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## Description of two cryptic species of *Anomala* Samouelle (Coleoptera: Scarabaeidae: Rutelinae) from Costa Rica

### Descripción de dos especies crípticas de *Anomala* Samouelle (Coleoptera: Scarabaeidae: Rutelinae) de Costa Rica

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#### ABSTRACT

Two new species of *Anomala* Samouelle from Costa Rica are described: *Anomala moroni* **new species** and *A. parvaeucoma* **new species**. Habitus, protibia, distribution map, and male genitalia (aedeagus and endophallus) of each species are illustrated. A key for the dorsally setose species from the Neotropical region is provided.

**Keywords:** taxonomy, scarab beetles, aedeagus, species distribution, endophallus, new species.

#### RESUMEN

Se describen dos nuevas especies de *Anomala* Samouelle de Costa Rica: *Anomala moroni* **nueva especie** y *A. parvaeucoma* **nueva especie**. Se ilustra una vista dorsal, protibia, el mapa de distribución y las genitales masculinas (edeago y endofalo) para cada especie. Se proporciona una clave dicotómica para la identificación de las especies dorsalmente setosas de la región neotropical.

**Palabras clave:** taxonomía, escarabeidos, edeago, distribución de especies, endofalo, nuevas especies.

In this paper, we describe two new species of *Anomala* Samouelle from Costa Rica, morphologically similar to *A. eucoma* Bates, 1888 and *A. megaparamera* Filippini, Micó, Galante, 2013. Filippini *et al.* (2013) cleared up the dorsally setose *Anomala* species of Neotropical region pointing out the presence of three isolated populations of *Anomala eucoma* in Costa Rica. Morphological differences among these three populations provided evidences that they could be three different species. Recently, phylogenetic data based on genes COI, 16S and 28S indicate that they all are separate species, with the large sized “population” being sister species of *A. pseudoeucoma* (Filippini 2015). The separation between the species here described (“small sized populations”) and *A. eucoma* + *A. pseudoeucoma* has been calculated in about 10 mya, and between the 2 species here described in about 3 mya, older than the separation between *A. eucoma* and *A. pseudoeucoma* (Filippini 2015). We provide an updated identification key to similar species, modified from Filippini *et al.* (2013).

#### MATERIAL AND METHODS

The materials cited in this publication are deposited in the following collections: CEUA Colección Entomológica de la Universidad de Alicante, Spain; MNCR Museo Nacional de Costa Rica, Costa Rica.

To prepare the endophallus for study, the following procedure was used. The aedeagus was washed in a hot 10% KOH solution for 5–10 minutes and then rinsed in distilled water. It was then kept in lactic acid for a minimum of 48 hours until the structures of the aedeagus and endophallus became translucent. The endophallus was everted by injecting water from the base of aedeagus with

a syringe equipped with a needle or microforceps (WPI Dumont #5) when the length of the internal sac made the syringe method inefficient. The dissection was transferred to a microvial containing glycerine, which was attached to the insect pin. Three to six specimens of each species were dissected. Line drawings were done with the help of a camera lucida attached to a stereo microscope (Leica M80). The pencil drawings were then traced with technical ink pens. All measurements were taken from photographs of the specimens, using Leica Application software. A Leica DFC450 camera mounted on a Leica M205C stereo microscope was used to take the photographs. The following definitions were used in the description. Body length: from tip of clypeus to pygidium. Body width: measured on widest point of elytra. Clypeus width: measured at half height. Ratio interocular width/width of eye: widths measured at half the height of eyes. Pronotum width: measured at base. Width between mesocoxae: measured at level of apex of trochanters. Metatibia ratio: length measured from below the articulation with femur to tip, on the median axis; width measured at widest point. Protarsal claw: length measured from tip of claw to internal basal angle; height measured perpendicularly to the line of the length measurement, using this as base and the dorsal surface of the claw at the point when it reaches its maximum height as tip (Filippini *et al.* 2013).

We used the phylogenetic species concept described by Wheeler and Platnick (2000). This concept defines species as the smallest aggregation of (sexual) populations diagnosable by a unique combination of character states. In a more conservative classification, we followed the traditional taxonomic inclusion of New World species

in the genus *Anomala* (Jameson *et al.* 2003). To exclude cases of synonymy, the type specimens for 183 Neotropical species of *Anomala* and *Callistethus* (about 80% of species cited in the literature for the Neotropical region) have been studied (see Filippini *et al.* 2015), and available literature has been consulted for the rest.

## RESULTS AND DISCUSSION

### *Anomala moroni* sp.n. (Fig. 1)

**Material examined: Holotype:** ♂ “Est. Palo Verde, 10m, Ref. Nac. Fauna Silv. R. L. Rodriguez, Prov. Guan., COSTA RICA, D. Acevedo, Jun 1991, L- N 259000\_388400 / COSTA RICA INBIOCRI000652257”. Specimen deposited at MNCR.

**Paratypes (16):** 1♂ “Est. Palo Verde, 10m, Ref. Nac. Fauna Silv. R. L. Rodriguez, Prov. Guan., COSTA RICA, D. Acevedo, Jun 1991, L- N 259000\_388400 / COSTA RICA INBIOCRI000652258”; 1♂ “Est. Las Pailas, 800m, P. N. Rincon de la Vieja, Prov. Guanacaste, Costa Rica, 1 a 22 jul 1992, D. Garcia, L- N 306300\_388600 / COSTA RICA INBIOCRI000713719”; 1♂ “Fca. Jenny, 30 km N de Liberia, P. N. Guanacaste, Prov. Guanacaste, Costa Rica, 20 ago a 12 set 1992, E. Araya, L N 316200\_364400 / COSTA RICA INBIOCRI000849675”; 1♂ “Est. Las Pailas, 800 m, P.N. Rincon de la Vieja, Prov. Guan. COSTA RICA. 15 May-11 Jun 1993, K. E. Taylor, L- N 306300\_388600 / CEUA00105267”; 1♂ “Finca Jenny, 30 km N de Liberia, P.N. Guanacaste, Prov. Guana, COSTA RICA. 300m. Mar 1991. R. Espinoza, L N 316200\_364400 # 1678 / COSTA RICA INBIOCRI001693034”; 1♂ “Fca. Jenny, 300m, 31 Km N. Liberia, Guanacaste Prov. COSTA RICA, Nov 1988 GNP Biodiversity Survey W85 34 27”, N10 51 55” / COSTA RICA INBIOCRI002517326”; 1♂ “Estac. Maritza, 600 m, W side Volcan Orosi Guanac. Pr. COSTA RICA. June 1988. Janzen & Hallwachs W85 29`37” .N10 57`39” / COSTA RICA INBIOCRI002517343”; 1♂ “Estac. Maritza, 600 m, W side Volcan Orosi Guanac. Pr. COSTA RICA. June 1988. Janzen & Hallwachs W85 29`37” .N10 57`39” / COSTA RICA INBIOCRI002517348”; 1♀ “Tierras Morenas, 700m, Prov. Guan., COSTA RICA. May 1993. G. Rodriguez. L-N-283950, 424500 / COSTA RICA INBIOCRI001180822”; 1♀ “ Tierras Morenas, 700m, Prov. Guan., COSTA RICA. May 1993. G. Rodriguez. L-N-283950, 424500 / COSTA RICA INBIOCRI001180834”; 1♂ “Est. Las Pailas, P.N. Rincón de la Vieja, A.C. Guanacaste, Prov. Guana. COSTA RICA. 800 m. 8-26 May 1994. K.E. Taylor, L N 306300\_388600 #2912 / COSTA RICA INBIOCRI001861399”; 1♂ “Est. Las Pailas, P.N. Rincón de la Vieja, A.C. Guanacaste, Prov. Guana. COSTA RICA. 800 m. 8-26 May 1994. K.E. Taylor, L N 306300\_388600 #2912 / COSTA RICA INBIOCRI001861400”; 1♀ “Est. Las Pailas, P.N. Rincón de la Vieja, A.C. Guanacaste, Prov. Guana. COSTA RICA. 800 m. 8-26 May 1994. D. García, L N 306300\_388600 #2910 / COSTA RICA INBIOCRI001879319”; 1♀ “Est. Las Pailas, P.N. Rincón de la Vieja, Prov. Guanacaste, Costa Rica. 800 m. 19 Jun-1 Jul 1993. D. G. García, L N 306300\_388600 #2189 / COSTA RICA INBIOCRI001967801”; 1♀ “Est. Las Pailas, P.N. Rincón de la Vieja, Prov. Guana. COSTA RICA. 800 m. 16-24 Ago 1993. D. García, L N 306300\_388600 #2268 / CEUA00105266”. Fourteen paratypes are deposited at MNCR and two paratypes are deposited at CEUA.

**Description: Holotype.** Body shape oval. Length 9.31 mm. Width 5.05 mm. Head, pronotum and scutellum blackish brown. Pygidium, legs and underside reddish brown to dark orange; elytra light brown with two dark horizontal bands (on disc and one covering the basal third). Surface covered with fine blonde setae. **H e a d .** Clypeus trapezoidal, punctate-reticulate; ratio width/length 2.00. Anterior angles rounded. Frons densely punctate, flat, gradually curving towards vertex (no boundary clearly visible between the two parts). Ocular canthum long, thin and rounded at apex. Ratio interocular width/width of eye: 3.08. Antenna: ratio funiculus/club 0.72. Pronotum. Width 1.63 times length; trapezoidal. Lateral margins forming an obtuse angle at 1/3 of pronotum length. Anterior angles right and sharp, posterior angles obtuse and rounded. Basal margin thin and complete, sinuous. Whole surface with deep punctures. Scutellum sub-pentagonal in shape, with rounded sides and blunt apex. Ratio width/length 1.23. Sparsely punctate. Elytra. Surface with well defined striae and evident costae. Subsutural interstice with 2 irregular rows of punctures, 2nd- 4th interstices with one irregular secondary striae. All the surface with small setigerous punctures, with scabrous appearance. Lateral margin convex and larger at base, becoming nearly flat at half the length of elytra. Marginal membrane almost complete. Pygidium. Surface finely granulate, with longer setae at hind margins. Triangular in shape. Slightly convex in lateral view. Ratio width/length 1.71. Metasternum. Disc slightly sulcated, all covered with sparse setae. Space between the mesocoxae narrow, slightly convex; width 0.17 mm. Mesometasternal suture well defined, at base of mesocoxae. Abdominal sternites with numerous irregular transverse rows of setae, and strigate punctures. Last sternite strigate-imbricate, with apical margin well defined and slightly sinuous. Protibia with 2 teeth (Fig. 2), apical tooth long and slightly curved; second tooth at the same level or inferior respect to internal apex of protibia, triangular in shape, obtuse. Metatibia stout, narrower subapically. Ratio length/width 2.76. First carina well developed. Surface punctate above first carina and rugose below. Protarsal claws. External claw strongly curved; ratio length/height: 1.47; internal claw bifurcate, with upper branch slightly shorter and narrower than the lower one. Inferior margin slightly sinuous. Aedeagus (Fig. 3). Pointed, parameres shorter than in *A. parvaeucoma*, straight ventral margin

with defined basal angle. Endophallus (Fig. 4). Similar to that of *A. eucoma*, but thinner and with less sclerotized setae on apex.

Female. Length of club similar in both sexes. Protibia (Fig. 2) with teeth similar to male, apical tooth slightly longer, apical widening not always appreciable. Internal protarsal claw with branches of similar width, bifurcation narrower than in male, inferior margin straight.

**Variation:** Head, pronotum and scutellum from blackish to reddish brown; pygidium, legs and underside reddish brown to dark orange; bands on elytra from reddish brown to nearly black; in one specimen (Est. Maritza, INBIOCRI002517343) the band are expanded, leaving just a light band at base of elytra. In some specimens, more evident in males, presence of shallow depressions at sides of pronotum, more central respect to foveae, and rarely a central sulcus. Body length 9.31-9.96 mm, body width 5.05-5.93 mm. Clypeus w/l: 1.89-2.02. Interocular ratio (interocular width/width of eye): 3.02-3.32. Pronotum w/l: 1.63-1.68. Scutellum w/l: 1.23-1.30. Pygidium w/l: 1.66-1.71. Metatibia l/w: 2.63-2.78. Protarsal claw l/h: 1.41-1.51.

**Diagnosis:** Small size, surface covered in setae, elytra light brown with two dark horizontal bands, abdominal sternites with strigate punctures, females with antennal club similar to males; aedeagus with short parameres and defined ventral margin. Very similar to *A. parvaeucoma* and *A. megaparamera*, it can be differentiated from them mainly for the shape of parameres (short and with defined ventral angle in *A. moroni*, slender and with sinuous ventral margin in *A. parvaeucoma*, wide and rounded in *A. megaparamera*) and internal sac (with few sclerotized setae on apex on *A. moroni*, glabrous in *A. parvaeucoma*, with several sacculi in *A. megaparamera*). In Costa Rica these three species have clearly separated distribution.

**Distribution:** North-west of Costa Rica, along Cordillera de Guanacaste, from 10m to 800m.s.l. (Fig. 9).

**Etymology:** we are pleased to dedicate this species to Miguel Ángel Morón, for his valuable contributions to the knowledge of Neotropical scarab beetles.

*Anomala parvaeucoma* sp.n. (Fig. 5)

**Material examined: Holotype:** ♂ “Est. Sirena, P. N. Corcovado, 0 - 100m, Prov. Punt., COSTA RICA. N. Obando, Jun 1990, L- S 270500\_508300 / COSTA RICA INBIOCRI000644521”. Specimen deposited at MNCR.

**Paratypes** (13): 1♂ “Est Sirena, Corcovado N. P. , Puntarenas, Prov. COSTA RICA, 0-100m, Jan 1990, G. Fonseca, L\_S\_270500\_508300 / COSTA RICA INBIOCRI000198374”; 1♂ “Sirena, Corcovado N. P. Puntarenas Province COSTA RICA. 0 - 100m. G. Fonseca, Dic 1989, L- S 270500\_508300 / COSTA RICA INBIOCRI000203726”; 1♂ “Est. Sirena, P. N. Corcovado, 0-100m, Prov. Punt., COSTA RICA F. Quesada, Jun 1990, L- S 270500\_508300 / COSTA RICA INBIOCRI000376353”; 1♂ “Est. Sirena, P. N.

Corcovado, 0 -100m, Prov. Punt., COSTA RICA, G. Fonseca, Oct 1989, L- S 270500\_508300 / COSTA RICA INBIOCRI000446957”; 1♂ “Est. Sirena, 0-100m, P. N. Corcovado, Prov. Puntarenas, Costa Rica, G. Rodriguez, Abr 1992, L- S 270500\_508300 / CEUA00105265”; 1♀ “Est. Sirena, 0-100m, P. N. Corcovado, Prov. Punt., COSTA RICA, G. Fonseca, Ene 1992, L- S 270500\_508300 / COSTA RICA INBIOCRI000506778”; 1♂ “ Est. Sirena, P. N. Corcovado, 0 - 100m, Prov. Punt., COSTA RICA. N. Obando, Jun 1990, L- S 270500\_508300 / COSTA RICA INBIOCRI000644524”; 1♀ “Est. Sirena, 0-100m, P. N. Corcovado, Prov. Puntarenas, Costa Rica, Jun 1992, G. Fonseca, L -S 270500\_508300 / CEUA00105264”; 1♂ “Est. Sirena, 0-100m, P. N. Corcovado, Prov. Puntarenas, Costa Rica, Jun 1992, G. Fonseca, L -S 270500\_508300 / COSTA RICA INBIOCRI000714400”; 1♀ “COSTA RICA. Prov. Puntarenas. P.N. Corcovado, Est. Sirena. 0-100m. 21 FEB 2004. E. Holzer. C. Libre. L\_S\_270850\_509176 #92946 / INB0004129881 INBIOCRI COSTA RICA “; 1♀ “COSTA RICA. Prov. Puntarenas. P.N. Corcovado, Est. Sirena. 0-100m. 21 FEB 2004. E. Holzer. C. Libre. L\_S\_270850\_509176 #92946 / INB0004129887 INBIOCRI COSTA RICA”; 1♂ “COSTA RICA. Prov. Puntarenas. P.N. Corcovado, Est. Sirena. 0-100m. 21 FEB 2004. E. Holzer. C. Libre. L\_S\_270850\_509176 #92946 / INB0004129886 INBIOCRI COSTA RICA”; 1♂ “ COSTA RICA. Prov. Puntarenas. P.N. Corcovado, Est. Sirena. 0-100m. 21 FEB 2004. E. Holzer. C. Libre. L\_S\_270850\_509176 #92946 / INB0004129883 INBIOCRI COSTA RICA”. Eleven paratypes are deposited at MNCR and two paratypes are deposited at CEUA.

**Description: Holotype:** Body shape oval. Length 8.44 mm. Width 4.87 mm.

Color. Head, pronotum and scutellum dark brown with a metallic green luster. Pygidium, legs and underside reddish brown; elytra light brown with two darker horizontal bands (on disc and covering the basal third, sometimes not reaching the hind margin). All the surface is covered with fine blonde setae. Head. Clypeus trapezoidal, punctate-reticulate; ratio width/length 1.75. Anterior angles rounded. Frons densely punctate, flat, almost gradually curving towards vertex (no boundary clearly visible between the two parts). Ocular canthum long, thin and rounded at apex. Ratio interocular width/width of eye: 2.82. Male antenna: ratio funiculus/club 0.67. Pronotum. Width 1.67 times length; shape trapezoidal to rectangular. Lateral margins forming an obtuse angle at 1/3 of pronotum length. Anterior angles right and sharp, posterior angles obtuse and rounded. Basal margin thin and complete, sinuous. Whole surface with deep punctures. Scutellum sub-pentagonal in shape, with rounded sides and blunt apex. Ratio width/length 1.28. Sparsely punctate. Elytra. Surface with well defined striae and evident costae. Subsutural interstice with 2 rows of sparse punctures, irregular at base, 2nd- 5th interstices with one irregular secondary striae. Surface with

small setigerous punctures, but the main punctation is still clear. Lateral margin convex, larger at base, disappearing on apex. Marginal membrane almost complete. Pygidium. Surface finely granulate, with longer setae at hind margins. Triangular in shape. Quite straight in lateral view. Ratio width/length 1.64. Metasternum. Disc slightly sulcated, all covered with sparse setae. Space between the mesocoxae narrow, slightly convex; width 0.20 mm. Mesometasternal suture well defined, at base of mesocoxae. Abdominal sternites with numerous irregular transverse rows of setae, and elongated punctures that fuse into streaks at sides. Sternite 5 with denser setae. Last sternite strigate-imbricate, with apical margin well defined and slightly sinuous. Protibia with 2 teeth (Fig. 6): apical tooth long and almost straight; second tooth at the same level of internal apex of protibia, triangular in shape, obtuse. Metatibia stout, narrower subapically. Ratio length/width 2.93. First carina well developed. Texture punctured above first carina and rugose below. Protarsal claws. External claw strongly curved; ratio length/height: 1.32; internal claw bifurcate, with upper branch slightly shorter and 2/3 the width of the lower one. Inferior margin quite straight. Aedeagus (Fig. 7). Long and slender parameres, acute apex, ventral margin slightly sinuous. Endophallus (Fig. 8). One long branch covered with microsetation. Ejaculatory duct opening at 1/3 of length. Swollen at base.

Female: Antennal club slightly shorter than in male. Protibia (Fig. 6) with apical tooth longer and slightly wider than in male. Internal protarsal claw similar to male.

**Variation:** Head, pronotum and scutellum dark brown to reddish brown; metallic green luster usually absent. In some specimens, presence of a shallow median sulcus on pronotum not reaching margins. Pygidium, legs and underside reddish brown to dark orange; elytra light brown with two dark (reddish to dark brown) horizontal bands (on disc and covering the basal third, sometimes not reaching the hind margin. Body length 8.44-9.90 mm, body width 4.87-5.63 mm. Clypeus w/l: 1.75-1.99. Interocular ratio (interocular width/width of eye): 2.82-2.93. Male antenna: ratio funiculus/club 0.66-0.67. Pronotum w/l: 1.62-1.67. Scutellum w/l: 1.21-1.32. Pygidium w/l: 1.64-1.70. Metatibia l/w: 2.35-2.93. Protarsal claw l/h: 1.32-1.33.

**Diagnosis:** Small size, surface covered in setae, elytra light brown with two dark horizontal bands, abdominal sternites with elongated punctures, females with antennal shorter than males; aedeagus with slender parameres and sinuate ventral margin. It's very similar to *A. moroni* and *A. megaparamera*, from which it can be separated by the shape of aedeagus, with slender parameres and sinuous ventral margin (short and with defined ventral angle in *A. moroni*, wide and rounded in *A. megaparamera*), and internal sac; particularly the lack of sclerotized setae, that in *A. moroni* and *A. megaparamera* are visible even in the inverted sac. In Costa Rica these three species have clearly separated distribution.

**Distribution:** Costa Rica, Parque Nacional Corcovado,

in the Osa peninsula (Fig. 9).

**Etymology:** from Latin adjective “parva”, little, and “eucoma”, Greek roots “eu=true, coma=hair”, for its similarity with *A. eucoma* but of smaller size.

#### Key to dorsally (pronotum and elytra) setose *Anomala* species of the Neotropical Region

1. Rounded shape, with widest point at half the length of elytra; two transversal bands on elytra: a median transversal wavy band, hind band usually not reaching the posterior margin of elytra ..... 2
- Elongated shape, with widest point at last third of elytra; elytra with uniform color, or with 1 or more continuous transversal band, the hind one covering apical third of elytra; if bands are made of spots, they are arranged in 3 rows ..... 3
2. Median band on elytra continue, hind band reaching sides, male genitalia illustrated in Fig. 48 .....  
..... *A. semitonsa* Bates, 1888
- Median band on elytra composed by isolated spots, hind band usually not reaching sides, male genitalia illustrated in Fig. 49 ..... *A. balzapambae* Ohaus, 1897
3. Pronotum metallic green, larger at 1/3 of height than at base, elytra uniform dark brown, total length about 10 mm, aedeagus illustrated in Fig. 50 .....  
..... *A. ampicoma* Bates, 1888
- Pronotum dark brown, largest at base, if a green luster is present, elytra have transversal light bands ..... 4
4. Pronotum almost rectangular, head large, almost as long as pronotum and 2/3 the width of the pronotum. Elytra light brown dappled with darker spots, concentrated in 3 transversal bands (post humeral, median and posterior half of elytra), or expanding till covering almost all surface .... 5
- Pronotum trapezoidal, head small, about half wide as the pronotum. Elytra with uniform color or max 2 transversal bands, never a posthumeral one ..... 6
5. Elytra with setae on the entire surface, pronotum of uniform color, or with slightly lighter border in light colored specimens, pattern on elytra not defined (aedeagus in Filippini et al. 2013) ..... *A. hispidula* Bates, 1888
- Elytra with setae only on posterior third, border of pronotum always of lighter color, pattern on elytra well defined (aedeagus in Morón & Nogueira 2002) .....  
..... *A. tindakua* Morón & Nogueira, 2002
6. Elytra uniformly light brown, or max 1 transversal dark band. Size about 11 mm .....  
..... *A. flavacoma* Filippini, Micó, Galante, 2013
- Elytra dark brown, quite uniform or with two bands, apical third of elytra always dark ..... 7
7. Size more than 11 mm ..... 8
- Size less than 10.1 mm ..... 9
8. Elytra uniformly dark or with a lighter posthumeral band (rarely a second light band on disc); male protibia upper tooth short (less than 1/4 of total length) and almost straight; aedeagus with wide apex and strongly sinuous ventral margin .....

..... *A. pseudoeucoma* Filippini, Micó, Galante, 2013  
 -. Two darker transversal bands are visible on elytra; male protibia upper tooth long (more than 1/4 of total length) and oblique, parameres with short rounded apex and slightly sinuous ventral margin ..... *A. eucoma* Bates, 1888  
 9. Pronotum with irregular surface due to small depressions on sides of median sulcus. Parameres wide, max length as 3/4 of tectum length, with blunt and wide apex. Basal ventral margin longer than dorsal joint of parameres .....  
*A. megaparamera* Filippini, Micó, Galante, 2013  
 -. Pronotum with uniform surface, sometimes a median sulcus is present. Parameres slender, with defined narrow apex; length of parameres not reaching 3/4 of tectum length. Basal ventral margin as long as dorsal joint of parameres ..  
 ..... 10  
 10. Ventral margin of parameres slightly sinuous, parameres long, more than half the length of tectum (Fig. 7) .....  
 ..... *A. parvaeucoma* n. sp.  
 -. Ventral margin of parameres straight, parameres short, less than half the length of tectum (Fig. 3) .....  
 ..... *A. moroni* n. sp.

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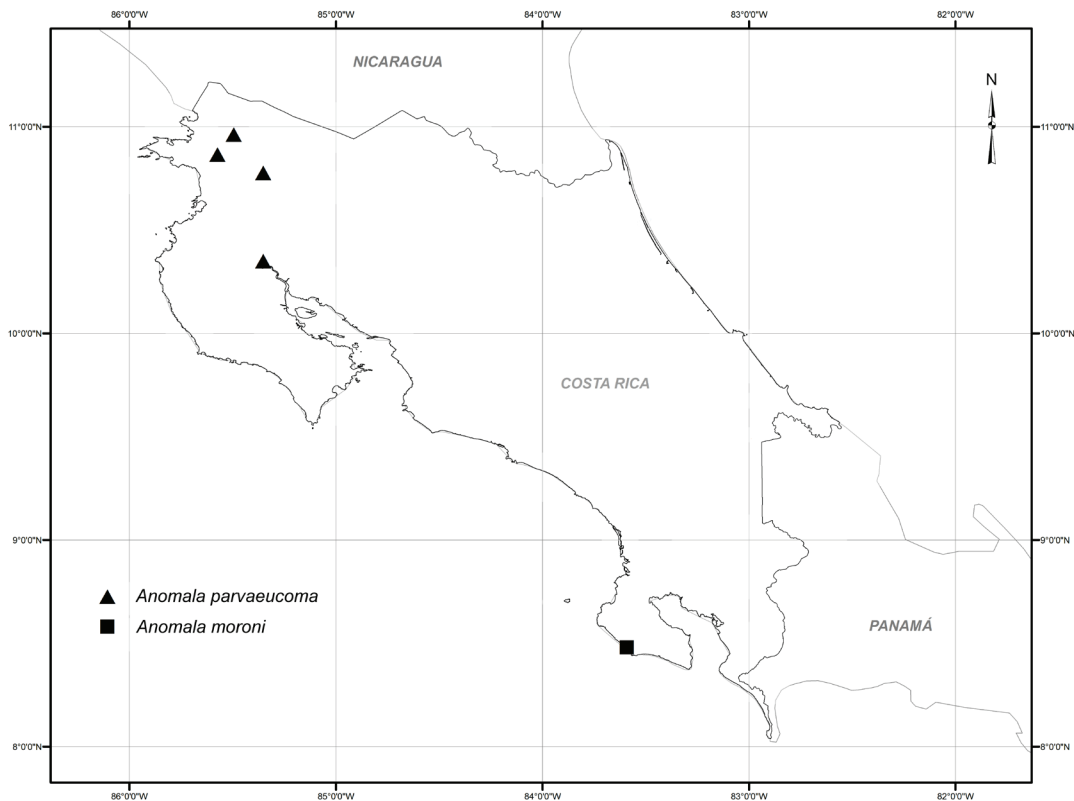
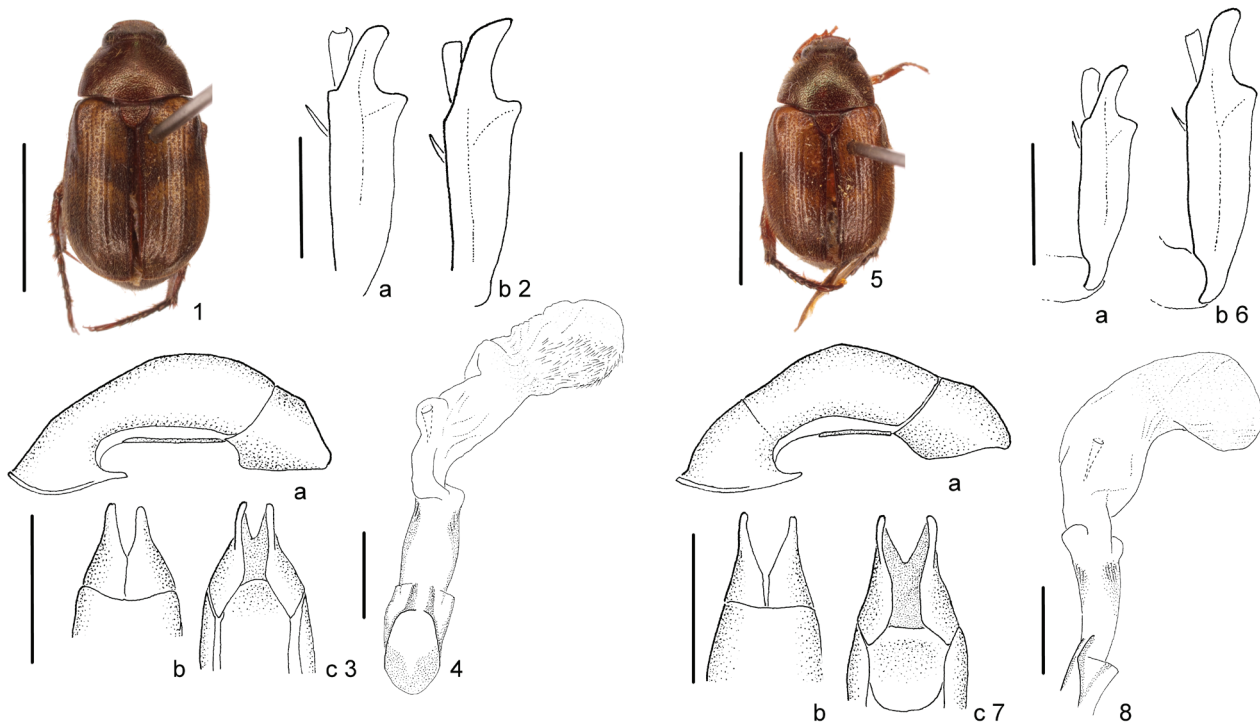
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Figures 1–4: *Anomala moroni*. 1) Habitus (holotype). Scale = 5mm. 2) Protibia (a) male, holotype; (b) female, paratype (Est. Las Pailas). 3) Aedeagus (holotype), (a) lateral view; (b) dorsal view of parameres; (c) ventral view of parameres. 4) Endophallus (paratype, Est. Las Pailas) (from Filippini *et al.* 2013). Scale = 1mm. Figures 5–8: *Anomala parvaeucoma*. 5) Habitus (male paratype, Est. Sirena). Scale = 5mm. 6) Protibia (a) male, paratype (Est. Sirena); (b) female, paratype (Est. Sirena). 7) Aedeagus (paratype, Est. Sirena), (a) lateral view; (b) dorsal view of parameres; (c) ventral view of parameres. 8) Endophallus (paratype, Est. Sirena) (from Filippini *et al.* 2013). Scale = 1mm. Figure 9. Distribution map of *Anomala moroni* and *A. parvaeucoma*.