

Artículos

A new species of the genus *Epicauta* (Coleoptera: Meloidae) from the Pre-Delta National Park, Diamante, Entre Ríos

Una nueva especie del género *Epicauta* (Coleoptera: Meloidae: Epicautini) en el
Parque Nacional Pre-Delta, Diamante, Entre Ríos.

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Abstract: A new species of *Epicauta* Dejean (Coleoptera: Meloidae), *Epicauta chana* sp. nov. is described, photographed, and illustrated. The new species was collected on its host plant, *Salpichroa origanifolia* (Lam.) Baill (Solanaceae), in the mid-morning in the Pre-Delta National Park, Diamante, Entre Ríos, and compared with *E. bosqi* Denier from temperate and semi-arid zones of Argentina. The latter species is primarily distinguished by its size, coloration on the elytral vittae, and male genitalia. The new species is referred to the *E. vittata* group of the nominate subgenus.

Keywords: *Epicauta chana*, *E. vittata* group, Epicautini, *Salpichroa origanifolia*.

Resumen: Una especie nueva de *Epicauta* Dejean (Coleoptera: Meloidae), *Epicauta chana* sp. nov. es descrita, fotografiada y dibujada. La nueva especie es recolectada sobre su planta huésped, *Salpichroa origanifolia* (Lam.) Baill (Solanaceae), a media mañana dentro del Parque Nacional Pre-Delta, Diamante, Entre Ríos, y comparada con *E. bosqi* Denier de zonas templadas y semi-áridas de la Argentina. Esta última especie se diferencia principalmente por el tamaño, su coloración en las vittas presentes en los élitros y la genitalia masculina. La nueva especie se refiere al grupo *E. vittata* del subgénero designado.

Palabras clave: *Epicauta chana*, *E. vittata* group, Epicautini, *Salpichroa origanifolia*.

INTRODUCTION

An insect group that has been historically studied and is well represented in scientific collections is the beetles of the family Meloidae. Within Meloidae, *Epicauta* Dejean, 1834 —commonly known as blister beetles— is one of the most speciose genus of the family, assigned to the tribe Epicautini (Pinto & Bologna, 1999), the validity of which was recently confirmed by molecular data (Ricciari et al., 2022, 2024); *Epicauta* includes all species with a patch of cinereous pubescence on the venter of the fore- femur, a structure associated with the antennal cleaning. The genus is divided in two subgenera: *Epicauta* (*Macrobasis*) Le Conte, 1862 and nominotypical subgenus (Pinto, 1991). The nominotypical subgenus *Epicauta* (*Epicauta*) is thoroughly documented in the entomological literature primarily in relation to the presence of cantharidin in their body, the larval hypermetabolic development, the predatory behavior, and its economic importance (Pinto et al., 1996; Bologna et al., 2002; Campos-Soldini & Wagner, 2021; Campos-Soldini et al., 2021; Safenraiter et al., 2024).

The genus distribution encompasses a wide geographic range, with species located over most of the world, except Australia (Bologna & Pinto, 2002). Despite this, the genus attains its maximum diversity in the New World, where 75 % of the species occur (Pinto, 1991; Campos-Soldini et al., 2018; Campos-Soldini, 2022). The North American fauna comprising 101 species, arranged into 18 species groups, which has been the subject of a thorough study by Pinto (1991). In contrast, the South American fauna comprises 102 species of the nominate subgenus and most of them have not been assigned to any specific species group (Campos-Soldini et al., 2018). The species groups of *E. bella*, *E. caustica*, *E. maculata*, and *E. vittata*, that were revised by Adams & Selander (1979), Selander (1981), Campos-Soldini (2011), and Campos-Soldini & Roig-Juñent (2011, 2015), represent exceptions to this situation.

As far as I know, the fauna of both continents attains greatest diversity in temperate and semi- arid regions (Campos-Soldini, 2022). The tropical habitats of middle America have apparently served as effective barriers to substantive fauna exchange since continental fusion four million years ago (Campos-Soldini, 2022).

The study of the coleopteran fauna in the Pre- Delta National Park (Diamante, Entre Ríos) revealed the presence of one undescribed species of *Epicauta*, which is herein described, drawn and photographed.

MATERIAL AND METHODS

The specimens were collected in the Pre-Delta National Park ($32^{\circ} 03' 43''\text{S}$; $60^{\circ} 38' 39''\text{W}$), located in the central-east region of Argentina, established in 1992 in Diamante (Entre Ríos). One of the most notable geographic characteristics of the area is the variety of environments it presents (Fig. 1). The climate is temperate/warm humid. The annual average temperature is about 19°C , and the annual rainfall is approximately 900 mm, with warmer and rainier summers than winters.

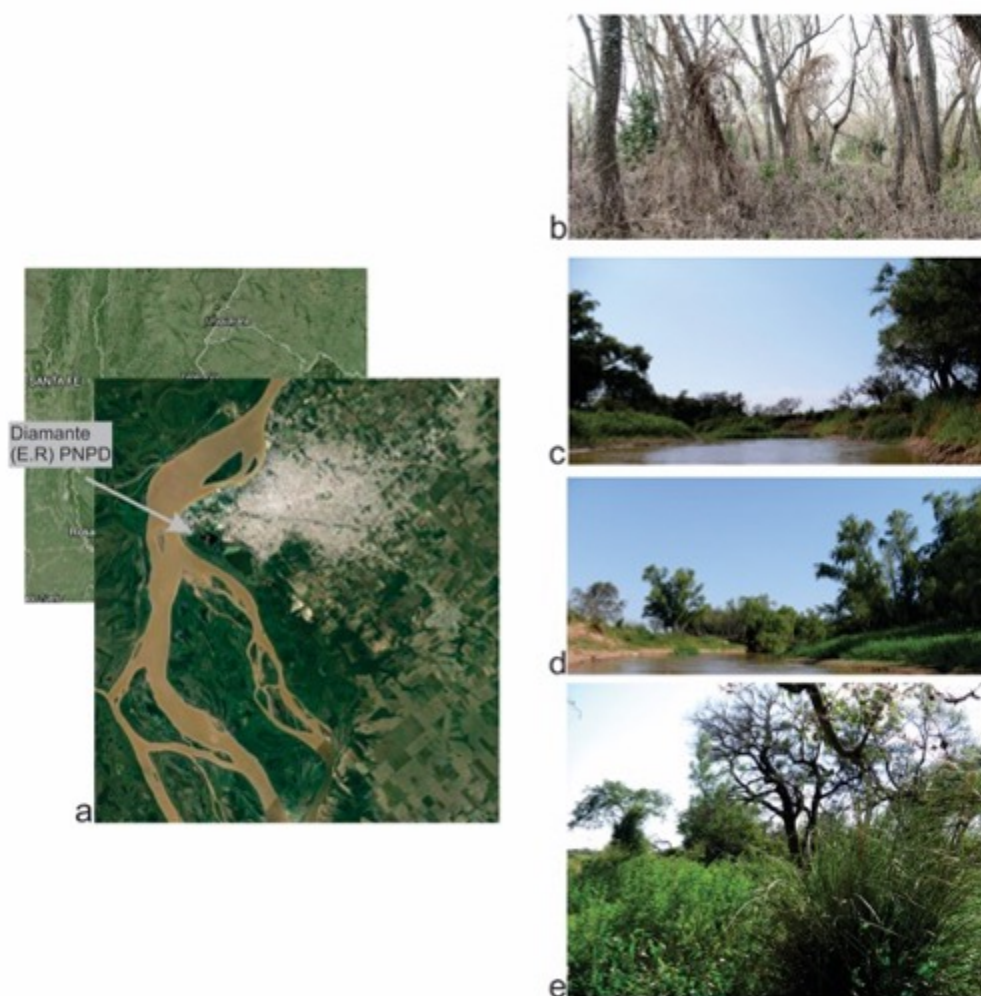


Fig. 1.

Distribution and environments where *Epicauta chana* sp. nov. is found.

a. Pre-Delta National Park ($32^{\circ} 03' 43''\text{S}$; $60^{\circ} 38' 39''\text{W}$) satellite view. b-e. the variety of environments found in the National Park.

The collected material was brought to the Laboratorio de Entomología CICYTTP (CONICET-Prov. E.R-UADER) for posterior study.

The specimens were examined, dissected, and illustrated using a Leica 8SAPO stereo-microscope equipped with a Leica DFC 295 digital camera. Measurements were taken with an ocular micrometer.

Line drawings were made using a camera lucida adapted to a stereoscopic microscope. Photographs of habitus were taken with a camera Nikon D5100. Illustrations and plates were edited for adjustments (e.g., levels, shadows/highlights). 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.

Torre-Bueno (1937), Tuxen (1970), Pinto (1991) and Lawrence et al. (2011) were followed for the description of the external/ internal anatomical structures of male and female. All references to the head assume the normal hypognathous position.

Dissections of genitalia were performed following standard entomological techniques. The specimens were softened to relax their anatomical structures. Subsequently, the abdomen was removed and cleared using 10 % KOH for approximately 12 hours. Then, the aedeagus was dissected from the abdomen and washed in water, followed by 80 % alcohol and glycerin.

The voucher specimens are housed at the Entomological Collection, CICYTTP (CONICET-Prov. E.R-UADER).

RESULTS

Epicauta chana sp. nov. (Fig. 2)

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Type material. Holotype male (CICYTTP), labelled: “Diamante, Entre Ríos, zona de islas del Pre-Delta (32°03'S; 60°38'W), Diciembre 30 dec. 2010, leg. Vittar F. Paratype males (3) and females (2) same data as holotype.

Etymology. The name of the new species refers to the first inhabitants of the Pre- Delta lands, the Chana people.

Diagnosis. *Epicauta chana* is readily diagnosticable by the large sized and slender body. The golden- brown pubescence; chestnut-brown tegument, head with a subtriangular reddish- spot on frons, elytra with a sutural, marginal and median vittae, the three fused at apex and base. Head subquadrate, wider than pronotum (head maximum width 1.3 mm), with a longitudinal subtle median groove from the vertex to the upper area of fronto-clypeal suture. Antennae subfiliform, dimorphic sexually (see Description). Pronotum relatively narrow, longer than wide (1.14 as long as wide) and distinctly narrower than head. Elytra elongate, flanks subparallel; tegument color tri vittate, sutural, middle and outer vittae pale brown, broadly fused at base and apex; pattern color not coincident with pubescence color.

Taxonomic comments. *Epicauta chana* can be included in the subgenus *Epicauta* sensu Pinto (1991). Also, this new species can be included in the *E. vittata* species group (Campos-Soldini & Roig-

Juñent, 2011) because of the following diagnostic characters: vittae pattern expressed underlying tegument, not coincident with pubescent color distance between; eyes less than 0.42 total head width across eyes; antennae elongate, tapering to the apex, sexually dimorphic: compressed dorso- ventrally in male. The new species, *E. chana*, resembles *E. bosqi* Denier in having a brown, matte tegument. However, it differs from *E. bosqi* in size, as this species does not exceed medium size; in the coloration of the elytral vittae, with the elytra having four pale vittae that fuse near the apex; and in the male genitalia."

Description (Fig. 2). Large sized and slender species (20-22 mm).



Fig. 2.
Epicauta chana sp. nov. male.

Pubescence. Golden- brown, dorsally short, setiform, sparse (13-19 setae on one mm) particularly on head, pronotum and elytra; relatively longer on venter (1.3 × longer than dorsal pubescence). Head setae decumbent, directed in relation to midline, parallel from base to occiput, then oblique; clypeus and labrum surface with setae directed forwards twice as long as the setae of head. Pronotum setae decumbent, directed in relation to midline, parallel from base to apex, then oblique. Scutellum usually with a narrow glabrous midline, distinct at least at basal half. Foretarsi on ventral surface (it is opposite to femur) with very dense golden pubescence; meso and metatarsi on ventral surface covered by sparse golden pubescence. Elytra with similar setation than head and pronotum.

Tegument. Body chestnut- brown. Head with a subtriangular reddish- spot on frons; antennae mate black; clypeus dark- brown with posterior margin reddish (on frontoclypeal suture); labrum dark- brown with a ventral- yellow semicircular spot; clypeus and labrum with punctures sparse, wide, and deep, surface among punctures smooth and shiny; the area above the antennal insertions slightly elevated, smooth and shiny, unsetated. Head and pronotal punctures dense, small, and deep, surface among punctures mate. Neck (sclerotized region between the posterior edge of the head and pronotum) brown, homogeneously and densely foveate. Elytra uniformly rugose; tri- vittate, sutural, middle and outer vittae pale- brown, broadly fused at base and apex; pattern color not coincident with pubescence color.

Head. Subquadrate, wider than pronotum (head maximum width 1.3 mm), with a longitudinal thin median groove from the vertex to the upper area of fronto- clypeal suture; calluses poorly developed; frons narrow; temples subparallel; capsule slightly excavate behind eyes; occiput broadly arcuate. Mouthparts and head capsule not sexually dimorphic. Eyes large, slightly bulged, broadly deeply emarginate, ventral lobe distinctly wider than dorsal lobe, width 0.55 head length; the ventral lobe almost attaining lateral margin of maxilla on underside of head; distance between eyes less than 0.43 total head width across eyes. Clypeus flat, with the posterior margin (fronto-clypeal suture) as obtuse- angled. Labrum- clypeus suture almost straight. Labrum transverse (0.62 mm wide by 0.34 mm long), anterior margin conspicuously sinuate. Maxillary palpomere (MP) IV elongate, broad at apex, narrowed towards the base as in figure 3a. Labial palpomere (LP) III securiform as in figure 3a. Mandible robust, abruptly curved at apical half, not visible in frontal view, completely covered by labrum. At the anterodorsal I distinguished the incisor ridge (ir), the superior terebral ridge (str), and terebral tooth (tt). At the posteroventral I distinguished the anterior retinacular tooth (art), the superior retinacular ridge (srr), the molar tooth (m), and the basal face (bf) (Fig. 3b). Antenna as in figure 3c; elongate; antennomeres IV-VI decreasing from the distal end towards

the proximal area; sexually dimorphic; male with antennomeres IV-XI very elongate (typically, its width is more than half its length, and its length is greater than 0.7 of that of antennomere XI), markedly compressed dorsoventrally, extending almost to the middle of elytra in male, proportions: 27/12, 11/10, 35/11, 24/11, 22/11, 23/11, 20/10, 20/10, 18/9, 17/9, 20/7; female with antennomeres IV-XI elongated (typically, its width is less than half its length, and its length greater than 0.7 that of antennomere XI) sub-cylindrical, extending almost to the first third of elytra, proportions: 25/11, 10/8, 32/9, 22/10, 20/10, 21/10, 18/9, 18/9, 16/7, 15/7, 19/7.

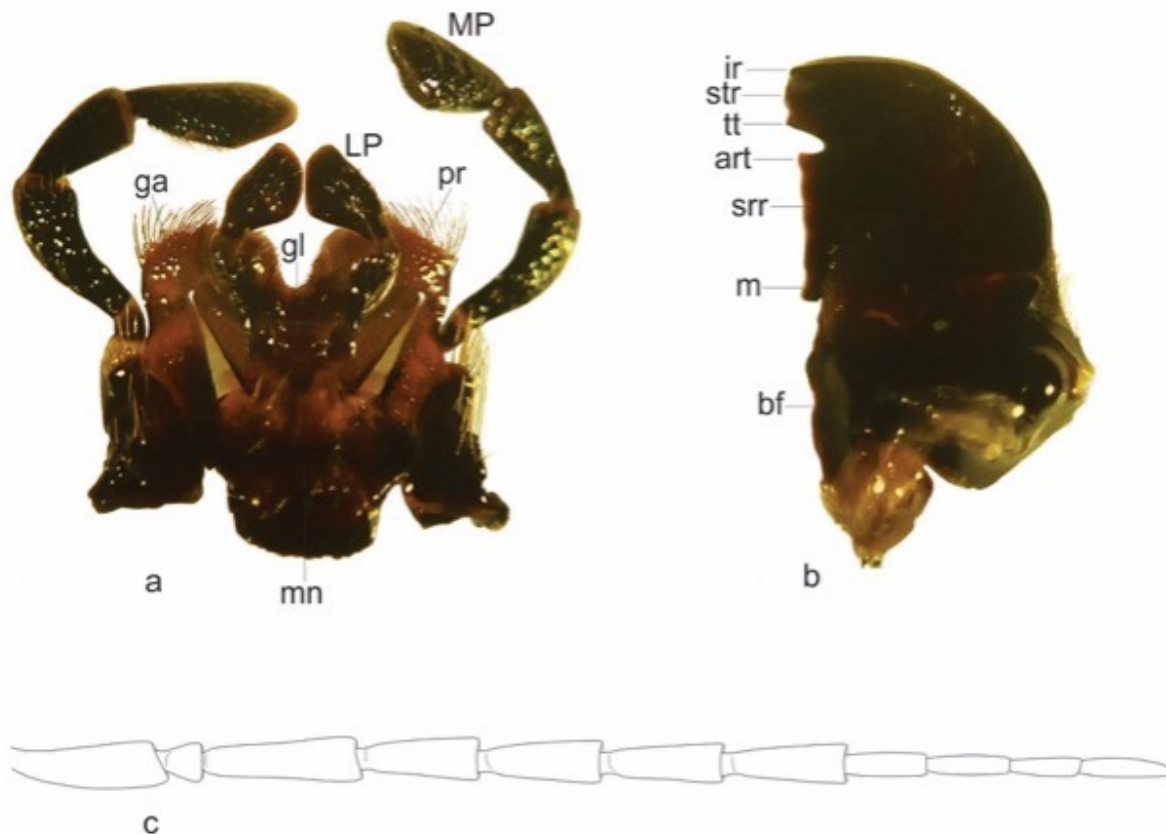


Fig. 3.

Epicauta chana sp. nov.

- a. (MP) Maxillary palpomere; (ga) galea; (gl) glosa; (pr) paraglosa; (mn) mentum; (LP) Labial palpomere. b. Mandible, (ir) insisor ridge; (str) superior terebral ridge; (tt) terebral tooth; (art) anterior retinacular tooth; (srr) superior retinacular tooth; (m) molar tooth; (bf) basal face. c. *Epicauta chana* sp. nov. antennae.

Wing. In an unfolded state the wing is membranose and indistinctly pigmented as in figure 4. The outline is divided into three margins: the coastal margin [Cm], external margin [Em], and posterior margin [Pm]. On the other hand, the surface of the wing, is divided into three regions: Remigial region (Rr), Anal region (Ar), and Jugal region (Jr). On the (Rr) the following principal veins are recognized: Costa (C) is a rather long and sclerotized vein, situated at the anterior basal part of the [Cm], with its base being associated

with a humeral plate (hp). The Subcosta (Sc) is a short and well sclerotized vein, connected with (C) by a short cross- vein "h". The Radius (R) is a long and very strongly sclerotized vein that run on wing border, and forms the characteristic Pterostigmatic area (Pa) in its apical zone. This vein (R) continues as isolate well sclerotized branch named here (Ra). The Radial sector (Rs) is a submembranous vein and runs along the lower margin of the (R). The median part of (Rs) disappears and the distal part remains as an isolate branch, slightly sclerotized, the (Rs 2+3). The cubitus (Cu) is a well sclerotized vein which runs obliquely at the median part. The (Cu) extends apically towards the wing margins as (M1+Cu) vein. The (Cu) and (R) ar basally connected with a cross vein named here (Cu+). On the (Ar) presents three annal veins: (1st A), (2d A1) and (2d A), and (3d A). The (1st A) is a slightly sclerotized vein that runs between (Cu) and (2d A2). Subsequently, the (2d A) is an elongate, in part sclerotized vein that extends forwards the wing margin; at base this vein is branched into a short, well sclerotized (2d A1) vein. The (3d A) is an elongate, in part sclerotized vein that extends forwards the wing margin. Finally, on the (Jr) presents two slightly sclerotized veins the (J1) and (J3).

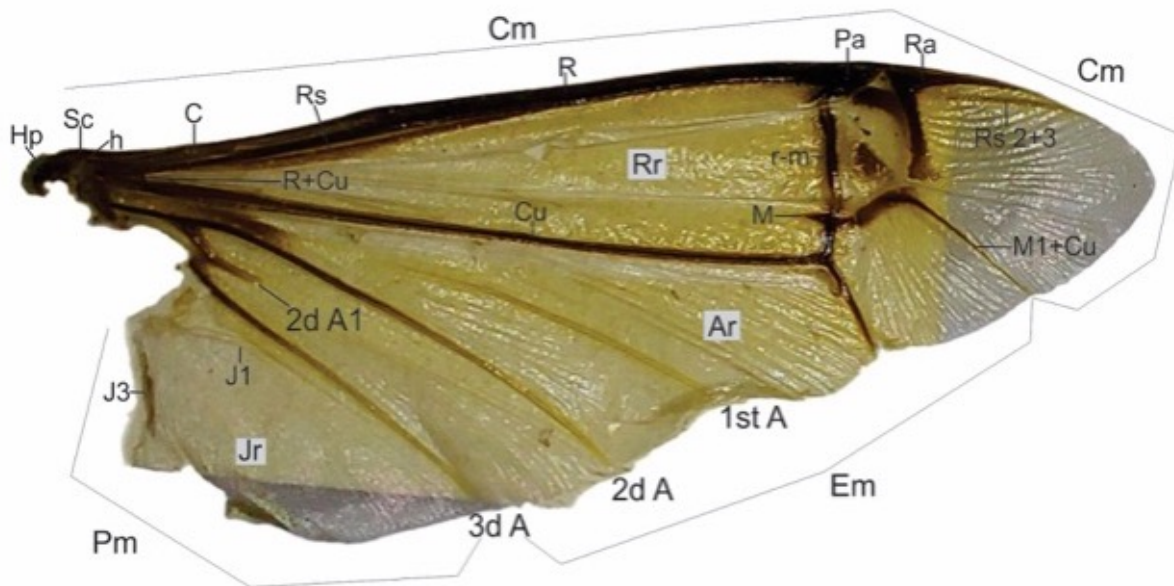


Fig. 4.

***Epicauta chana* sp. nov. right wing.**

(Cm) coastal margin; (Em) external margin; (Pm) posterior margin. The surface of the wing is divided into three regions: (Rr) remigial region; (Ar) annal region; (Jr) jugal region. (C) Costa; (Sc) subcosta; (R) radius; (Pa) pterostigmatic area; (Rs) radial sector.

Elytra. Elongate, with subparallel sides (total length: 16 mm), colored and setated as described above (see Pubescence).

Male genitalia (Fig. 5a-c). The (PA) are well sclerotized except for membranous areas. The (PA) are separate dorsally, but fused ventrally at their base shows a sclerotized membrane (PHM). The (PA) has a (PHA) joined with a membrane at the base of (PHM). The (PHA) proximal border with V- shape concavity. The (AE) is well sclerotized. Distally, it is provided with one (DAS) and a (VAS). Proximally, the (AE) continued into an ejaculatory duct (EJD). At its base the ventral wall of the (AE) is produced into a narrow (AAE) which is short and wide. In addition, there is another sclerite, the (SG), distally straight, with plate (Pl) tri- dentate at proximal area as in figure 5c. The tergum 9 (TS) is sclerotized. The tergoanal sclerites (TAS) are situated dorsolaterally as in the female, they are slightly sclerotized except at the edges; the distal ends are pointed with pubescence (Fig. 5d).

Female genitalia. The external structure are in figure 5e. The (VAL) subrectangular; the (BSVA) elongate digitiform. Distally, each (VAL) is nearly cylindrical and carries an unjointed (ST). Both, the (VAL) and the (ST) are beset with elongate setae. Additionally, the tergoanal sclerites (TAS) positioned dorsolaterally at either side of the ninth tergum and the anus. Although these are not parts of the genitalia, they are associated with the genitalic musculature.

Notes on natural history. *Epicauta chana* sp nov. has been observed and collected feeding on *Salpichroa origanifolia* (Lam.) (Solanaceae), the “Baill”, locally known as “uvita de campo” or “huevo de gallo”. Specimens were collected in December and January during late morning hours in a sparsely vegetated area near a watercourse. This region displays high environmental heterogeneity due to both past geomorphological and hydrological processes (Holocene marine ingresses and regressions) and current ones (fluvial modeling), coupled with its unique climatic characteristics. These factors give rise to various landscape patterns inhabited by a highly diverse biota. Despite the rich beetle fauna in this locality, the fauna of meloids remains largely unexplored.

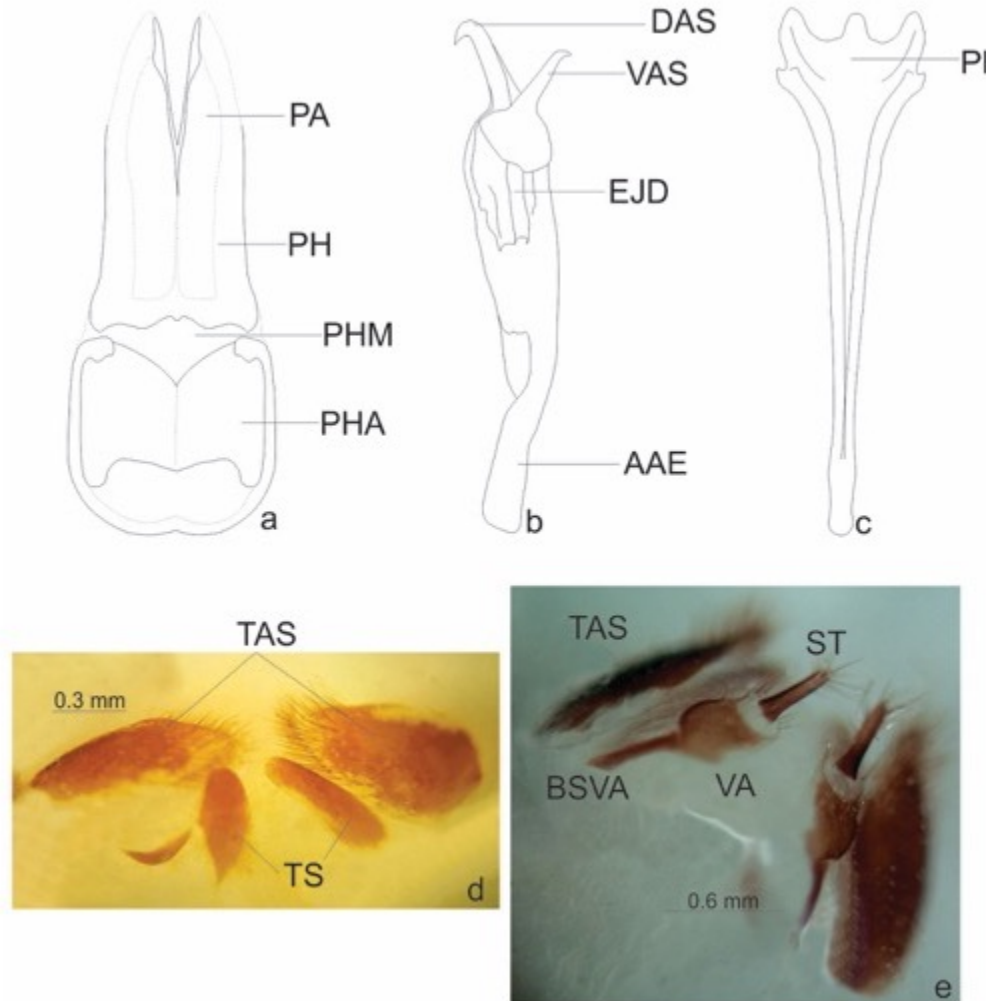


Fig. 5.

Epicauta chana sp. nov.

a. Male genitalia: (PA) paramere; (PHM) membranous portion of phallobase; (PHA) apodema of phallobase; (AE) aedeagus; (DAS) distal dorsal aedeagal spine; (VAS) ventral aedeagal spine; (EJD) ejaculatory duct; (AAE) aedeagal apodeme; (SG) Spiculum gastrale; (PI) Plate of spiculum gastrale. b. (TAS) Tergoanal sclerite; (TS) Tergum. c) Female genitalia: (VAL) valvifer; (BSVA) basal stem of valvifer; (ST) stylus. (TAS) Tergoanal sclerite.

REFERENCES

- Adams, L., & Selander, R.B. (1979) The biology of blister beetles of the vittata group of the genus *Epicauta* (Coleoptera, Meloidae). *Bulletin of the American Museum of Natural History*, **162**, 139-266.
- Bologna M.A., & Pinto J.D. (2002) The Old World genera of Meloidae (Coleoptera): a key and synopsis, *Journal of Natural History*, **36**, 2013-2102.
- Campos-Soldini, M.P. (2011) A new species group of the genus *Epicauta* Dejean of southern South America, the bella Group (Coleoptera: Meloidae). *Neotropical Entomology*, **40**, 475-486.
- Campos-Soldini, M.P. (2022) Modeling Current and Future Distribution of *Epicauta* Dejean (Meloinae, Epicautini) under Changing Climate Conditions in America. *Neotropical Entomology*, **51**, 356-367.
- Campos-Soldini, M.P., & Roig-Juñent, S.A. (2011) Redefinition of the vittata species group of *Epicauta* Dejean (1834) (Coleoptera: Meloidae) and taxonomic revision of the species from southern South America. *Zootaxa*, **2824**, 21-43.
- Campos-Soldini, M.P., & Roig-Juñent, S.A. (2015) Phylogenetic analysis and redefinition of the maculata species group of *Epicauta* (Meloidae: Meloinae: Epicautini). *Insect Systematics and Evolution*, **46**, 431-470.
- Campos-Soldini, M.P., & Wagner, L.S. (2021) Sexual behaviour of the blister beetle *Epicauta atomaria* (Germar), with remarks on the bionomics of *Epicauta maculata* species group (Meloidae: Meloinae: Epicautini). *The Canadian Entomology*, **153**, 672-681.
- Campos-Soldini, M.P., Safenraiter, M.E., Wagner, L.S., Fernández, E.N., & Sequin, C.J. (2018) Checklist of *Epicauta* Dejean from America (Meloidae, Meloinae, Epicautini). *ZooKeys*, **807**, 47-125.
- Campos-Soldini, M.P., Zapata, L.D., Wagner, L.S., Fernandez, E.N., & Safenraiter, M.E. (2021) Contribución al estudio de la ecología y biología de *Epicauta atomaria* (Coleoptera: Meloidae), insecto asociado a cultivos agrícolas en América del Sur, *Revista de Ingeniería Agronómica*, **47**, 3 1-9.
- Lawrence, J.F., Slipinski, A., Seago, A.E., Thayer, M.K., Newton, A.F., & Marvaldi, A.E. (2011) Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annals of Zoology*, **61**, 1-217.
- Pinto, J.D. (1991) *The taxonomy of North American Epicauta (Coleoptera: Meloidae) with a revision of the nominate subgenus and a survey of courtship behavior*. University of California Publications in Entomology, USA.

- Pinto, J.D., & Bologna M.A. (1999) The New World genera of Meloidae (Coleoptera): a key and synopsis. *Journal of Natural History*, **33**, 569-620.
- Riccieri A., Mancini E., Pitzalis M., Salvi D., & Bologna, M.A. (2022) Multigene phylogeny of blister beetles (Coleoptera, Meloidae) reveals an extensive polyphyly of the tribe Lyttini and allows redefining its boundaries. *Systematic Entomology*, **47**(4), 569-580.
- Riccieri, A., Spagoni, L., Bologna, M.A., Ming, L., Franchini, P., Fratini, E., Rossi, M.N., Polticelli, F., Cervelli, M., & Mancini, E. (2024) Comparative genomics provides insights into molecular adaptation to hypermetamorphosis and cantharidin metabolism in blister beetles (Coleoptera: Meloidae). *Integrative Zoology*, **19**(5), 975-988.
- Selander, R.B. (1981) The *Custica* group of the genus *Epicauta* (Coleoptera: Meloidae). *Proceedings of the Entomological Society of Washington*, **83**, 573-591.
- Safenraiter, ME, Campos-Soldini, M.P., & Del Río, G. (2024) Cantharidin: A Multipurpose Beetlejuice. *Neotropical Entomology*, **53**, 964-971..
- Torre Bueno, J.R. (1937) *A glossary of Entomology*. Bulletin of the Brooklyn Entomological Society, USA.
- Tuxen, S. (1970) Taxonomist's glossary of genitalia in insects. 2d Ed. Munksgaard, Copenhagen.

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Una nueva especie del género *Epicauta* (Coleoptera: Meloidae:
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