

## A new genus and a new Costa Rican species of Endocephalites (Chrysomelidae: Eumolpinae: Eumolpini)

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### Abstract

*Thysanomerus* **new genus** is described from Costa Rica. The new species *Thysanomerus ulatae* Flowers is described, and *Prionodera jacobyi* Lefèvre is transferred to *Thysanomerus* **NEW COMBINATION** and designated as the type species. The new genus belongs in the informal group Endocephalites of the eumolpine tribe Eumolpini.

### Resumen

Se describen un género y una especie nueva de los Endocephalites de Costa Rica: se describe *Thysanomerus ulatae* Flowers y se designa *Prionodera jacobyi* Lefèvre como la especie tipo de este género. Se presenta un diagnóstico nuevo para los Endocephalites.

**Key words:** *Thysanomerus jacobyi*, *Thysanomerus ulatae*, Chrysomelidae, *Prionodera*, Eumolpinae, Endocephalites, Costa Rica

### Introduction

In the course of reviewing the species of the genus *Prionodera* Chevrolat, *Prionodera jacobyi* Lefèvre, described from Costa Rica was found to differ sufficiently in both internal and external morphology to warrant removal to a new genus which is here established. Additionally, collections of Costa Rican material in the Costa Rica Biodiversity Institute (INBio) revealed a second closely related species which is also described. In the descriptions given below, terminology of the genitalia follows Flowers (1995, 1999) and Askevold and Flowers (1994).

*Thysanomerus* new genus (Fig. 1 - 18)

**Types species.** *Prionodera jacobyi* Lefèvre 1885:cxv, here designated.



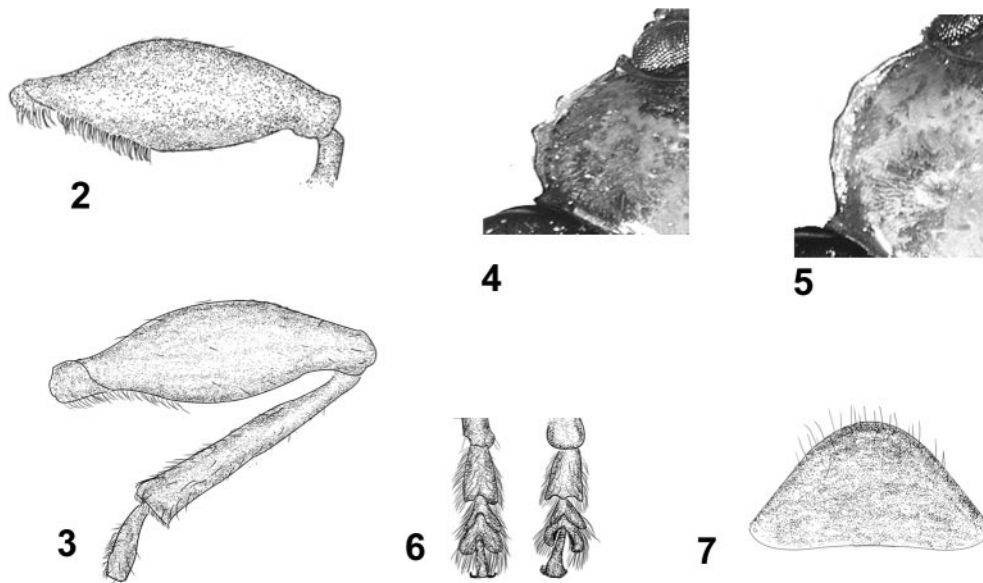
**FIGURE 1.** *Thysanomerus ulatae*, female, dorsal view.

Body elongate oval. Head with clypeus coarsely punctate, punctures separated by distance greater than the diameter of a puncture, surface between punctures smooth, apex of clypeus moderately to deeply emarginate. Frons with scattered deep punctures near eyes, punctures separated by distance greater than the diameter of a puncture; surface between punctures smooth, shining; antennal calli smooth, shining, moderately swollen. Eye oval, deeply emarginate at antennal insertion; ocular sulcus running close to upper margin of eye. Antenna with scape elongate oval, pedicel subglobose, shorter than scape, distinctly

shorter than flagellomere 1; flagellum filiform, each flagellomere slightly wider at apex, elongate; antennomeres 3-6 with scattered appressed setae; antennomeres 7-11 densely pubescent; antennomeres 3-10 with whorl of long erect setae at apex; antennomere 11 narrowly spindle-shaped. Mouthparts with apex of labrum emarginate, with 4 - 5 dorsal setae and short row of lateral setae along outer margin. Mandibles with outer margin with sharp bend, lateral surface finely punctate and setose, a prominent seta on dorsal surface at angle, apical teeth broad, pointed. Maxillary palpi with apical segment tapered. Prothorax distinctly wider than long, pronotum moderately convex and with posterior margin subequal in length to anterior margin; anterior angles acute, directed anteriorly; posterior angles acute; all angles with a seta-bearing puncture; basal marginal bead present; lateral margin (Fig. 4, 5) narrow to broad, undulate, forming one to three teeth at or behind the mid-point, greatest width of pronotum at or just behind middle; disc with scattered fine to deep punctures at middle, scattered deep punctures laterally, separated by a distance greater than their own diameters; surface between punctures smooth. Undersurface of thorax smooth. Prosternum with long setae, finely punctate, transversely flat between coxae, depressed at posterior margin, with anterior margin excavated for reception of gular area of head; posterior margin of intercoxal process truncate or very shallowly concave. Lateral arms of prosternum excavated for reception of gular area of head with anterior margin reflexed outward and weakly convex, junction with prosternum discontinuous, surface glabrous. Proepimeron weakly concave, surface weakly wrinkled, shiny. Mesosternum subequal in width to prosternum, surface finely punctate, with numerous erect yellow setae. Metasternum flat, swollen anterior to hind coxae, with a median area of dense yellow setae (female with fewer setae); metepisternum gradually narrowed posteriorly, with surface alutaceous. Legs sparsely covered with short prostrate setae; all surfaces smooth. Fore- and mesotrochanters with several setae at apical angles; metatrochanter densely setose on ventral surface. Femora strongly swollen in middle, with erect setae on ventral margin in basal fourth, metafemur (Fig. 2, 3) with numerous setae in basal half (fewer setae in female). Tibiae multicarinate, slightly to moderately sulcate between carinae, with setae increasing in length toward apex of tibiae; protibiae abruptly widened in apical third; middle and hind tibiae widened apically. Tarsi densely and uniformly pilose beneath; basal tarsomere of fore- and middle legs weakly expanded, distinctly longer than wide (Fig. 6); second tarsomere broadly triangular, with acute apicolateral angles; third tarsomere longer than second, deeply bilobed; terminal tarsomere distinctly surpassing apex of third tarsomere; claws divergent, appendiculate. Elytra densely punctate, punctures forming transverse rugosities laterally, punctures striate on apical declivity. Surface between punctures smooth with scattered small punctulae; humeri prominent, rounded; basal calli weakly developed; postbasal depression shallow. Sides subparallel, convergent; apices moderately declivous, conjointly rounded. Basal margin costate at humeri. Epipleuron narrow, slanted downward, visible in lateral view, tapering evenly from base to apex. Scutellum U- or V-shaped, width at base subequal to length, surface smooth with a few punctulae.

Abdomen with all segments subequal in length, surfaces smooth, with erect yellow setae on apical half of each segment, or covering the segment; sterna III-VII with a transverse row of long setae at midline. Sternum VII with lateral margins smooth. Pygidium (Fig. 7) lacking longitudinal groove, surface smooth, with long erect setae throughout or on apical half, lateral margins smooth. Male Genitalia: Basal hood of median lobe constricted at point of attachment; median lobe in lateral view strongly curved (Fig. 8, 10); apex of median lobe (Fig. 9, 12) broad, subtruncate with apical point; subbasal fenestra present; basal spurs blunt. Female Genitalia: Segments VIII-XI forming short, broad ovipositor (Fig. 13, 16, 17). Sternum VIII weakly sclerotized with short apodeme; apical margin setaceous; dorsum of segment VIII weakly sclerotized and bearing short and long setae apically. Segment IX with hemisternites broadly sclerotized; paraprocts separated into a pair of slender dorsal rods, apically forming hood-like projection above genital orifice; baculum distinct, apical, subequal to shorter than gonocoxae. Gonocoxae short, broad, straight to curved inward medially, with long setae apically and laterally. Spermatheca (Fig. 14, 15) with receptacle narrower than pump, evenly tapering basally, duct sclerotized and loosely coiled.

**Etymology.** *Thysano*, from Greek, meaning brush; *meros*, from Greek, meaning femur, masculine.



**FIGURES 2-7.** External characters of *Thysanomerus*. 2 – 3. Hind femur of male. 2. *T. jacobyi*. 3. *T. ulatae*. 4 – 5. Lateral margin of pronotum. 4. *T. jacobyi*, 5. *T. ulatae*. 6. Fore tarsi of *T. jacobyi*: left, male; right, female. 7. Pygidium of *T. jacobyi*.

**Remarks.** This genus can be distinguished from all other Neotropical Eumolpinae by the following combination of characters: 1) pygidium lacking groove; 2) prosternum broadly excavated at anterior margin; 3) lateral arms of prosternum not distinctly convex; 4) subparallel sides of elytra; 5) anterior femur lacking ventral tooth or angulation. *Thysanomerus* most closely resembles certain species of *Endocephalus* Chapuis but can be at once recognized by its more elongate shape and its much smaller size.

#### Key to Species of *Thysanomerus*

1. Lateral margin of pronotum narrow, strongly undulate (Fig. 4); hind femur of male with dense, even brush of ventral setae on basal half (Fig. 1), elytra metallic green or bluish green ..... *jacobyi* (Lefèvre).
- 1'. Lateral margin of pronotum wide, weakly undulate (Fig. 5); hind femur of male with numerous setae in ventral third (Fig. 2); elytra metallic blue, rarely blue-green ..... *ulateae* Flowers.

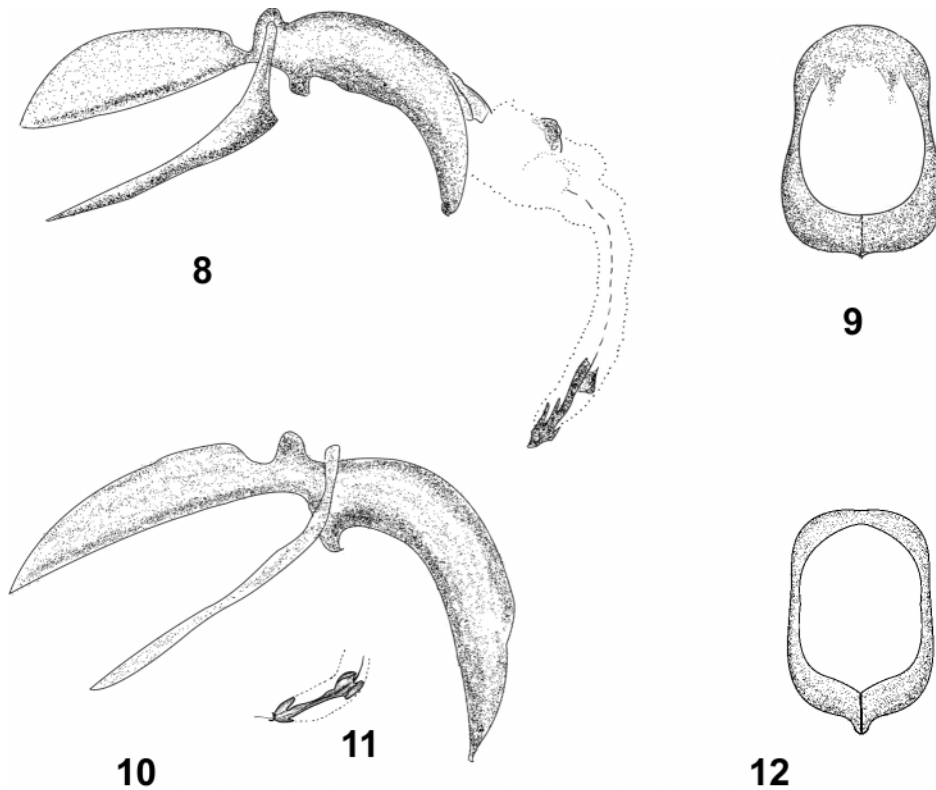
#### *Thysanomerus jacobyi* (Lefèvre)

(Figs. 2, 4, 6, 7, 8, 9, 13, 14, 18)

*Prionodera jacobyi* Lefèvre 1885:cxv, **new combination**

**Male.** Body dorsally convex; length 5.6 – 6.5 mm. Head and pronotum yellowish brown, elytra metallic green or bluish green; antenna with scape dark brown, washed with black, antennomeres 3-11 black. Underside yellowish brown with femora yellowish brown, tibia brown in basal fourth, dark brown to black in remainder, tarsi dark brown to black. Head with apical margin of clypeus deeply emarginate, antennal calli swollen. Mouthparts dark reddish brown, apex of labrum emarginate with 4 dorsal setae. Prothorax distinctly wider than long, L/W = 0.72; lateral margin narrow undulate, forming one to three teeth at the mid-point (Fig. 4). Greatest width of pronotum at middle; disc with scattered fine punctures at middle. Undersurface of thorax smooth. Prosternum longitudinally strongly inclined behind coxae, depressed in middle at posterior margin; posterior margin of intercoxal process very shallowly concave, width of intercoxal process 0.6 x diameter of procoxa. Pro- and mesofemora with erect setae on ventral margin in basal fourth, metafemur with dense brush of ventral setae in basal half (Fig. 2). Scutellum V-shaped: Abdomen with all segments covered with erect yellow setae. Male sternum VII with a weak depression in center. Pygidial surface smooth, covered with long, erect setae. Median lobe of aedeagus in lateral view smoothly curved (Fig. 8); apex with a pointed protuberance thickened ventrally; basal hood long, lightly sclerotized, with apodemes indistinct at lateral margins of hood. Apex of median lobe in apical view subtruncate, minutely acuminate

(Fig. 9). Endophallus membranous, moderately elongate, thicker and lobed dorsally; apical sclerite of endophallus straight, with apical and basal curved flaps (Fig. 8).



**FIGURES 8-12.** Male genitalia of *Thysanomerus*. 8, 10. Median lobe. 8 *T. jacobyi*, showing endophallus and apical sclerite. 10. *T. ulatae*. 9, 12. Apex of median lobe. 9. *T. jacobyi*. 12. *T. ulatae*. 11. Apical sclerite, *T. ulatae*.

**Female.** Body oval; length 6.5 – 8.3 mm; head, and pronotum as in male, elytra metallic green or dark blue, underside and antennae as in male, tibiae ranging from entirely yellowish brown to entirely black. Head with labrum, frons, clypeus, eyes and antennae similar to male; mouthparts similar to male. Prothorax distinctly wider than long,  $L/W = 0.62$ , intercoxal process 0.7 x diameter of procoxa. Legs similar to male but fewer setae on ventral margins of femora, metafemur lacking dense setal brush. Scutellum U-shaped: Abdominal sterna covered with erect setae, a slightly larger seta on each side of midline. Sternum VII with numerous long lateral and apical setae. Abdominal segments VIII-XI (Fig. 13) forming short ovipositor. Baculum distinct, apical, subequal to gonocoxae. Gonocoxae short, robust, with long setae in apical half, a membraneous area in basal half; coxostyli very small, with several long apical setae. Spermatheca as in Fig. 14; receptacle tapered in basal fourth, spermathecal duct thin, sclerotized, loosely coiled.

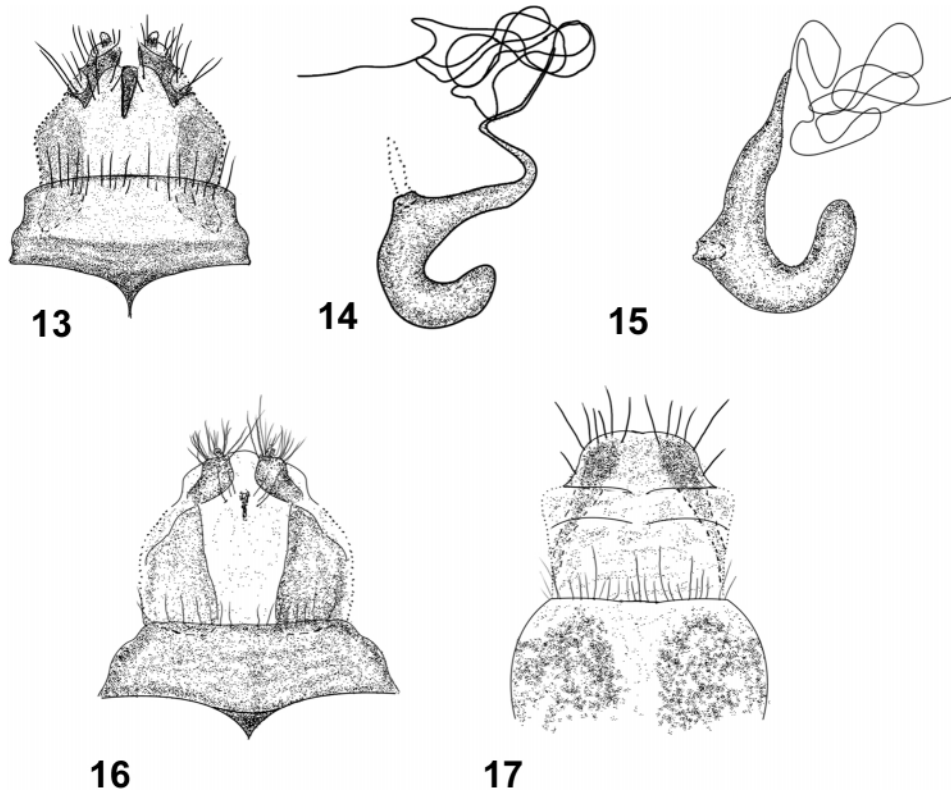
**Specimens Examined:** (41 ♂; 35 ♀) COSTA RICA, Alajuela Prov: 1 ♀ Río San Lorencito, 900m Res. For. San Ramón, 5 km N Col. Palmarea, Mar 1990, Curso Carabidae, L- N 244500\_470700; Guanacaste Prov: 1♂, Maritza, 600 m, W side Volcán Orosi. Malaise Tp 1989. GNP Biod. Sur, L\_N\_326900\_373000 #6658; 1 ♀, Est. Maritza, 600m, Lado oeste del Volcn Orosi, II curso Parataxonomos, Ago 1990, L- N 326900\_373000; Puntarenas Prov.: 13 ♂, 6 ♀; Estac. Quebrada Bonita, 50m, R. B. Carara, May 1990. R. Zuiga. L- N 194500\_469850; 1♂, same locality and collector, Jun 1990; 2 ♂, same locality and collector, Jun 1991; 1 ♀, same locality, Jun. 1993, R. Guzman; 1 ♀, Corcovado National Park Osa Peninsula. 5-9 May 1978 D.H. Janzen; 1 ♀, Est. Sirena, 0 - 100 m, P. N. Corcovado, 1991. Tp Malaise, L S 270500,508300; 2 ♀, same locality, J. C. Saborio, Jun 1991; 1 ♀, same locality, Tp Malaise Mar - Jun 1991; 3 ♂, 6 ♀, same locality, G. Fonseca, May 1992; 1 ♀, same locality and collector, Jul 1992; 11 ♂, 5 ♀, same locality and collector, May 1993; 2 ♂, 1 ♀, same locality and collector, Jun 1993; 7 ♂, 4 ♀, same locality and collector, May 1994; 1♂, Est. Sirena, ACOSA, 1-100m. 6-12 ABR 1995. A. Picado, L N 270500 507900 #4573; 2 ♀, Est. Sirena, Sendero Ollas (ACOSA ), 150m. 20 ABR 1995. B. Gamboa, L S 272100 509400 #4744; 1 ♀, Fila Matahambre, Fca. La Purruja, Cerro La Torre, Pen. Osa, 200 m. 4-9 May 1994, M. Segura, L N 277000\_527000 # 2936; 1 ♀, Rancho Quemado, Pen. de Osa, Prov. Punta, COSTA RICA. 200m. 1-27 Ene 1992, A. Marin, L S 292500\_511000 #1779.

***Thysanomerus ulateae* Flowers, new species**

(Figs. 1, 3, 5, 10 – 12, 15 – 18)

**Holotype Male.** Body dorsally convex; length 6.6 mm. Head and pronotum yellowish brown, elytra shining violet; antenna with scape yellowish brown, washed with black, segments 3-11 black. Underside yellowish brown with femora yellowish brown, tibia brown to black, darkened apically, tarsi black. Head with apical margin of clypeus emarginate, antennal calli moderately swollen. Labrum emarginate, with 6 dorsal setae. Prothorax distinctly wider than long, L/W = 0.6, pronotum with lateral margin (Fig. 5) broad, undulate, greatest width of pronotum just behind middle; disc with scattered deep punctures, separated by distances greater than their diameters. Prosternum longitudinally weakly inclined behind coxae, posterior margin of intercoxal process truncate, width of intercoxal process 0.75 x diameter of procoxa. Mesosternum narrower than prosternum, flat between coxae, surface finely punctate, with numerous erect yellow setae. Metasternum with a median area of closely spaced sort recurved setae. Femora with a few setae on ventral margin in basal fourth, metafemur (Fig. 3) with long ventral setae in basal third. Scutellum V-shaped. Abdomen with erect yellow setae on apical half of each segment. Male sternum VII broadly emarginate, pygidial surface with long, erect setae on apical half. Median lobe of aedeagus in lateral view strongly curved (Fig. 10); basal hood long, lightly sclerotized, with apodemes indistinct at lateral margins of hood. Apex of median lobe

mucronate in apical view (Fig. 12). Endophallus with apical sclerite straight, with apical and basal curved flaps present (Fig. 11).



**FIGURES 13- 17.** Female characters of *Thysanomeros*. 13, 16-17. ovipositors. 13. *T. jacobyi*, ventral. 16. *T. ulateae*, ventral. 17. *T. ulateae*, dorsal. 14-15. spermatheca. 14. *T. jacobyi*. 15. *T. ulateae*.

**Allotype Female.** Body oval; length 7.8 mm; head, and pronotum as in male, elytra dark blue or blue-green, underside and antennae as in male; legs with femora and tarsi as in male, tibiae ranging from entirely yellowish brown to entirely black. Head with labrum, frons, clypeus, eyes and antennae similar to male; mouthparts similar to male. Prothorax distinctly wider than long,  $L/W = 0.67$ ; pronotum with one to three teeth on lateral margin; punctation on disc as in male. Prosternum similar to male, but with width of intercoxal process  $0.68 \times$  diameter of procoxa. Mesosternum similar to male. Metasternum similar to male but with fewer setae in median area. Legs similar to male but fewer setae on ventral margins of femora. Scutellum U-shaped. abdominal sterna covered with long setae, 2-3 longer setae on each side of midline. Sternum VII with apical margin weakly emarginate, and with a transverse row of long setae. Abdominal segments VIII-XI forming short ovipositor (Fig. 16, 17). Baculum distinct, apical, shorter than gonocoxae. Gonocoxae short, robust, with long setae in apical half, strongly incurved medially. Spermatheca as in Fig. 15, receptacle tapered; spermathecal duct thin, sclerotized, loosely coiled.



**Etymology:** This species is named for Elena Ulate Arce, in recognition of her talented and dedicated service as technician in the Coleoptera collections of INBio.

**Specimens:** (3 ♂ and 8 ♀, all deposited in INBio) Male HOLOTYPE labeled Sector San Ramón, Prov. Alaju, COSTA RICA. 620m, 13-28 Mar 1994, D. Garcia, L N 318100\_381900 # 2766" (INBIOCRI001738811). Female ALLOTYPE labeled "Valle la Estrella, R.B. Hitoy Cerere, Prov. Limón, COSTA RICA. 100 m. Jul 1994, J. F. Quesada, L S 398100\_572800 # 3174" (INBIOCRI002004360). PARATYPES (2 ♂, 7 ♀): COSTA RICA: Alajuela Province: 1 ♂ (INBIOCRI002250566), 1 ♀ (INBIOCRI002250565), Sect. San Ramón de Dos Rios, 620m. 3-24 ABR 1995. M. Chinchilla, L\_N\_318100\_381900 #5328; 1 ♀ (INBIOCRI002146264), same locality, 27 ABR-11 MAY 1995. C. Cano #5276; 1 ♀ (INBIOCRI001874584), Est. San Ramón, P. N. Guanacaste, 620 m. 03-19 Abr 1994, Fam. Hurtado Garcia, L N 318100\_381900 # 3004; 1 ♀ (INBIOCRI001776894), Est. San Ramón Oeste, 620 m. 03-19 Abr 1994, F. Quesada, L N 318100\_381900 # 2817. Guanacaste Province: 1 ♀ (INBIOCRI000698667), Est. Pitilla, 700m, 9 km S Sta. Cecilia, P. N. Guanacaste, C. Moraga, 31 mar. - 15 abr. 1992, L- N 330200\_380200; 1 ♀ (INBIOCRI002336380), same locality abr. 1995. P. Rios, L\_N\_329950\_380450 #4814: 1 ♀ (INBIOCRI000422572), Río San Lorenzo, 1050 m., Tierras Morenas, Z. P. Tenorio, M. Segura, 23 mar. a 21 abr. 1992, L\_N\_287800\_427600. Heredia Province: 1 ♂ (INBIOCRI002729432), Est. Biol La Selva. 50-100m. MAY 2000. INBio-OET. Manual. L\_N\_268800\_535300 #71434. Limón Province: 1 ♀ (INBIOCRI001954677), Río Sardinias, R.N.F.S. Barra del Colorado, 10 m. 18-27 Jun 1993, F. V. Araya, L N 291500\_564700 # 2182; 1 ♀ (INBIOCRI000709586), Est. Hitoy Cerere, 100m, R. Cerere, Res. Biol. Hitoy Cerere, Jul 1992, G. Carballo, L- N 184200\_643300.

**Discussion.** The series Endocephalites was defined by Chapuis (1874) as Eumolpinae having convex anterior edges on the lateral arms of the prosternum (the proepisternum in older literature). In Bechyné's (1953) catalog this group was treated as a subtribe, but is here retained as an informal group pending broader study of the Eumolpini. Endocephalites contains the Neotropical genera *Colaspoides* Laporte, *Endocephalus* Chapuis, *Eroteinia* Lefèvre, *Melinodea* Jacoby, *Phanaeta* Lefèvre, *Susteraia* Bechyné and *Thyra* Lefèvre. *Phanaeta* was later removed to the subtribe Colaspina (Bechyné 1958). Although *Thysanomerus* does not have convex anterior margins on the prosternal arms, it shares with *Colaspoides* and *Endocephalus* (the two largest New World genera of the Endocephalites) several other significant characters which together serve to define this subtribe: all three genera have the anterior margin of the prosternum broadly concave for reception of the head, completely lack an elytral locking groove on the pygidium and have a constriction at the junction of the attachment of the basal hood to the median lobe of the aedeagus. Flowers (1996) noted that some species currently placed in *Colaspoides* have grooved pygidia, as do some *Endocephalus*, but the type species of both genera fit the definition of Endocephalites given above.

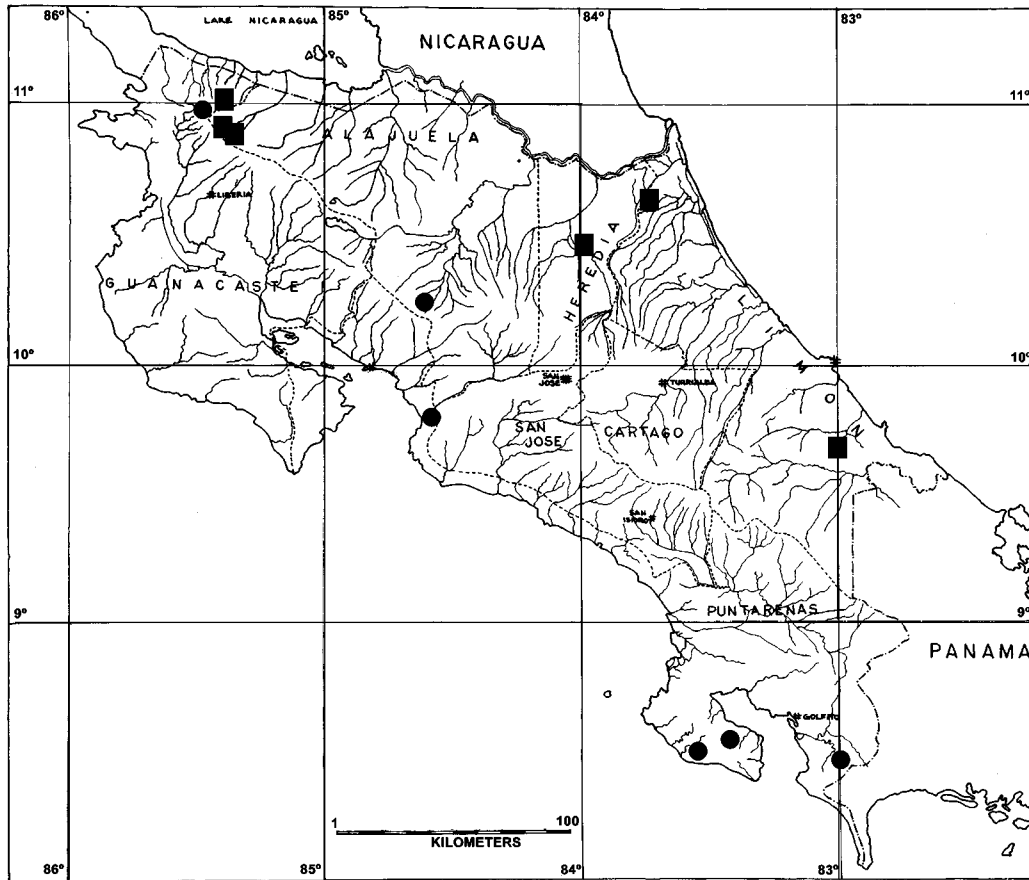


FIGURE 18. Distribution of *Thysanomeros*. *T. jacobyi*, closed circles. *T. ulateae*, closed squares.

The ranges of the two species in Costa Rica (Fig 18) show a largely disjunct distribution with most specimens of *T. jacobyi* coming from the Osa Peninsula on the southwest Pacific side and with *T. ulateae* largely confined to the Atlantic slope of Costa Rica. There is an area of overlap around the volcanos of the Guanacaste Conservation Area in northwestern Costa Rica. A single specimen of *T. jacobyi* is known from the San Ramón site in western Costa Rica, but on the Atlantic slope, and one *T. ulateae* has been collected on the western side of Volcán Tenorio. Both species of *Thysanomeros* are currently known only from Costa Rica, but given that the ranges of both span the length of the country, it would not be surprising if these species were eventually found in both Nicaragua and Panamá.

### Acknowledgments

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### Literature cited

- Askevold, I.S., & Flowers, R.W. (1994) *Glyptosceloides dentatus*, a genus and species of Eumolpinae new to Chile (Coleoptera: Chrysomelidae). *Revista Chilena de Entomología*, 21, 69-76.
- Bechyné, J. (1953) Katalog der neotropischen eumolpiden (Col. Phytoph. Chrysomeloidea). *Entomologische Arbeiten. aus dem Museum G. Frey*, 4, 26-303.
- Bechyné, J. (1958) Notizen zu den neotropischen Chrysomeloidea (Col. Phytophaga). *Entomologische Arbeiten. aus dem Museum G. Frey*, 9, 478-706
- Chapuis, F. (1874). In Lacordaire, *Histoire naturelle des insectes. Genera de coléoptères*. 10, 455 pp.
- Flowers, R.W. (1995) *Hermesia* Lefèvre, a resurrected genus of Neotropical Eumolpinae (Coleoptera: Chrysomelidae). *Proceedings of the Entomological Society of Washington*, 97, 35-45.
- Flowers, R.W. (1996) La Subfamilia Eumolpinae (Coleoptera: Chrysomelidae) en América Central. *Publicación especial No. 2 de la Revista de Biología Tropical*, 59 pp.
- Flowers, R.W. (1999) Internal structure and phylogenetic importance of male genitalia in the Eumolpinae. in Cox, M.L. (ed.) *Advances in Chrysomelidae Biology 1*, Backhuys Publishers, Leiden, pp. 71-93.
- Lefèvre, E. (1885) (Description de quatre nouvelles espèces d'eumolpides). *Bulletin de la Société Entomologique de France*. clxxxix-cxci