; occiput slightly convex. Female antennomeres with following ratios: 2.6 (I); 1.6 (II); 3.6 (III); 2.3 (IV); 2.3 (V); 2.3 (VI); 2.3 (VII); 2.3 (VIII); 2.3 (IX); 2.3 (X); 3.3 (XI);, male: 3.3 (I); 2 (II); 3.6 (III); 3 (IV); 3 (V); 3 (VI); 3 (VII); 2,6 (VIII); 2,6 (IX); 2.6 (X); 3.6 (XI). *Pronotum* as long as wide (0.90; 027-030), sides subparallel, slightly wider on base; disk slightly convex. *Elytra* with maximum width at beginning of the apical third tapering to apex. *Legs* fore tibial mucro developed, tarsomerers with tarsal pads uniformly distributed; middle and hind tarsomerers with tarsal pads composed by two longitudinal rows of setae. *Last abdominal sternite* subtriangular with apex rounded (Fig 16, see arrow).
Female genitalia. Spermathecal diverticulum well developed; spermathecal duct elongate and thin (Fig 34, see arrow). Valvifer ventrolateral basal stem lacking; stylus with setae uniformly distributed.
Male genitalia. *Spiculum* gastrale straight, at apex as in Fig 24. *Parameral lobes* subparallel, tapering to the apex where they are slightly divergent (see arrow). *Phallobase* similar in length to parameres but 1/3 wider; fore border straigth; lateral view evidently emarginate (Fig 29). *Median lobe* with basal region straight; dorsal hook very short and robust; *endophallic hook* robust (Fig 8).
Distribution (Fig 35). Known only from Argentina, in the western provinces of La Rioja, Tucumán, and Salta. ***New distribution records***: Córdoba: Lucio V. Macilla.
Material examined. (7♂♂, 6♀♀) 12 specimens from Argentina. Córdoba; La Rioja; Salta: Santa Salta Forestal 5 km from J. V. González; Tucumán: Gobernador Garmendia.
Host plants. There is no avaiable information about host plants of this species.

Epicauta luctifera (Fairmaire)

Epicauta concinna Dejean 1837: 247 (*nomen nudum*).
Epicauta pulchella Klug 1837: 247 (*nomen nudum*).
Cantharis luctifera Fairmaire 1873: 534; Berg, 1881: 303.
Cantharis leucoloma Burmeister 1881: 22.
Lytta luctifera: Bruch 1914: 405.
Epicauta luctifera: Borchmann 1917: 77; Bosq 1942: 11; Hayward 1942: 23; Blackwelder 1945: 483; Viana & Williner 1973: 14; Di Iorio 2004: 169.
Type material. The two syntypes of *Cantharis leucoloma* Burmeister 1881 are preserved at the Museo Argentino de Ciencias Naturales (Buenos Aires – Argentina) Nº 4181, 4182. Lectotype Nº 4181.
Diagnosis: Pubescence very sparce. Head with dark setae on capsule, pale setae on frons and undersides. Pronotum and elytra with yellow setae marginally, elytra with three short vittae extended only on the apical third.
Habitus (Fig 40). Length 12-13 mm. Dark color predominates. Head and pronotum punticulate. Pubescence very sparce (6-7 setae in one mm); head with dark setae on capsule, pale setae on frons and undersides; pronotum and elytra with marginal yellow pubescence, elytra with three short vittae extended only onto the apical third (Fig 6).
Head as long as wide (0.4: 8-20), widest on occiput; occiput convex. Female antennomeres with the following ratios: 2.5 (I); 1 (I); 3 (III); 2 (IV); 2 (V); 2 (VI); 2 (VII);

2 (VIII); 2 (IX) 2 (X); 3 (XI); male (I); 1 (II); 2,5 (III); 2 (IV); 2 (V); 2 (VI); 2 (VII); 2 (VIII); 2 (IX); 2 (X); 3,5 (XI). *Pronotum* as wide as long (0.88; 15-17); antero-lateral angles oblique, sides parallel; disk convex. *Elytra* with the same width throughout. *Legs* foretibial spurs sexually dimorphic: female spurs straight, male inner spurs? curved; tarsite I showing sexual dimorphism: female normal, male bulged; tarsomerers with tarsal pads conforming two longitudinal rows of setae. *Last abdominal sternite* subtriangular (Fig 14).
Female genitalia. spermathecal duct short and wide (Fig 32, see arrow); valvifer with ventrolateral stem developed and slightly curved; stylus with setae distributed at apex.
Male genitalia. *Spiculum gastrale* biarmed (Fig 23). *Parameral lobes* tapering to the apex. *Phallobase* 1/3 wider than parameres; superior border with a slight protuberance (Fig 30, see arrow). *Median lobe* basally long and curved; dorsal hook very short and robust, *endophallic hook* robust with distal area as in Fig 10.
Distribution (Fig 35). Uruguay and Argentina; in Argentina it is recorded from Buenos Aires, San Luis (Carolina) (Viana & Williner 1973), Córdoba (El Sauce) (Viana & Williner 1973) and Tucumán; in Uruguay it is recorded from Minas.
Material examined. (1♂ and 1♀) two specimens from Uruguay, Minas (34º 22' 33'' S, 55º 13' 36'' O).
Host plants. Viana & Williner (1973: 14) collected this species feeding on "yerba del pájaro" (probably *Hedeoma multiflora* Benth (Lamiaceae), in San Luis province. The following other host plants were cited in the literature: Solanaceae (Hayward 1960); *Solanum tuberosum* (Bosq 1943, Hayward 1942, 1960) (see also Di Iorio 2004 for a synthesis).

Epicauta zebra (Dorhn)

Cantharis zebra Dorhn 1876: 411.
Lytta albovittata Haag-Rutenberg 1880: 29;
Cantharis albovittata: Burmeister 1881: 23; Berg 1881: 303.
Epicauta somnolenta Beauregard 1889: 89; Bruch 1914: 404; Borchmann 1917: 83; Bosq 1934: 12; Viana & Williner 1974: 11.
Epicauta zebra: Denier 1935: 161; 1940: 422; Hayward 1942: 23; Blackwelder 1945: 484; Adams & Selander 1979: 162; Martínez 1992: 8; Di Iorio 2004: 172.
Type material. The type specimens of *Lytta albovittata* are preserved in Zoologisches Sammlung der Bayerischen Staates, Münich. Type material of *Cantharis zebra* was not examined.
Diagnosis. Pubescence pale, head with a dark midline vitta extended from the occiput to base of clypeus; pronotum with three dark vittae: two on sides, and one in the middle; elytra with three dark vittae: one on the margin, on on the suture and one on the middle, all extended from the base to near apex (Fig 7).
Habitus (Fig 41). Length 11-15 mm. Mostly black, legs pale orange. Pubescence dense (28-34 in one mm) pale; head with a dark midline extended from the occiput to the base of clypeus; pronotum and elytra with three dark vittae: two on margins and one on the middle, all extended from the base to near apex (Fig 7).
Head as long as wide (0.87: 0.21-0.24); occiput rather straight. Female antennomeres with the following ratios: 2 (I); 2 (II); 3.33 (III); 2.66 (IV); 2.66 (VI); 2.66 (VII); 2.66 (VIII); 4 (IX); 4 (X); 5 (XI); male: 2.33 (I); 2.5 (II); 3.66 (III); 2.66 (IV); 2.66 (V); 2.66 (VI); 2.66 (VII), 2.66 (VIII), 3.5 (IX); 3.5 (X); 5.5 (X).
Pronotum as wide as long; with maximum width on the apical third; disk convex. *Elytra* of uniform width. Tarsomerers with tarsal pads conforming two longitudinal rows of setae. *Last abdominal sternite* subpentagonal, apex slightly emarginate (Fig 17).
Female genitalia. Spermathecal duct rather long, accessory gland large and tubular. Ventrolateral basal stem of valvifer not well developed (Fig 33); setae on stylus uniformly distributed.
Male genitalia Spiculum gastrale biarmed (Fig 22). *Parameral lobes* of uniform width, divergent apically. *Phallobase* subrectangular, fore margin emarginate (Fig 27, see arrow). *Median lobe*: basally short and curved; with dorsal hook small and rather long, *endophallic hook* robust (Fig 12, see arrow).
Distribution (Fig 35). Argentina: La Rioja: Patquía and Chilecito (Viana & Williner 1974), Santiago del Estero, Mendoza, and Tucumán (Bosq 1942); Córdoba: San Javier and La Paz (Viana & Williner 1974), Salta (Martínez 1992). ***New distribution records***: Catamarca: Andalagá; San Juan.
Material examined. (1♂, 6♀♀) seven specimens from Argentina: Catamarca, Córdoba, Mendoza.
Host plants. The only recorded host plant is *Cassia aphylla* (Fabaceae), vernacular name "pichanilla". (Hayward 1942; 1960; Bosq 1943; Martínez 1992).

The *bella* group is proposed as a new group of species based on the vittae pattern, which is expressed in pubescence, not coincident with the color from the basal integument, with basic pattern of one to three vittae (Figs 1-6); and endophalic hook robust (see diagnosis of group). These two features are not present in other species of the nominate subgenus. This supports the hypothesis that the species in the *bella* group constitute a natural and monophyletic group. Seven species belong to the new group: *E. bella*, *E. brunneipennis*, *E. diagramma*, *E. griseonigra*, *E. riojana*, *E. luctífera*, and *E. zebra*, and have the particularity that they have hitherto never been included in a formal species group. The distributions of these

species have never been mapped, and neither described or illustrated in detail.

This new group occurs in South America, principally in the subtropics of southern South America. Two species, *E. riojana* and *E. zebra*, endemic to central-west Argentina; *E. luctifera* is endemic to Uruguay; three species (*E. brunneipennis*, *E. diagramma*, and *E. griseonigra*) are recorded from both countries, and only *E. bella* is wide spread in Argentina, Bolivia, and Uruguay.

All species inhabit warm and moderately dry regions, being mainly distributed in the biogeographical region known as the Chaco subregion (Morrone 1996, 2000). Additionally, it is remarkable that many large areas of southern South America are still poorly explored and consequently the range of many species appears patchy. Although I have updated the distributional data for this group, a further study is needed to obtain more accurate information on the distribution of the species.

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