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662

The beetle family Carabidae of Costa Rica: The genera of the Cryptobatida group of subtribe Agrina, tribe Lebiini, with new species and notes on their way of life (Insecta: Coleoptera)

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Table of contents

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Abstract

Eight genera and eighteen species of the Cryptobatida group of subtribe Agrina, Lebiini, living in Costa Rica are diagnosed, described, illustrated or referenced and new species assigned to inclusive genera. Occurrences of some taxa outside of Costa Rica are also reported, these ranging from Texas to Argentina. Subtribe Agrina consists of those species formerly included in the Subtribe Calleidina. Four new species of *Aspasiola* Chaudoir 1877 are described: *A. bonita* Erwin, **n. sp.** (COSTA RICA. PUNTARENAS, Peninsula de Osa, P.N. Corcovado, Estación Sirena, 0–100 m, 08° 28' 0 N, 083° 35' 0 W, LS270500, 508300), *A. osa* Erwin**, n. sp.** (COSTA RICA. PUNTARENAS**,** Peninsula de Osa, P.N. Corcovado, Estación Sirena, upper Ollas Trail, 30–150 m, 08° 29' 00" N, 083° 34' 39" W), *A. selva* Erwin**, n. sp.** (COSTA RICA. HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500, 268000), *A. steineri* Erwin **n. sp.** (COSTA RICA. HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500, 268000). Two new species of *Hyboptera* Chaudoir 1872 are described: *H. apollonia* Erwin **n. sp.** (PANAMÁ, COLÓN, Porto Bello, 113 m, 09° 33' 0 N, 079° 39' 0 W), *H. auxiliadora* Erwin **n. sp.** (USA. TEXAS, Hidalgo County, Mission; Bentsen State Park, 26º 10' 22" N, 098º 22' 56" W). *Alkestis* Liebke 1939 is a ***nomen dubium*** and possible junior synonym of *Lelis* Chaudoir 1869**.** *Aspasiola rutilans ignea* Bates 1883 is changed to full species, *Aspasiola ignea* Bates **new status**. *Pseudolebia* Basilewsky 1942 is **NOT** a synonym of *Onota* Chaudoir 1872. *Pseudometabletus* Liebke 1930 is a **junior synonym** of *Cylindronotum* Putzeys 1846. *Pseudotoglossa rufitarsis nigrescens* Mateu 1961:177 is a **junior synonym** of *Pseudotoglossa terminalis* (Chaudoir).

An identification key is provided to the genera of the Cryptobatida Group and additional keys are provided for those genera with more than one species occurring in Costa Rica. Distribution data is provided for all species including their known occurrence outside of Costa Rica in adjacent Panamá and Nicaragua, and other countries. Adults of species of *Aspasiola, Cryptobatis, Otoglossa* and *Hyboptera* are known to occur on shelf fungi on rotting logs and have also been fogged from the canopy of tropical trees (which probably contained shelf fungi on dead branches); adults of species of *Cylindronotum, Onota, Pseudotoglossa, Valeriaaschero* have also been fogged from the canopy of tropical trees and likely adults of *Onota* and *Pseudotoglossa* collected from rotten logs were associated with fungi.

Key words: Costa Rica, Nicaragua, Panamá, INBio, Carabidae, Lebiini, *Alkestis, Aspasiola, Cryptobatis, Cylindronotum, Hyboptera, Onota, Otoglossa, Pseudolebia, Pseudometabletus, Pseudotoglossa, Thoasia, Valeriaaschero.*

Resumen

Ocho géneros y dieciocho especies del Grupo Cryptobatida perteneciente a la Subtribu Agrina, Lebiini, que viven en Costa Rica son diagnosticados, descritos, ilustrados o referenciados y nuevas especies son asignadas a géneros inclusivos. La ocurrencia de algunos taxa fuera de Costa Rica es tambien presentada, estos ocupando el rango entre Texas y Argentina. La Subtribu Agrina se constituye por aquellas especies incluidas anteriormente en la Subtribu Calleidina. Cuatro nuevas especies de *Aspasiola* Chaudoir 1877 son descritas: *A. bonita* Erwin**, n. sp.** (COSTA RICA. PUNTARENAS, Peninsula de Osa, P.N. Corcovado, Estación Sirena, 0–100 m, 08° 28' 0 N, 083° 35' 0W, LS270500, 508300), *A. osa* Erwin**, n. sp.** (COSTA RICA. PUNTARENAS, Peninsula de Osa, P.N. Corcovado, Estación Sirena, upper Ollas Trail, 30–150 m, 08° 29' 00" N, 083° 34' 39" W), *A. selva* Erwin**, n. sp.** (COSTA RICA. HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500, 268000), *A. steineri* Erwin **n. sp.** (COSTA RICA. HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500, 268000). Dos nuevas especies de *Hyboptera* Chaudoir 1872 son descritas: *H. apollonia* Erwin**, n. sp.** (PANAMÁ, COLÓN, Porto Bello, 113 m, 09° 33' 0 N, 079° 39' 0 W), *H. auxiliadora* Erwin**, n. sp.** (USA. TEXAS, Hidalgo County, Mission; Bentsen State Park, 26º 10' 22" N, 098º 22' 56" W). *Alkestis* Liebke 1939 es un ***nomen dubium*** y posiblemente un sinónimo menor de *Lelis* Chaudoir 1869. *Aspasiola rutilans ignea* Bates 1883 se cambia a especie, *Aspasiola ignea* Bates **nuevo status**. *Pseudolebia* Basilewsky 1942 no es un sinónimo de *Onota* Chaudoir 1872. *Pseudometabletus* Liebke 1930 es un sinónimo menor de *Cylindronotum* Putzeys 1846. *Pseudotoglossa rufitarsis nigrescens* Mateu 1961:177 es un sinónimo menor de *Pseudotoglossa terminalis* (Chaudoir).

Se provee de una clave para identificar los géneros del Grupo Cryptobatida y claves adicionales para los géneros con más de una especie presente en Costa Rica. Se adjuntan datos de distribución para todas las especies incluyendo el conocimiento de su presencia fuera de Costa Rica, en los adyacentes Panamá y Nicaragua u otros países. Se conoce que los adultos de las especies de *Aspasiola, Cryptobatis*, *Otoglossa* y *Hyboptera* ocurren en hongos en repisa sobre troncos caídos y han sido colectados de la copa de árboles tropicales (los cuales probablemente contengan hongos en repisa sobre las ramas muertas); los adultos de las especies de *Cylindronotum, Onota, Pseudotoglossa, Valeriaaschero* han sido también colectados en la copa de árboles tropicales y posiblemente los adultos de *Onota* y *Pseudotoglossa* que fueron colectados en troncos en putrefacción estaban asociados a hongos.

Palabras clave: Costa Rica, Nicaragua, Panamá, INBio, Carabidae, Lebiini, *Alkestis, Aspasiola, Cryptobatis, Cylindronotum, Hyboptera, Onota, Otoglossa, Pseudolebia, Pseudometabletus, Pseudotoglossa, Thoasia, Valeriaaschero*

Introduction

This is the fifth in my new series of papers with diagnoses of new taxa and redescriptions of known taxa in the beetle family Carabidae from Costa Rica (Erwin 2000, 2002, 2004; Erwin et al. 2004) and adjoining countries; previous contributions can be found in Erwin (1973a, 1973b, 1974a, 1982, 1991, 1994). Full descriptions of all taxa herein, including color images, up-to-date maps of their known distributions, and what is known of their

way of life will be posted at the following URL: http://www.inbio.ac.cr. The purpose of this paper is to rapidly validate the new species names (Erwin & Johnson, 2000) with descriptions and provide more complete redescriptions of known species so that they are available for the INBio website, thus enhancing the National Biodiversity Inventory Project of Costa Rica.

Although this contribution is a faunal treatment rather than one of phylogenetics, a comment about the grouping of taxa in the Cryptobatida Group is necessary here. By virtue of many attributes, these genera are obviously closely related, as already recognized in part by Chaudoir (1872) and expanded by Bates (1883), although with disagreement on some attributes. Structure of mouthparts, elytral transverse depression, and male genitalia are the attributes of best support and will become the bases for a morphologically-based reconstructed phylogeny in the future for all species throughout the ranges of all genera. These genera, based on museum collections are distributed widely in the Neotropical region and revision of all their species will be needed for a worthwhile phylogenetic study in the future.

Specimens and methods

Methods and species concepts follow those previously described (Erwin and Kavanaugh, 1981; Kavanaugh and Erwin, 1991). The species validation and diagnosis format follows as closely as possible that suggested in Erwin and Johnson (2000) and as used in Erwin (2000, 2004). Measurements of length (ABL, SBL) and width (TW) follow those of Ball (1972) and Kavanaugh (1979): ABL (apparent body length), measured from apex of labrum to apex of longer elytron; SBL (standardized body length), equals the sum of the lengths of the head (measured from apex of clypeus to a point on midline at level of the posterior edge of compound eyes), pronotum (measured from apical to basal margin along midline), and elytron length (measured from apex of scutellum to apex of the longer elytron); and TW, (total width), measured across both elytra at their widest point.

Included in this study are a total of 243 specimens from the National Museum of Natural History, Washington, DC (NMNH), INBio, Santa Domingo, Costa Rica, (INBio), as well as from the ALAS Project headquartered at Estación Biologica La Selva, Costa Rica (INBio-OET). Additional specimens from the University of Kansas, Lawrence, Kansas (SEMC), University of Alberta, Edmonton, Alberta (UASM), and the private collection of H. Hespenheide (HESP) are also included herein and will be returned to those collections upon completion of the study. The ALAS specimens will be deposited at INBio and NMNH upon completion of the study. Some duplicates, series permitting, will be deposited in the California Academy of Sciences (CASC) collection. Type specimens are included in the number above and their depositories are cited in the text.

The habitus images of the adult beetles portray most of the character states referred to in the keys provided. Male genitalia illustrations are standard for descriptive taxonomy of

carabid beetles. Geographical data are presented for the species based on all known specimens available at the time of manuscript preparation. I also provide a composite map of current geo-references for all species herein described, or redescribed (Figs. 33–40). Up to date distribution maps for each species will be found at the website mentioned above and eventually in the Encyclopedia of Life, Smithsonian Institution. Common names for species are required in Spanish for the INBio Website; hence they are provided here in English and will be translated into Spanish when posted at the INBio web site. The species list below, as well as arrangement of descriptions that follow is ordered alphabetically, first by genus and within that, by species. Georeferences have been determined from information given on the specimen labels. At INBio, they customarily use Lambert, while I use latitude and longitude. I report here all information available and use the customary *addim* "0" for minutes or seconds that are not available.

The Costa Rica species of the Cryptobatida Group
(additional countries given if specimens seen from them)

Aspasiola Chaudoir 1877
bonita Erwin **n. sp.,** Costa Rica
ignea Bates 1883:201, **new status.** Costa Rica, Panamá
lemoides Bates 1883:201, Costa Rica, Panamá
osa Erwin **n. sp.,** Costa Rica
selva Erwin **n. sp.,** Costa Rica
steineri Erwin **n. sp.,** Costa Rica

Cryptobatis Eschscholtz 1829
chontalensis Bates 1883:202, Costa Rica, Nicaragua, Panamá

Cylindronotum Putzeys 1846
nevermanni (Liebke), 1930:723, Costa Rica

Hyboptera Chaudoir 1872
apollonia Erwin **n. sp.,** Costa Rica, Panamá
auxiliadora Erwin **n. sp.,** Costa Rica, México, Panamá, Texas

Onota Chaudoir 1872
angulicollis (Reiche), 1842:312, Brasil, Colombia, Costa Rica, Guatemala,Nicaragua, Panamá, Surinam

Otoglossa Chaudoir 1872
nevermanni (Liebke), 1927:102, Costa Rica

Pseudotoglossa Mateu 1961

marginella (Bates), 1883:199, Costa Rica, Panamá

obscurella (Bates), 1878:608, Belize, Colombia, Costa Rica, Nicaragua

rufitarsis (Chaudoir), 1877:231, Colombia, Costa Rica, Guatemala, Honduras, México, Panamá

terminalis (Chaudoir), 1872:161, Brazil, Colombia, Costa Rica, French Guiana,Guatemala, México, Nicaragua, Panamá, Perú

Valeriaaschero Erwin 2004

flora Erwin 2004:15, Costa Rica, Panamá

nigrita Erwin 2004:16, Costa Rica

Tribe Lebiini, Subtribe Agrina, Cryptobatida Group

Diagnosis: Head ventrally without suborbital setigerous pores, neck not markedly narrowed and head not pedunculate. Mandible widened near base, scrobe wide, lateral margin markedly rounded; palpi with ultimate articles sub-securiform or securiform, paraglossae broad, glabrous, adherent, extending to anterior angle of ligula. Elytron with transverse depression at anterior third, appearing deformed; penultimate setigerous pore of elytron umbilicate series not displaced laterally or medially. Posterior tibial spurs subequal, their margins smooth; tarsomere 4 bilobed. With the exception of one genus (probably a reversal), endophallus with flagellum.

Notes: Subtribe Agrina consists of those species formerly included in the Subtribe Calleidina (cf. Lorenz, 1998). The Cryptobatida Group, by virtue of the attributes above, formally is designated here with the type genus, *Cryptobatis* Eschscholtz. Many records of species in most genera covered refer to collections on fungus-covered fallen tree trunks. It is likely that this group contains species whose adults are predators on shelf fungus inhabitants (cf. Erwin & Erwin 1976).

Key to the Costa Rican genera of the Cryptobatida Group, Subtribe Agrina (Lebiini)
(Modified in part from Erwin, Kavanaugh & Moore 2004)

1 Elytron at basal third depressed, surface uneven, tuberculate or not, and/or margin of pronotum angulate or subangulate at mid-lateral setiferous pore .... **Cryptobatida Group** ... **2**

1' Elytron neither depressed nor tuberculate, surface smooth with normal interneurs and intervals (or interneurs effaced); side of pronotum evenly rounded .... **Plochionida Group, Calleidida Group, Agrida Group**

2 Elytron markedly tuberculate overall or with a series of small setiferous tubercles in

intervals 3 and 5 ..... **3**

2' Elytron without trace of discal tubercles; lateral marginal intervals with or without calli **5**

3(2) Prothorax somewhat tubular, much narrower than head ... ***Otoglossa*** Chaudoir 1872

3' Prothorax wider than head **4**

4(3') Sides of pronotum narrowly reflexed except at mid-lateral seta, there wide; neck well-defined, narrow; elytra metallic blue, forebody rufous....[1]***Thoasia*** Liebke 1939

4' Sides of pronotum broadly reflexed throughout; neck broad ..... ***Hyboptera*** Chaudoir 1872

5(2') Antennomere 4 glabrous except for apical ring setae **6**

5' Antennomere 4 multisetiferous from basal third to apex, in addition to apical ring setae **7**

6(5) Elytron laterally with callus at apical third; male endophallus without flagellum ..... ***Valeriaaschero*** Erwin 2004

6' Elytron laterally without callus at apical third; male endophallus with flagellum ..... ***Aspasiola*** Chaudoir 1877

7(5') Head and pronotum densely and evenly punctate ..... ***Cylindronotum*** Putzeys 1846

7' Head and pronotum smooth **8**

8 (7') Pronotum with lateral margin narrowly reflexed from base to apex ..... ***Pseudotoglossa*** Mateu 1961

8' Pronotum with lateral margin moderately or markedly reflexed from base to apex **9**

9(8') Elytron laterally at apical third with large callus ..... ***Cryptobatis*** Eschscholtz 1829

9' Elytron laterally at apical third without callus ..... ***Onota*** Chaudoir 1872

Accounts of taxa

Lelis Chaudoir 1869:239

Alkestis Liebke 1939: 116. ***Nomen dubium.*** **New synonymy?**

Type species: *Alkestis nevermanni* Liebke 1939:117 (original designation).

The single known specimen described by Liebke for his new genus and new species is neither in the Liebke collection in Warsaw, Poland, nor is it in the NMNH, as Liebke declared in his description, thus it may be that the specimen perished as a result of World War II when Hamburg, Germany was bombed by Allied planes. Liebke's description (not illustrated) is inadequate to determine exactly which species he had represented at the time of

1. ***Thoasia rugifrons*** Liebke (1939:129) is exceedingly common in western and north-western South America, but adults are found best using insecticidal fogging techniques. It is possible that the genus also occurs in Central America and may be found, if this technique is used.

description, although he compares the single specimen in color to members of *Cryptobatis* Eschscholtz, and that is why I have treated this taxon here. Liebke may have re-described the similarly-colored adults of *Lelis rutila* (Bates), which is not a member of the Cryptobatida Group.

Aspasiola Chaudoir 1877

Aspasiola Chaudoir 1877:209. Type species: *Aspasiola rutilans* Chaudoir 1877:209, here designated. This is the first species mentioned by Chaudoir of his included three species. Type area: México.

Diagnosis. (cf. Figs. 1, 3, 5, 7, 9, 11). Colorful. Antennomere 4 glabrous except for apical ring setae. Pronotum without subangulate margin at level of anterior setigerous pore, side margin minimally explanate. Elytron at basal third depressed; interneurs as shallowly impressed rows of punctulae; disc without trace of tubercles, without well defined callus at apical third. Male endophallus with flagellum; flagellum apex not barbed.

Geographic distribution. This genus is widespread in the Neotropical Region from México south to Brazil, Bolivia, and east to French Guiana.

Notes. The known altitudinal range of these species is between sea level and 1150 meters above sea level. This genus is presently known in the literature from four species and is being revised by Erwin & Ball. There are 25 species represented in our study material from across the range mentioned above, most of which are new species to science. It is highly probable that adults of the species in this genus are associated with fungi growing on rotten tree trunks or branches in the canopy where they are likely predators on small fungivores (cf. Erwin & Erwin, 1976).

Key to the Costa Rican species of *Aspasiola* Chaudoir 1877

1 Legs and tarsomeres concolorous, testaceous **2**

1' Leg bicolored, femur testaceous, tibia and tarsomeres piceous **5**

2(1) Elytron with punctulae of interneurs markedly small and fine throughout; pronotum transverse with hind angle slightly obtuse, margin not markedly constricted anterior to hind angle ..... ***A. selva* Erwin, n. sp.**

2' Elytron with punctulae of interneurs moderately coarse in basal half, fine posteriorly; pronotum with hind angle obtuse, margin markedly constricted anterior to hind angle **3**

3(2') Pronotum with margins broadly explanate, width greater than head across eyes; elytra somewhat obscurely pigmented, only humerus AND post scutellar area pale.. ..... ***A. osa* Erwin, n. sp.**

3' Pronotum with margins narrowly explanate, width less than head across eyes; entire elytron pale, although darkly pigmented wings may show through; post scutellar area pale **4**

4(3') Eyes normal, moderately produced, not appearing stalked from posterior aspect; distal antennomeres (5–11) black ..... ***A. ignea* Bates**

4' Eyes slightly stalked, markedly produced, appearing stalked from posterior aspect; distal antennomeres (5–11) brown, 3–4 slightly infuscated.. ***A. bonita* Erwin, n. sp.**

5(1') Elytron with humeral area darkly pigmented with bluish reflections, remainder bright rufous; apex of femur infuscated ..... ***A. steineri* Erwin, n. sp.**

5' Elytron bright rufous; apex of femur testaceous ..... ***A. lemoides* Bates**

***Aspasiola bonita* Erwin, new species**
(Figs. 1, 2, 33)

Holotype. Male, COSTA RICA. PUNTARENAS, Peninsula de Osa, P.N. Corcovado, Estación Sirena, 0–100 m, 08° 28' 0 N, 083° 35' 0 W, LS270500, 508300, June (G. Fonseca)(INBIO: CRI001834190).

Derivation of specific name. The specific epithet, *bonita,* is used as a noun in apposition and is based on the Estación Quebrada Bonita in Carara National Park in reference to one of the places near which members of this species are found and secondarily to the beautiful colors of the adult.

Common name. Beautiful fungus dweller.

Diagnosis. With the attributes of the genus as described above and legs and tarsomeres concolorous, testaceous; distal antennomeres (5–11) brown. Eyes appearing slightly stalked from posterior aspect, markedly produced. Pronotum with hind angle acute, margin markedly constricted anterior to hind angle. Elytron with punctulae of interneurs moderately coarse in basal half, finer posteriorad.

Description. (Fig. 1). Size small: ABL = 5.25 to 5.66 mm, SBL = 4.91 to 5.0 mm, TW = 2.66 mm. *Color:* Dorsum and venter rufescent; mouthparts, antennomeres 1–4 and legs testaceous; antennomeres 5–11 infuscated-brown. Metathorasic wings smoky grey. *Luster:* Very shiny. *Microsculpture:* Absent. *Head:* Slightly broader across eyes than pronotum; frontal furrows shallowly impressed, very short; eyes large, produced; frons slightly convex, vertex moderately convex; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Pronotum cordiform, moderately convex, side margin narrowly explanate, moderately sinuate anterior to obtuse hind angle. Base slightly lobed posteriorly. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 2) with ostium 1/5 its length, catopic, slightly constricted at basal third, basal third arched, apex markedly elongate, evenly rounded;

endophallus with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right small.

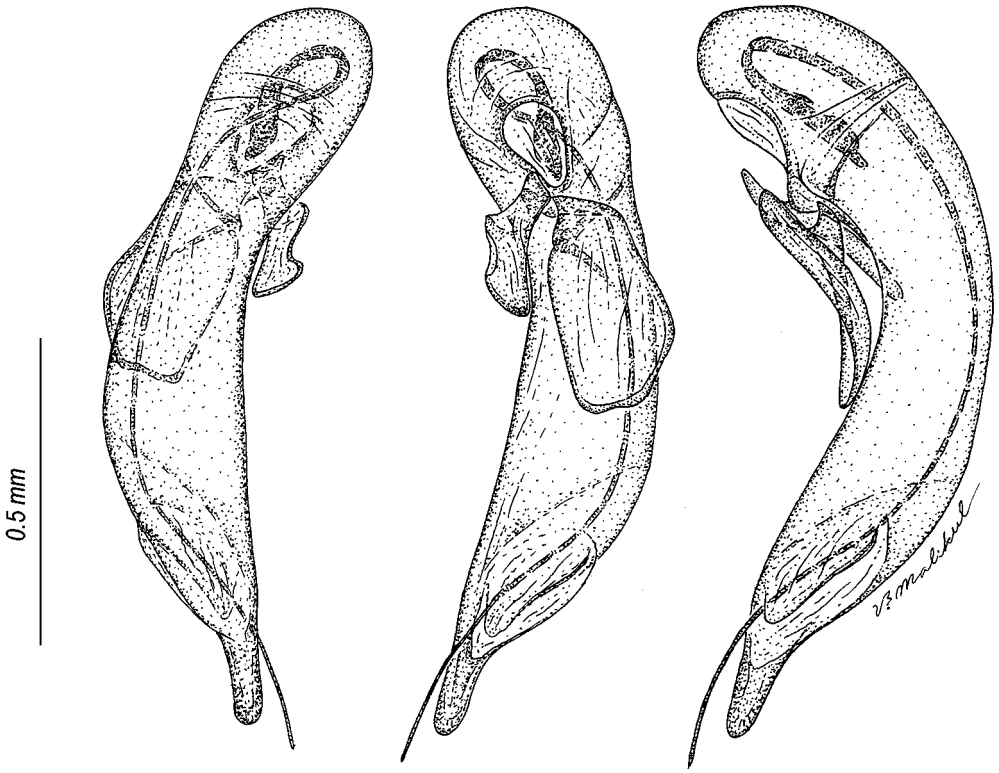

FIGURE 2. Phallus, dorsal, ventral, left lateral aspects of *Aspasiola bonita* Erwin n. sp., specimen # ADP006041.

Way of life. See above, Notes, under genus description. The known altitudinal range of this species is between sea level and 200 meters above sea level. They have been collected only west of the Cordillera Central in the lowlands in May, June and July, the lowland rainy season in Costa Rica, thus the adults are perhaps restricted to this season.

Other specimens examined. Paratypes: COSTA RICA. 2 males, PUNTARENAS, P.N. Carara, Táracoles, Estación Quebrada Bonita, 50 m, 09° 46' 0 N, 084° 36' 0 W, LN194500,469850, July (R.M. Guzmán)(INBIO: CRI000943524, CRI000749976); 1 male, Peninsula de Osa, P.N. Corcovado, Estación Sirena, 0–100 m, 08° 28' 0 N, 083° 35' 0 W, LS270500,508300, June (F. Quesada)(INBIO: CRI000326927); 1 male, Peninsula de Osa, Rancho Quemado, 200 m, 08° 40' 44” N, 083° 34' 00” W, LS292500,511000, May (J.C. Saborio)(INBIO: CRI000337454).

Geographic distribution. (Fig. 33). Known only from Costa Rica.

***Aspasiola ignea* Bates, new status**
(Figs. 3, 4, 33)

Aspasiola rutilans ignea Bates 1883:201. Lectotype female labeled by me in BMNH (The Natural History Museum, London). Type locality: PANAMÁ, Volcan de Chiriqui.

Common name. Flaming colorful fungus dweller.

Diagnosis. With the attributes of the genus as described above and legs and tarsomeres concolorous, testaceous; distal antennomeres (5–11) black. Eyes normal, moderately produced, not appearing stalked from posterior aspect. Pronotum with hind angle acute, margin markedly constricted anterior to hind angle. Elytron with punctulae of interneurs moderately coarse in basal half, finer posteriorly.

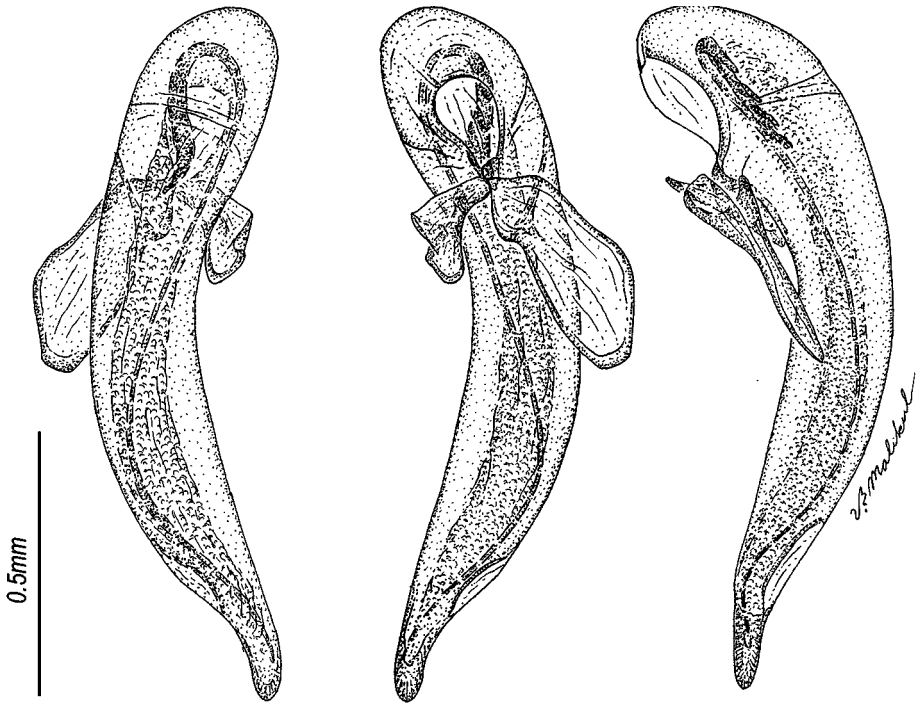

FIGURE 4. Phallus, dorsal, ventral, left lateral aspects of *Aspasiola ignea* Bates, specimen #ADP006026.

Description. (Fig. 3). Size small: ABL = 4.58 to 5.16 mm, SBL = 4.42 to 5.08 mm, TW = 2.0 to 2.32 mm. *Color:* Dorsum and venter rufescent; mouthparts, antennomeres 1–4 and legs testaceous; antennomeres 5–11 infuscated-black. Elytron with yellowish patch proximal to scutellum. Metathorasic wings smoky grey. *Luster:* Very shiny. *Microsculp-*

ture: Effaced. *Head:* Slightly broader across eyes than pronotum; frontal furrows shallowly impressed, very short; eyes large, produced; frons slightly convex, vertex moderately convex; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Pronotum cordiform, moderately convex, side margin narrowly explanate, moderately sinuate anterior to slightly obtuse hind angle. Base slightly lobed posteriorly. *Pterothorax:* Sterna normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 4) with ostium 1/6 its length, catopic, not constricted at basal third, basal third arched, apex markedly elongate, evenly rounded; endophallus with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right small.

Dispersal potential. These beetles have been fogged from the canopy and are fully winged, thus they are likely good dispersers, as are most arboreal beetles.

Way of life. As can be seen in Figure 33, this is an upland species. It has been collected in Malaise traps, and in the months February, March, April, and November which are dry season months and one specimen in July, the wet season, thus perhaps this is a predominately dry season specialist occurring between 700 and 1150 meters above sea level.

Other specimens examined. COSTA RICA. 1 female, 2 males, GUANACASTE, 9.0 km S Santa Cecilia, Estación Pitilla, 700 m, 10° 59' 33" N, 085° 25' 46" W, LN330200,380200, November (C. Moraga, P. Rios)(INBIO: female CRI000142029, male CRI000112821), February (C. Moraga)(male CRI001806263, ADP006026); 3 males, 1050 m, 10° 55' 38" N, 085° 27' 07"' W, July (J. Ashe, R. Brooks, Z. Falin)(KUNHM: ADP106305, 106307, 106309); 1 male, HEREDIA, 16.0 km SSE La Virgen, 1050–1150 m, 10° 16' 0 N, 085° 05' 0 W, LN527381,257085, April (INBio-OET: INB0003202145), 11.0 km SE La Virgen, 550 m, 10° 20' 0 N, 084° 04' 0 W, 1 female, February (INBio-OET: INB0003237612), 1 male, March (INBio-OET: INB0003239293), 1 female, April (INBio-OET: INB0003238541).

Geographic distribution. (Fig. 33). Known only from lower Central America in Costa Rica and Panamá.

Aspasiola lemoides Bates

(Figs. 5, 6, 33)

Aspasiola lemoides Bates 1883:201. Lectotype, female, labeled by me in BMNH (The Natural History Museum, London). Type locality: PANAMÁ, Volcan de Chiriqui.

Common name. Mimetic colorful fungus dweller.

Diagnosis. With the attributes of the genus as described above and elytron bright rufous, legs bicolored, femur testaceous, tibia and tarsomeres piceous, apex of femur testaceous.

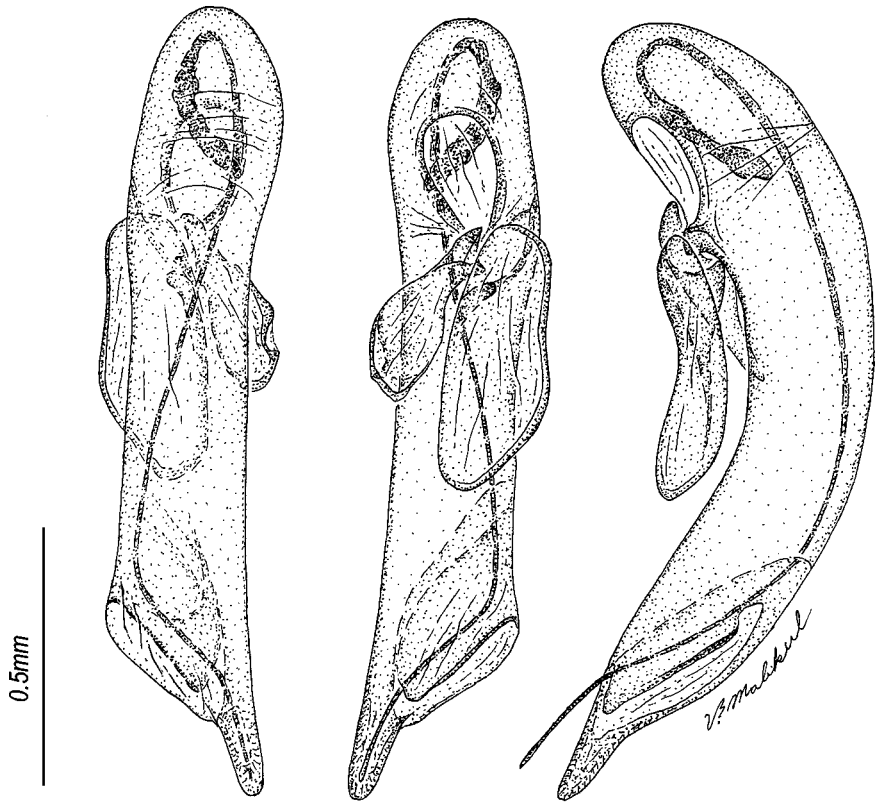

FIGURE 6. Phallus, dorsal, ventral, left lateral aspects of *Aspasiola lemoides* Bates, specimen # ADP006044.

Description. (Fig. 5). Size small: ABL = 6.58 mm, SBL = 6.25 mm, TW = 2.4 mm. *Color:* Dorsum and venter rufescent; palpi, antennomeres 1–4 dorsally, tibiae and tarsi, and antennomeres 5–11 infuscated-blackish, femora and basal 4 antennomeres ventrally testaceous. Metathorasic wings smoky grey. *Luster:* Very shiny. *Microsculpture:* Absent. *Head:* Moderately broader across eyes than pronotum; frontal furrows shallowly impressed, very short; eyes large, produced; frons slightly convex, vertex moderately convex; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Slightly transverse, moderately convex, side margin narrowly explanate and slightly produced at level of anterior setigerous pore, slightly sinuate anterior to slightly obtuse hind angle. Base markedly lobed posteriorly. *Pterothorax:* Sterna normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Normal for Agrina, mostly glabrous, except normal paired ambulatory setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 6) with ostium 1/5 its length, catopic, not constricted at basal third, basal third straight, apex mark-

edly elongate, evenly rounded; endophallus with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right small.

Way of life. The known altitudinal range of this species is between sea level and 100 meters above sea level and one specimen was collected in the dry season, thus not much is known about its way of life.

Other specimens examined. COSTA RICA. 1 male, PUNTARENAS, Peninsula de Osa, P.N. Corcovado, Estación Sirena, 0–100 m, 08° 28' 0 N, 083° 35' 0 W, LS270500, 508300, April (G. Rodríguez)(INBIO: CRI000534840).

Geographic distribution. (Fig. 33). Known only from lower Central America in Costa Rica and Panamá.

Aspasiola osa Erwin, new species
(Figs. 7, 8, 33)

Holotype. Male, COSTA RICA. PUNTARENAS, Peninsula de Osa, P.N. Corcovado, Estación Sirena, upper Ollas Trail, 30–150 m, 08° 29' 00" N, 083° 34' 39" W, June (Z.H. Falin)(KUNHM: ADP106295).

Derivation of specific name. The specific epithet, *osa,* is used as a noun in apposition and is based on the Peninsula de Osa, in Corcovado National Park in reference to the area in which members of this species are found.

Common name. Osa colorful fungus dweller.

Diagnosis. With the attributes of the genus described above and pronotum with margin broadly explanate, width greater than head across eyes; pronotum with hind angle obtuse, margin markedly constricted anterior to hind angle. Elytron with punctulae of interneurs moderately coarse in basal half, fine posteriorad. Elytra somewhat obscurely pigmented, only humeri and post scutellar area pale; legs and tarsomeres concolorous, testaceous.

Description. (Fig. 7). Size small: ABL = 5.0 to 5.58 mm, SBL = 4.66 to 4.91 mm, TW = 2.32 to 2.5 mm. *Color:* Dorsum of head and pronotum, and venter rufescent, elytra somewhat obscurely pigmented, only humeri and post scutellar area pale; mouthparts, antennomeres 1–4 and legs testaceous; antennomeres 5–11 infuscated-brown. Metathorasic wings smoky grey. *Luster:* Very shiny. *Microsculpture:* Absent. *Head:* Slightly broader across eyes than pronotum; frontal furrows shallowly impressed, very short; eyes large, produced; frons slightly convex, vertex moderately convex; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Pronotum cordiform, moderately convex, side margin narrowly explanate, slightly produced at level of anterior setigerous pore, moderately sinuate anterior to obtuse hind angle. Base slightly lobed posteriorly. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae on sterna 3–5; males and females with two pairs long setae

on sternum 6. *Male genitalia:* Phallus (Fig. 8) with ostium 1/4 its length, catopic, constricted at basal third, basal third arched, apex markedly elongate, rounded; endophallus with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right small.

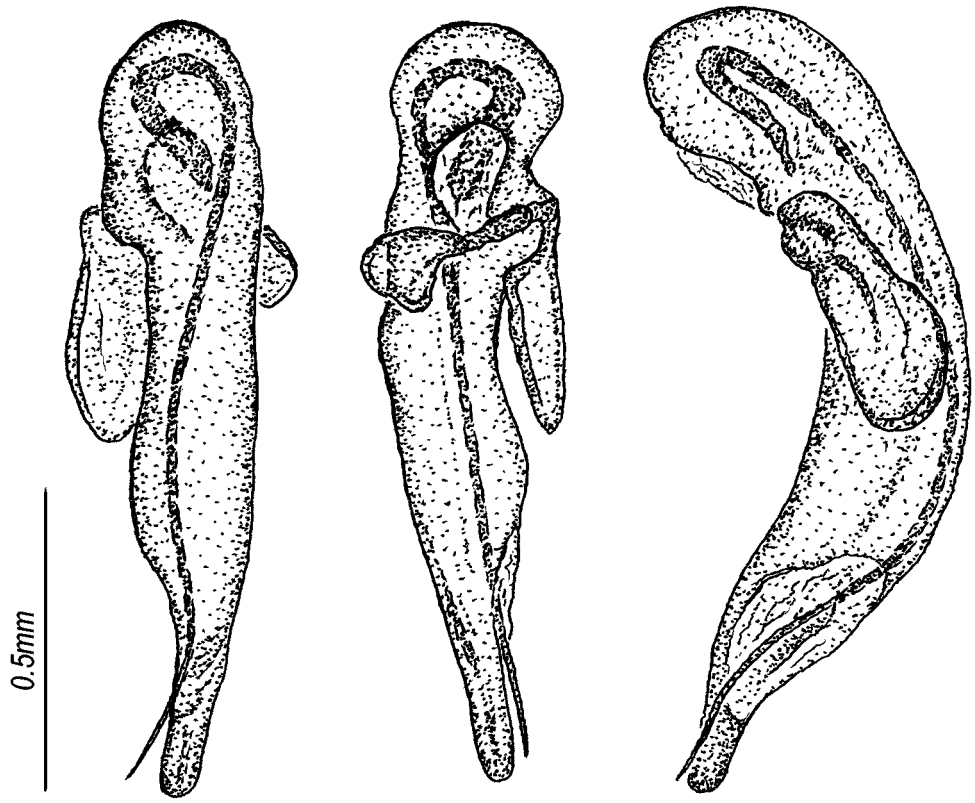

FIGURE 8. Phallus, dorsal, ventral, left lateral aspects of *Aspasiola osa* Erwin n. sp., specimen # ADP106295.

Dispersal potential. These beetles have been fogged from the canopy and are fully winged, thus they are likely good dispersers, as are most arboreal beetles.

Way of life. These beetles have been found by fogging fungus covered logs. The known altitudinal range of this species is between sea level and 150 meters above sea level. They have been collected only west of the Cordillera Central in the lowlands in June and July, the rainy season in Costa Rica.

Other specimens examined. Paratypes: COSTA RICA. 1 male, PUNTARENAS, Peninsula de Osa, Rincón, July, 08º 42' 0 N, 083º 29' 0 W, (A.R. Moldenke)(UASM: ADP006048); 1 male, Peninsula de Osa, P.N. Corcovado, Estación Sirena, upper Ollas

Trail, 30–150 m, 08° 29' 00" N, 083° 34' 39" W, June (Z.H. Falin)(KUNHM: ADP106297).

Geographic distribution. (Fig. 33). Known only from Costa Rica.

***Aspasiola selva* Erwin, new species**
(Figs. 9, 10, 33)

Holotype. Male, COSTA RICA. HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500, 268000, March (W.E. Steiner, J.M. Hill, et al.)(NMNH: ADP006028).

Derivation of specific name. The specific epithet, *selva*, is used as a noun in apposition and is based on the Estación Biológica La Selva in reference to one of the places in which members of this species are found.

Common name. Forest colorful fungus dweller.

Diagnosis. With the attributes of the genus described above and dorsum and venter rufescent; mouthparts, antennomeres 1–4 and legs testaceous; antennomeres 5–11 infuscated-brown. Pronotum with margin broadly explanate, width greater than head across eyes; pronotum transverse with hind angle slightly obtuse, margin not markedly constricted anterior to hind angle. Elytron with punctulae of interneurs markedly small and fine throughout.

Description. (Fig. 9). Size small: ABL = 5.25 to 5.66 mm, SBL = 4.91 to 5.25 mm, TW = 1.16 to 1.2 mm. *Color:* Dorsum and venter rufescent; mouthparts, antennomeres 1–4 and legs testaceous; antennomeres 5–11 infuscated-brown. Metathorasic wings smoky grey. *Luster:* Very shiny. *Microsculpture:* Absent. *Head:* Slightly broader across eyes than pronotum; frontal furrows shallowly impressed, very short; eyes large, produced; frons slightly convex, vertex moderately convex; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Pronotum cordiform, moderately convex, side margin narrowly explanate and slightly produced at level of anterior setigerous pore, slightly sinuate anterior to obtuse hind angle. Base slightly lobed posteriorly. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen*: Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 10) with ostium 1/3 its length, catopic, not constricted at basal third, basal third arched, apex markedly elongate, evenly rounded; endophallus with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right small.

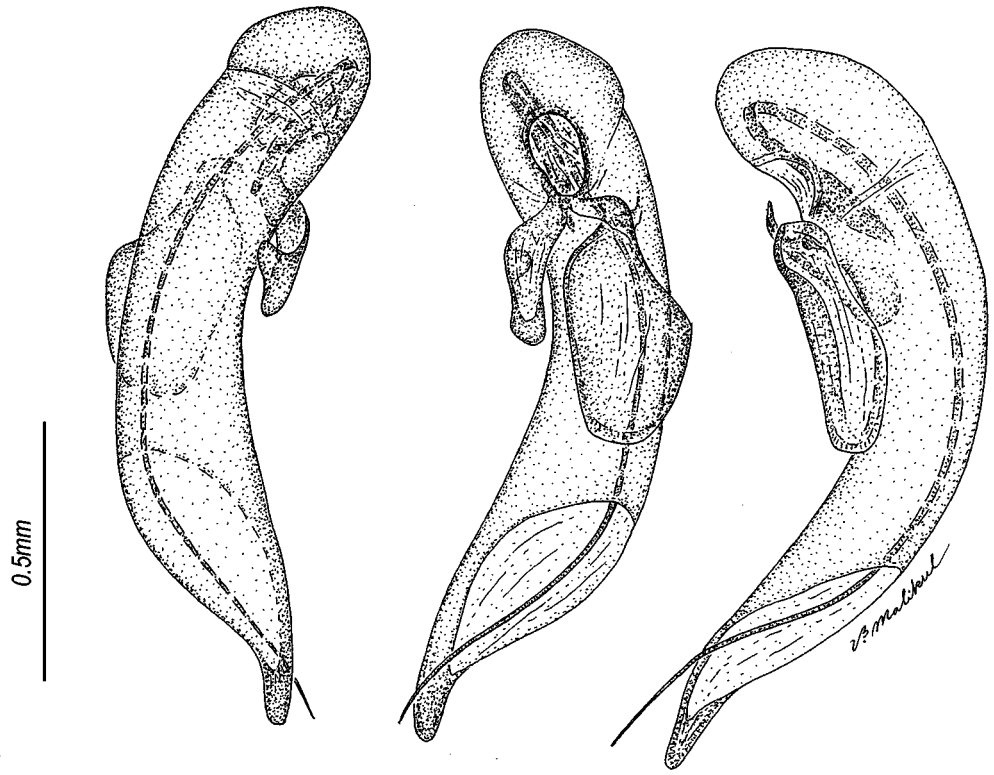

FIGURE 10. Phallus, dorsal, ventral, left lateral aspects of *Aspasiola selva* Erwin n. sp., specimen # ADP106299.

Dispersal potential. These beetles have been fogged from the canopy and collected in Malaise traps and they are fully winged, thus they are likely good dispersers, as are most arboreal beetles.

Way of life. These beetles have been found by fogging fungus covered logs, by beating low vegetation, and in Malaise samples. They also have been collected from both primary and secondary forest. The known altitudinal range of this species is between 10 and 700 meters above sea level. They have been found only east of the Cordillera Central in February, March, June, July, August, and September in low and middle altitudes, indicating they function as adults in both the dry and rainy seasons.

Other specimens examined. Paratypes: COSTA RICA. 1 female, CARTAGO, Turrialba, P.N. Barbilla, R.F. Rio Pacuare, Sendero Chilo, 500–600 m, LN218279,596387, September (W. Araña)(INBIO: INB0003372978); 2 females, HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55” N, 084 °00' 32” W, LN535500,268000, March (INBio-OET: CRI002230090), June (INBio-OET: CRI002227027), 1 male, June (R.S. Hanley)(SEMC: ADP006047); 3 males, GUANACASTE, P.N. Guanacaste, 9.0 km S Santa Cecilia, Estación Patilla, 700 m, 10° 59' 33” N,

085° 25' 46" W, LN330200,380200, July (J. Ashe, R. Brooks, Z. Falin) (KUNHM: ADP106299, 106301, 106303); 2 females, LIMÓN, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, February (F. Nevermann)(NMNH: ADP007958), August (NMNH: ADP007959), 1 female, Valle de la Estrella, R.B. Hitoy Cerere, Estación Hitoy Cerere, 160 m, 09° 40' 0 N, 083° 01' 0 W, LN184750,639500,29, June (W. Araña)(INBIO: INB0003147453).

Geographic distribution. (Fig. 33). Known only from Costa Rica.

***Aspasiola steineri* Erwin, new species**
(Figs. 11, 12, 33)

Holotype. Male, COSTA RICA. HEREDIA, Estación Biológica La Selva, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500, 268000, March (W.E. Steiner, J.M. Hill, et al.)(NMNH: ADP006027).

Derivation of specific name. The specific epithet, *steineri,* is used as a noun in apposition based on the last name of Warren Steiner, who has contributed significantly to our field knowledge of the species richness in Coleoptera. The NMNH collection, where his collection is deposited, vouchers his many years of efforts and includes the type specimen of this new species.

Common name. Steiner's colorful fungus dweller.

Diagnosis. With the attributes of the genus as described above and elytron bright rufous, with humeral area darkly pigmented with bluish reflections, legs bicolored, femur testaceous, tibia and tarsomeres piceous, apex of femur infuscated.

Description. (Fig. 11). Size small: ABL = 4.5 to 4.92 mm, SBL = 4.2 to 4.5 mm, TW = 1.83 to 2.0 mm. *Color:* Dorsum and venter rufescent, humeri infuscated with purple highlights; palpi, four basal 4 antennomeres dorsally, tibiae and tarsi, antennomeres 5–11 infuscated-blackish, femora and basal 4 antennomeres ventrally testaceous. Metathorasic wings smoky grey. *Luster:* Very shiny. *Microsculpture:* Absent. *Head:* Moderately broader across eyes than pronotum; frontal furrows shallowly impressed, very short; eyes large, produced; frons slightly convex, vertex moderately convex; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Quadrate, moderately convex, side margin narrowly explanate and slightly produced at level of anterior setigerous pore, slightly sinuate anterior to slightly obtuse hind angle. Base markedly lobed posteriorly. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 12) with ostium of 1/3 its length, catopic, apex markedly elongate, rounded; endophallus with flagellum, flagellum without barb. Parameres asymmetric, right very small, left larger.

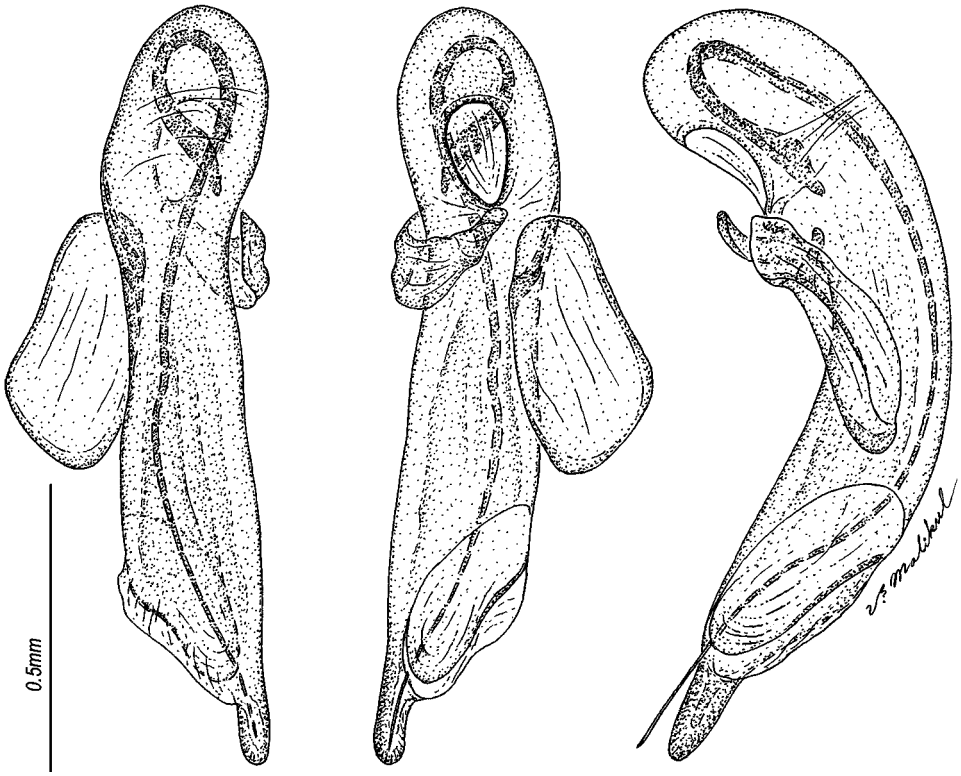

FIGURE 12. Phallus, dorsal, ventral, left lateral aspects of *Aspasiola steineri* Erwin n. sp., specimen # CRI000981559.

Way of life. The known altitudinal range of this species is between 50 and 150 meters above sea level. They have been collected in March and October hence they occur as adults in both the dry and rainy season in the lowlands east of the Cordillera Central.

Other specimens examined. Paratype: COSTA RICA. 1 male, LIMÓN, Cariari, Sector Cerro Cocori, 30.0 km N Finca de E. Rojas, 150 m, 10° 35' 29" N, 083° 42' 29" W, LN285700,568400, October (E. Rojas)(INBIO: CRI000981559).

Geographic distribution. (Fig. 33). Known only from Costa Rica.

Cryptobatis Eschscholtz 1829

Cryptobatis Eschscholtz 1829:7. Type species: *Lebia cyanoptera* Dejean 1825:258 (original monotypy). Type area of type species: Brazil.
Aspasia Dejean 1831:279. Type species: *Lebia cyanoptera* Dejean 1825:258 (original designation). Synonymized by Chaudoir 1877:207.
Cryptobasis auctt.

Diagnosis. (cf. Fig. 13) Head and pronotum smooth, not punctate, pale in color markedly contrasting with dark elytra. Antennomere 4 multisetiferous from basal third to apex, in addition to apical ring setae. Pronotum with lateral margin moderately or markedly reflexed from base to apex. Elytron at basal third depressed, surface uneven, without trace of tubercles, laterally at apical third with large callus. Male endophallus with flagellum; flagellum apex not barbed.

Geographic distribution. This genus is widespread in the Neotropical Region from México (Turnbow collection, G. Ball, pers. comm.) south to Brazil, Bolivia, and east to French Guiana.

Notes. Eight species are known in this genus, most of which occur only in South America.

Cryptobatis chontalensis Bates
(Figs. 13, 14, 34)

Cryptobatis chontalensis Bates 1883:202. Lectotype male, labeled by me in BMNH (The Natural History Museum, London). Type locality: NICARAGUA, Chontales.

Common name. Nicaraguan cobalt-blue carabid beetle.

Diagnosis. With the attributes of the genus as described above and head, prothorax, venter and base of femur testaceous; elytra metallic blue; antennae, palpi, apex of femur, tibia and tarsi black. Sides of pronotum markedly explanate.

Description. (Fig. 13). Size medium: ABL = 6.58 to 7.91 mm, SBL = 6.25 to 7.75 mm, TW = 3.0 to 4.0 mm. *Color:* Head, prothorax, venter and base of femur testaceous; elytra metallic blue; antennae, palpi, apex of femur, tibia and tarsi black. Metathorasic wings smoky grey. *Luster:* Dorsal and ventral surfaces very shiny. *Microsculpture:* Absent from head and pronotum; of transverse meshes on elytra. *Head:* Markedly narrower than pronotum across eyes; frontal furrows absent except for small groove at margin of clypeus; frons convex; eyes moderately large, markedly produced; ultimate labial palpomere securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Markedly convex, side margin markedly explanate, subangulate at mid-lateral setigerous pore, slightly sinuate anterior to hind angle. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, glabrous, except normal ambulatory setae on sterna 3–5 and males with one pair of ambulatory setae on sternum 6, females with two pairs on sternum 6. *Male genitalia:* Phallus (Fig. 14) with ostium 1/4 its length, catopic, apex moderately long and narrow, endophallus with flagellum, flagellum apex not barbed; left paramere very small, right moderately large.

Way of life. Elsewhere these beetles have been collected on the undersides of bracket fungi on fallen tree trunks and it is likely that the same holds true for Costa Rican populations. Several specimens from the ALAS project were collected in Malaise traps in sec-

ondary forest. The known altitudinal range of this species is between 10 and 1400 meters above sea level. Specimens have been obtained in all months except February and October, hence this is a widespread species east of the Cordillera Central in the lowlands through to upper middle altitudes and they are active as adults in both the dry and rainy seasons.

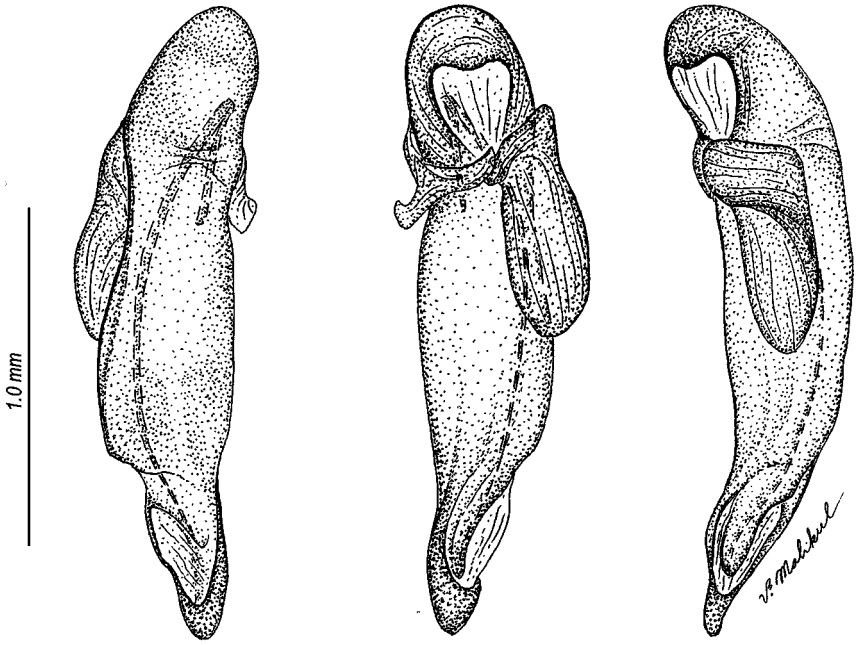

FIGURE 14. Phallus, dorsal, ventral, left lateral aspects of *Cryptobatis chontalensis* Bates, specimen # CRI002228291.

Other specimens examined. COSTA RICA. 1 female, CARTAGO, Turrialba, IICA Experimental Station, CATIE, 1.6 km N Rio Reventazon, 600 m, 09° 53' 0 N, 083° 39' 0 W, LN574947,208307, April (E. Giesbert)(CAS: ADP100289), 1 female Reserva Indígena Chirripó, 39 km SE Grano de Oro, 1120 m, 09° 49' 06" N 083° 27' 32" W, LN200250,595900, September (P. Campos)(INBIO: CRI001618293); 3 females, GUANACASTE, P. N. Guanacaste, Estación Cacao, 1100 m, 10° 59' 26" N, 085° 25' 40" W, LN323100,375800, July (B. Gamboa)(INBIO: CRI002187559), SW side, 1000–1400 m LN323300,375700, May (F. Quesada)(INBIO: CRI000378764), November, December (R. Blanco, C. Chavez)(INBIO: CRI000144405), 2 females, P.N. Guanacaste, 9 km S Santa Cecilia, Estación Pitilla, 700 m, LN330200,380200, September (GNP Biodiversity Survey)(INBIO: CRI000035327, CRI000077953), 1 female, March, April, (INBIO: CRI000019479), 1 male, August (INBIO: CRI0001024191); 1 female, HEREDIA, 3.0 km S Puerto Viejo, Finca La Selva, Estación Biologica La Selva, 50–150 m, 10° 25' 55" N,

084° 00' 32" W, LN535500,268000, January (INBio-OET: CRI002227335), 3 females, April, (INBio-OET: CRI002227442, CRI002227310, CRI002229741), 3 males, 1 female, June, (males, INBio-OET: CRI002268433, CRI002227028, female, CRI002228919, CRI002228291), 1 female, 1 male, August (female, INBio-OET: CRI002227316, male, CRI002229390), November (INBio-OET, CRI002726727), 1 male, March (H.A. Hespenheide)(INBIO: CRI002268360), 1 male, 1 female, July (H.A. Hespenheide)(male, UASM: ADP102316, female, (INBio-OET: CRI002267718), 1 female, August (HAH: ADP102197); 1 female, LIMÓN, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, January (F. Nevermann)(NMNH: ADP007940), 3 females, 1 male, P. B. Hitoy Cerere, Estación Hitoy Cerere, Valle de la Estrella, 100 m, LN643400,184600, December-January (G. Carballo)(females, INBIO: INB0003430493, INB0003317401), 1 female, 1 male, April (W. Araña)(female, INBIO: INB0003057085), 1 male, Sendero Bobocara, 300 m, (INBIO: INB0003076892).

Geographic distribution. (Fig. 34). Known only from lower Central America in Costa Rica, Nicaragua, and Panamá.

Cylindronotum Putzeys 1846

Cylindronotum Putzeys 1846:374. Type species: *Cylindronotum aeneum* Putzeys 1846:374 (original monotypy). Lectotype selected and labeled by G.E. Ball in MNHP (Muséum National d'Histoire Naturelle, Paris). Type locality: FRENCH GUIANA, Cayenne.
Pseudometabletus Liebke 1930:722. **New synonymy** (see notes).

Diagnosis. (cf. Fig. 15). Head and pronotum densely and evenly punctate. Antennomere 4 multisetiferous from basal third to apex, in addition to apical ring setae. Elytron at basal third depressed, without trace of tubercles, without callus at apical third. Male and female with small v-shaped indentation medial on posterior margin of sternum 6. Male endophallus with flagellum; flagellum apex not barbed.

Geographic distribution. A widespread Nearctic and Neotropical genus known from Texas, USA, south to Argentina, east to French Guiana.

Notes. Liebke (1930:723) placed this genus in the Subfamily Colliurinae after his treatment of the genus *Calophaena* because of the pectinate tarsal claws shared with members of that genus. Since no one has worked extensively with the groups Liebke treated as Colliurinae, the synonymy remained undetected until now. There are 16 species represented in the collections in NMNH, most of which are undescribed.

Cylindronotum nevermanni (Liebke)
(Figs. 15, 16, 35)

Pseudometabletus nevermanni Liebke 1930:723. Holotype, male, COSTA RICA. LIMÓN, Rio

Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, July (NMNH: ADP009555).

Cylindronotum nevermanni van Emden, 1949:891. **New homonymy, new synonymy**.

Derivation of specific name. The specific epithet, *nevermanni,* was used by Liebke as a noun in apposition based on the last name of Ferdinand Nevermann, who was superb at collecting carabid beetles in Costa Rica, especially on his own farm (Hamburg Farm) and in its vicinity and who has contributed significantly to our knowledge of the species richness represented in Costa Rica. The NMNH collection, where his collection was ultimately deposited, vouchers his efforts.

Common name. Nevermann's drab-brown carabid beetle.

Diagnosis. With the attributes of the genus as described above and color completely brown, except for testaceous 4 basal antennomeres; dorsal surface shiny.

Description. (Fig. 15). Size small: ABL = 4.66 to 5.08 mm, SBL = 4.33 to 4.66 mm, TW = 1.66 mm. *Color:* Brown to piceous overall. *Luster:* Surface shiny. *Microsculpture:* Effaced from head and pronotum; shallowly engraved isodiametric meshes on elytra. *Head:* Subequal across eyes to width of pronotum; frontal furrows absent except for small groove at margin of clypeus; frons slightly convex; eyes moderately small, slightly produced; ultimate labial palpomere sub-securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Moderately convex, side margin narrowly beaded, evenly rounded at anterior marginal seta, moderately sinuate anterior to hind angle. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen*: Sterna normal for Agrina, setiferous, setae scattered, except normal ambulatory setae on sterna 3–5 and both males and females with two pairs on sternum 6. *Male genitalia:* Phallus (Fig. 16) with ostium of 1/3 its length, apex elongate, narrow; phallus narrow, twisted, catopic; internal sac with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right very small.

Dispersal potential. Adults are fully winged, thus they are likely good dispersers, as are most arboreal beetles.

Way of life. Beetles in this genus have been fogged from the canopy in South America. Wendy Porras, INBio parataxonomist, collected individuals by sweeping a plant in the family Convolvulaceae. The known altitudinal range of this species is between 10 and 1300 meters above sea level. Adults have been collected only east of the Cordillera Central in March, June, July, and August, hence both dry and rainy seasons at low to middle altitudes.

Other specimens examined. COSTA RICA. 1 male, PUNTARENAS, 08°29' N, 083°36' W, August (D.R.Whitehead)(NMNH: ADP059597); 1 female, Rincon, Golfito Dulce, Fundacíon Neotrópica Field Station, Quebrada Aquabuena below station, 75 m, 08° 42' 03” N, 083° 30' 49” W, June (W. Porras)(INBIO: ADP108837); 1 female, 2.0 km S Santa Elena, 1300 m, 10° 18' 0 N, 084° 48' 0 W, June (J.M. & B.A. Campbell)(CNC: ADP057224); sex unknown, Estación Carara, R. B. Carara, 200 m, LN 195250,478700,

March (R. Zuñiga)(INBIO: CRI000164028). COLOMBIA. 1 female, META, Restrepo, December (J.A. Ramos)(NMNH: ADP100557). PANAMÁ. CANAL ZONE, Paraiso, 1 male, 1 female, February (E. Schwarz)(NMNH: male, ADP08574, female ADP085572), 1 male, 3 females, March (E. Schwarz)(NMNH: male, ADP08573, females ADP08571, 08567, 08566), Summit, 1 female, December (B. Bivin)(NMNH: ADP33323), Barro Colorado Island, 1 male, May (J. Zetek)(NMNH: ADP08569), 1 male, Fort Sherman, January (H. Stockwell)(NMNH: ADP60083); PANAMÁ, 1 male, Panama City, April (A.H. Jennings)(NMNH: ADP08570; CHIRIQUÍ, 3 males, 1 female, Bugaba, 244–457m, (G. Champion)(MCZ: female, ADP08563, male, ADP08560; NMNH: males ADP08561, 08562).

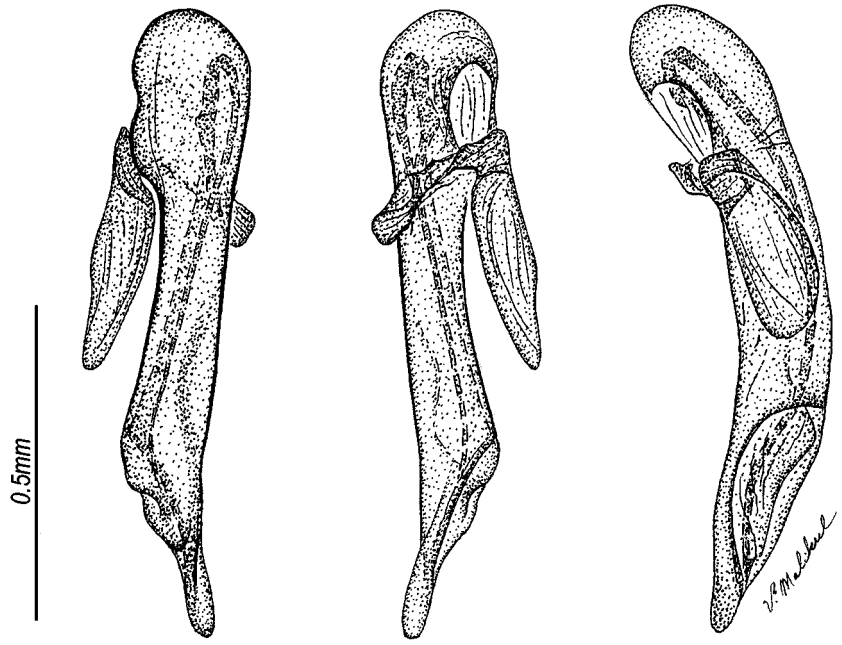

FIGURE 16. Phallus, dorsal, ventral, left lateral aspects of *Cylindronotum nevermanni* Liebke, specimen # ADP059597.

Geographic distribution. (Fig. 35). Known only from lower Central America from Costa Rica south to Colombia.

Notes. *Cylindronotum nevermanni* van Emden was described from a female (COSTA RICA. LIMÓN, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 083°28'W, 10°15'N, September) by van Emden (1949), and supposedly deposited in the NMNH (ibid: page 891). However, it is not in the NMNH collection (Erwin & House 1978). Apparently, van Emden was unaware that Liebke (1930) described the same species with the same patronymic and with the same Nevermann specimens, but in Liebke's own new genus placed in the wrong higher taxon, the Colliurinae.

FIGURE 1. *Aspasiola bonita* Erwin n. sp., male, dorsal aspect, specimen # ADP006041.

FIGURE 3. *Aspasiola ignea* Bates, male, dorsal aspect, specimen # ADP006026.

FIGURE 5. *Aspasiola lemoides* Bates, male, dorsal aspect, specimen # ADP006044.

FIGURE 7. *Aspasiola osa* Erwin n. sp., male, dorsal aspect, specimen # ADP106295.

FIGURE 9. *Aspasiola selva* Erwin n. sp., male, dorsal aspect, specimen # ADP106299.

FIGURE 11. *Aspasiola steineri* Erwin n. sp., female, dorsal aspect, specimen #ADP006027.

FIGURE 13. *Cryptobatis chontalensis* Bates, male, dorsal aspect, specimen # ADP102703.

FIGURE 15. *Cylindronotum nevermanni* (Liebke), male, dorsal aspect, specimen #ADP060083 (Fort Sherman, Panamá).

FIGURE 17. *Hyboptera apollonia* Erwin n. sp., male, dorsal aspect, specimen #CRI001191230.

FIGURE 19. *Hyboptera auxiliadora* Erwin n. sp., male, dorsal aspect, specimen #ADP007623 (Bentsen State Park, Texas, USA).

FIGURE 21. *Onota angulicollis* (Reiche), female, dorsal aspect, specimen # ADP054762.

FIGURE 23. *Otoglossa nevermanni* (Liebke), male, dorsal aspect, specimen # ADP100392.

FIGURE 25. *Pseudotoglossa marginella* (Bates), female, dorsal aspect, specimen # CRI000672994.

FIGURE 27. *Pseudotoglossa obscurella* (Bates), Female, dorsal aspect, specimen # ADP060001 (4.8 km W Cocoli, Panamá).

FIGURE 29. *Pseudotoglossa rufitarsis* (Chaudoir), female, dorsal aspect, specimen #ADP045466 (Cerro Punta, Panamá).

FIGURE 31. *Pseudotoglossa terminalis* (Chaudoir), female, dorsal aspect, specimen #ADP059899 (Corriente Grande, Panamá).

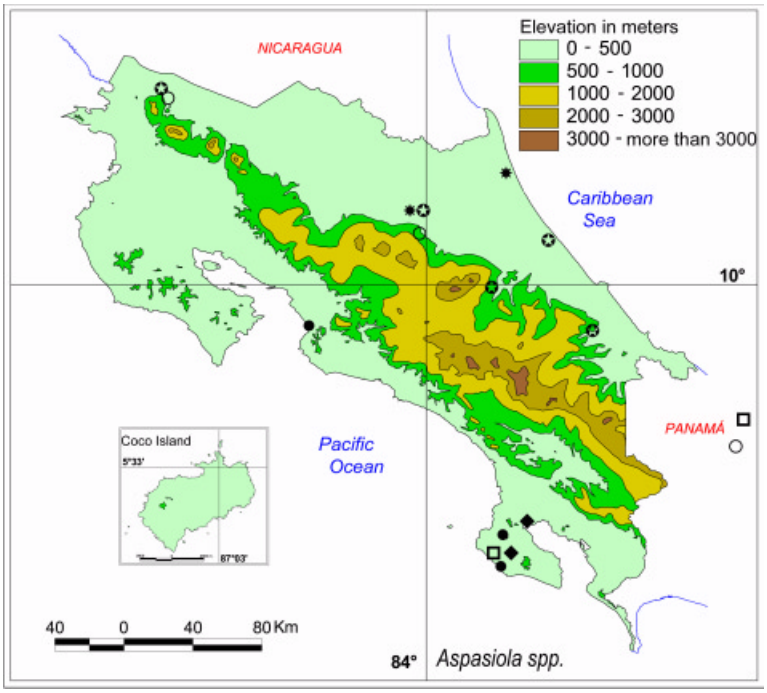

FIGURE 33. Geographical distribution map of the species of *Aspasiola* in Costa Rica: *A. bonita* Erwin n. sp. (solid circle, ●), *A. ignea* Bates (open circle, ○), *A. lemoides* Bates (open box, □), *A. osa* Erwin n. sp. (diamond, ◆), *A. selva* Erwin n. sp. (closed star, ✪), *A. steineri* Erwin n. sp. (8-point star, ✸).

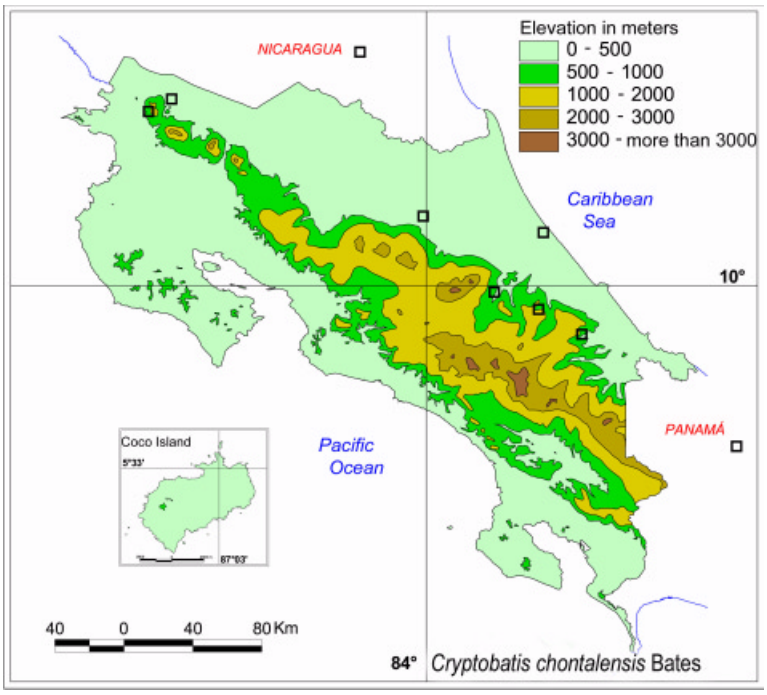

Figure 34. Geographical distribution map of the species of *Cryptobatis* in Costa Rica: *C. chontalensis* Bates (open box, □).

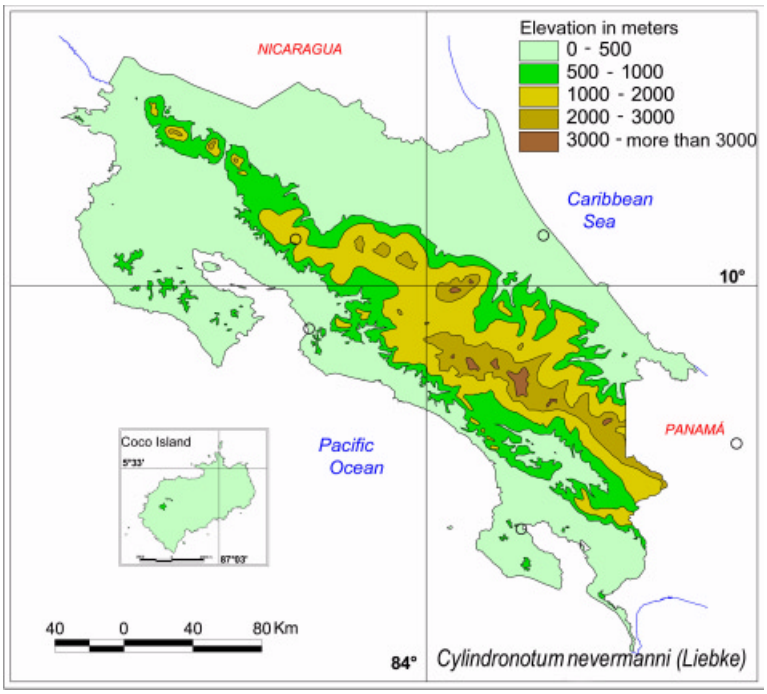

FIGURE 35. Geographical distribution map of the species of *Cylindronotum* in Costa Rica: *C. nevermanni* (Liebke)(open circle, ○).

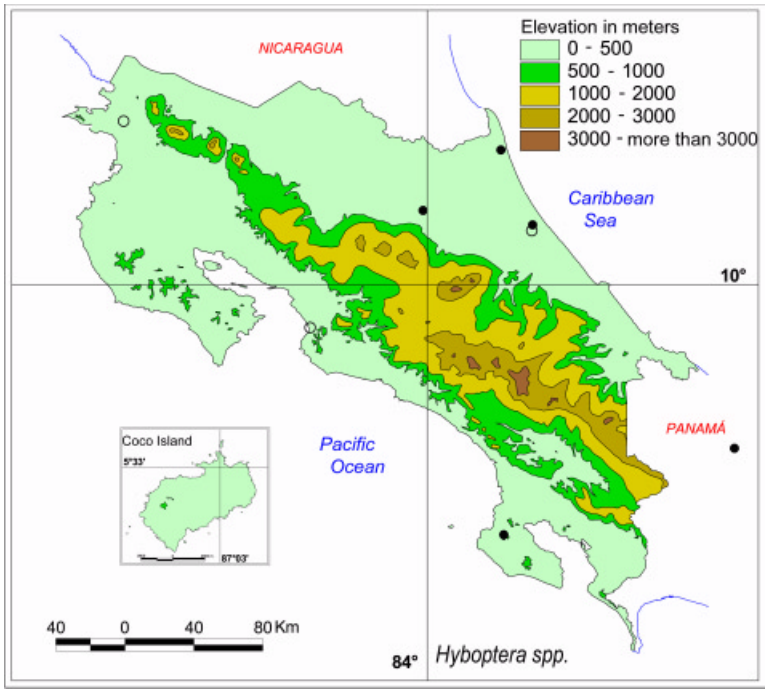

FIGURE 36. Geographical distribution map of the species of *Hyboptera* in Costa Rica: *H. apollonia* Erwin n. sp. (solid circle, ●), *H. auxiliadora* Erwin n. sp. (open circle, ○).

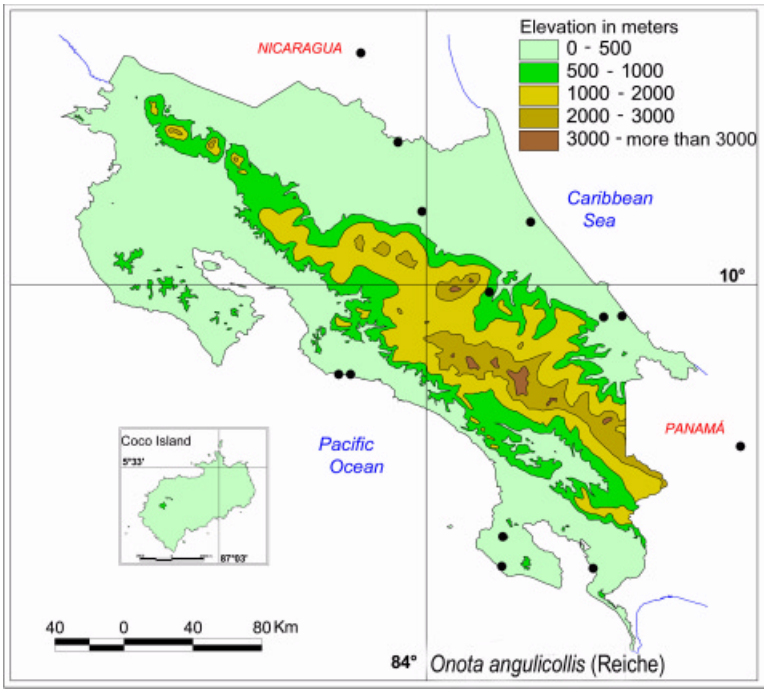

FIGURE 37. Geographical distribution map of the species of *Onota* in Costa Rica: *O. angulicollis* (Reiche)(solid circle, ●).

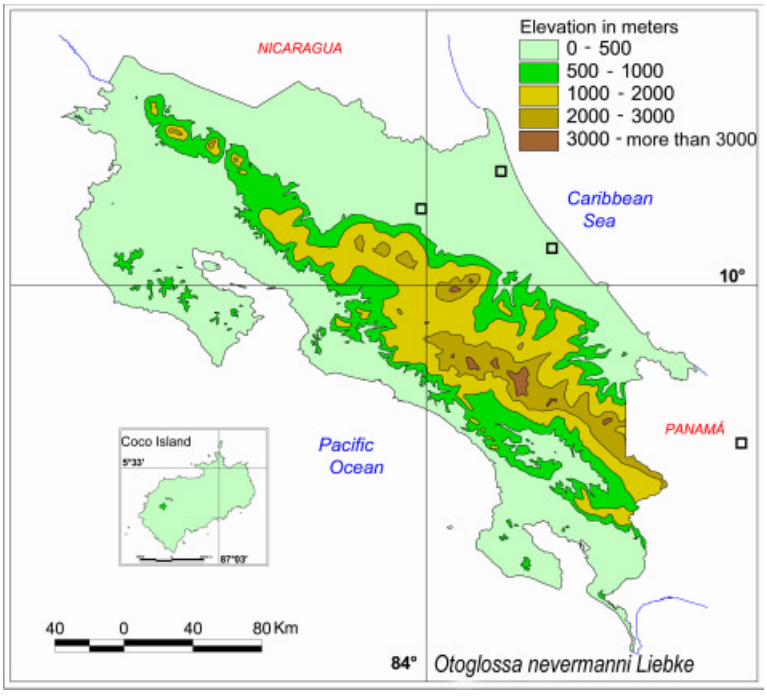

FIGURE 38. Geographical distribution map of the species of *Otoglossa* in Costa Rica: *O. nevermanni* (Liebke)(open box, □).

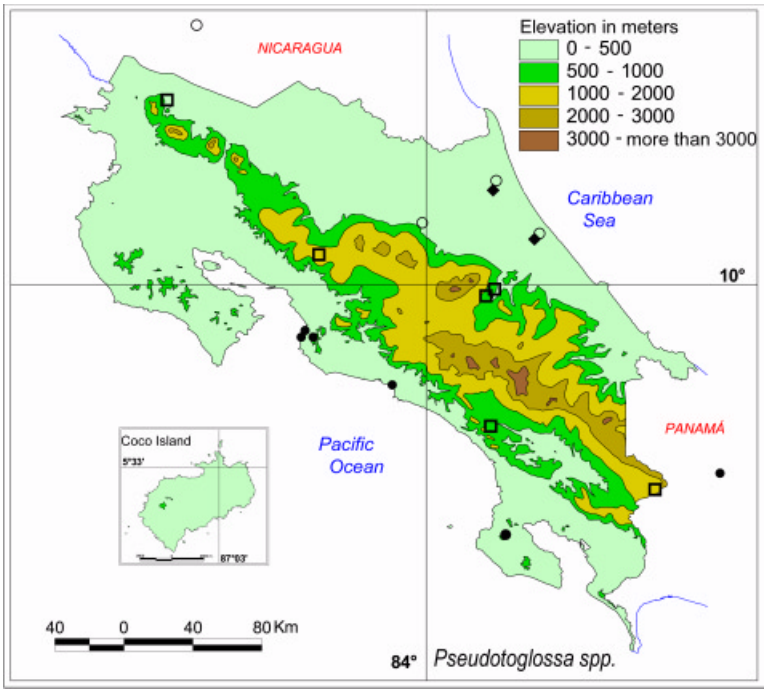

FIGURE 39. Geographical distribution map of the species of *Pseudotoglossa* in Costa Rica: *P. marginella* (Bates)(solid circle, ●), *P. obscurella* (Bates)(open circle, ○), *P. ufitarsis* (Chaudoir)(open box, □), *P. terminalis* (Chaudoir)(diamond, ◆).

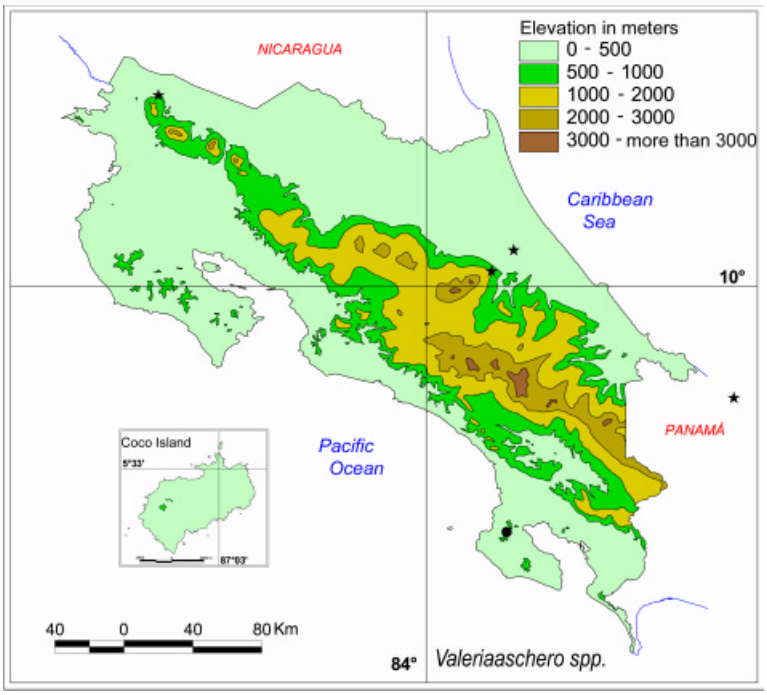

FIGURE 40. Geographical distribution map of the species of *Valeriaaschero* in Costa Rica: *V. flora* Erwin (star, ★), *V. nigrita* Erwin (solid circle, ●).

Hyboptera Chaudoir 1872

Hyboptera Chaudoir 1872:161. Type species: *Lebia tuberculata* Dejean 1825:272, designated by Lorenz 1998:98. Type locality: FRENCH GUIANA, Cayenne.
Aspasia; Reiche 1842:310 (not Dejean 1831). Synonymized by Chaudoir 1872:161.

Diagnosis. (cf. Figs. 17, 19). Neck broad. Prothorax wider than head; sides of pronotum broadly reflexed throughout, angulate at mid-lateral setigerous pore. Elytron at basal third depressed, surface uneven, markedly tuberculate overall. Male endophallus with flagellum; flagellum apex not barbed.

Dispersal potential. The wings are fully developed, thus it is likely that these beetles are moderate to strong flyers.

Geographic distribution. A widespread Nearctic and Neotropical genus known from Texas, USA, south to Brazil, Bolivia, and east to French Guiana.

Way of life. Little is known about the species in this genus. Adults of various species are regularly collected in small numbers using insecticidal fogging techniques in the forest canopy in the Amazon Basin, thus they are certainly at times arboreal. However, at Barro Colorado Island in Panamá, I collected adults from the forest floor amongst the large shed anther rings of trees in the genus *Pseudobombax*, these rings being a moisture source on the forest floor during the dry season (Erwin 1974b). W. Steiner collected several larvae and pupae along with emerging adults of *Hyboptera verrucosa* (Reiche) under bark of a living fence post in Panamá (Erwin & Steiner in prep).

Notes. Five species have been described in this genus; however, Erwin & Ball (in prep) have an additional three new species, in addition to the two new ones described below.

Key to the Costa Rican species of *Hyboptera* Chaudoir 1872

1 Elytral ground color testaceous, tubercles and small interval patches infuscated; interval 5 with 7 tubercles ..... ***H. apollonia* Erwin, n. sp.**

1' Elytral ground color black, surface with scattered metallic or brassy reflections; interval 5 with 6 tubercles ..... ***H. auxiliadora* Erwin, n. sp.**

Hyboptera apollonia Erwin, new species

(Figs. 17, 18, 36)

Holotype. Male. PANAMÁ, COLÓN, Porto Bello, 113 m, 9° 33' 0 N, 79° 39' 0 W, Feburary (E.A. Schwarz)(NMNH: ADP007943).

Derivation of specific name. The specific epithet, *apollonia*, is used as a noun in apposition based on the first name of Michael Corelone's beautiful young Italian wife in the movie *The Godfather*, whose death in a car explosion perpetrated by Mafia competition signifies the useless instantaneous death of so many species when humans put fire to the tropical rain forest in time of drought.

Common name. Apollonia's humped-wing carabid beetle.

Diagnosis. With the attributes of the genus as described above and elytral ground color testaceous, tubercles and small interval patches infuscated; interval 5 with 7 tubercles.

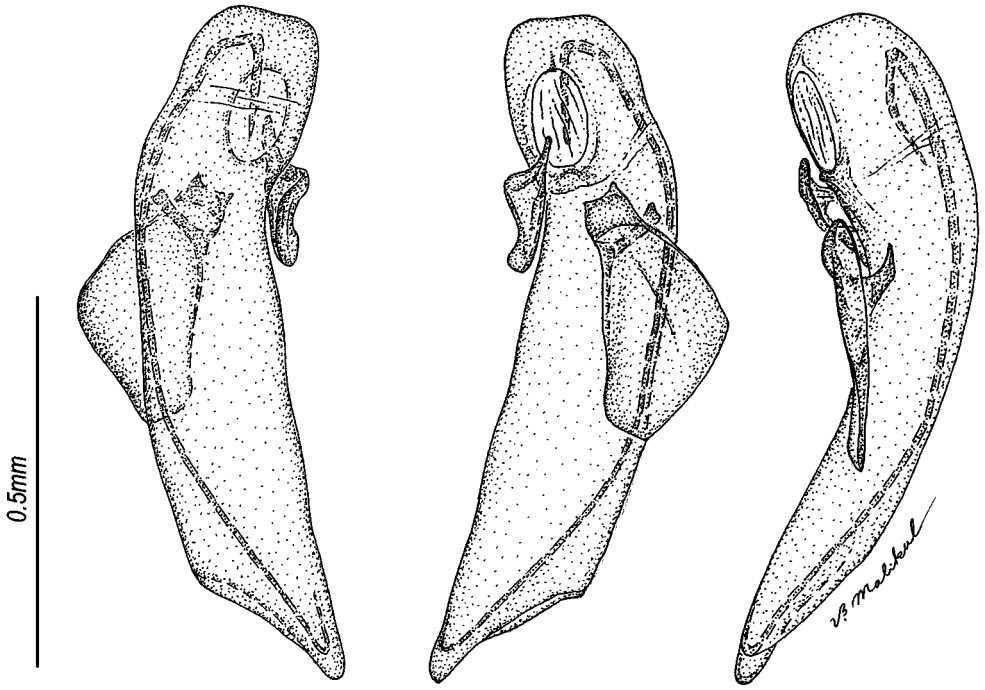

FIGURE 18. Phallus, dorsal, ventral, left lateral aspects of *Hyboptera apollonia* Erwin n. sp., specimen # CRI001191230.

Description. (Fig. 17). Size small: ABL = 4.33 to 4.83 mm, SBL = 4.08 to 4.58 mm, TW = 2.0 to 2.50 mm. *Color:* Aeneous with subtle green highlights; mouthparts, appendages, margin of prothorax, venter of head and prothorax, abdominal segments II–V testaceous; meso- and metathorax, and abdominal segment VI infuscated. Metathorasic wings clear. *Luster:* Very shiny. *Microsculpture:* Dorsal surface with isodiametric meshes. *Head:* Markedly broad, not as broad as pronotum; clypeus bi-tuberculate, tubercle in form of crescent; frons and occiput markedly transversely rugose; eyes large, produced; ultimate

maxillary palpomere securiform, ultimate labial palpomere securiform and concave with margin of setae; antennae short, barely reaching humerus. *Prothorax:* Convex, disc transversely and regularly rugose, side margin markedly explanate, subangulate at mid-lateral setigerous pore, straight to anterior hind angle, base medially lobed. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Setiferous; normal ambulatory setae on sterna 3–5 and males with one pair of ambulatory setae on sternum 6, females with two pairs on sternum 6. *Male genitalia:* Phallus (Fig. 18) with ostium of 1/5 its length, catopic, apex short, rounded; endophallus with flagellum, flagellum not barbed. Parameres asymmetric, right very small, left larger.

Dispersal potential. The wings are fully developed and adults of other species of this genus are known to occur in the canopy of tropical forests, thus it is likely that this species is a moderate to strong flyer.

Way of life. See under genus. An adult of this species was fogged from a tree in the genus *Guarea* at La Selva and another caught in a Malaise trap as part of the ALAS Project. Nevermann collected a specimen on a rotten log. The known altitudinal range of this species is between 10 and 750 meters above sea level. Adults have been obtained in January, February, March, April, September, and October; hence there is activity by them in both the dry and rainy seasons in the lowlands and lower middle altitudes, both on the east and west sides of the Cordillera Central.

Other specimens examined. Paratypes: COSTA RICA. 2 females, HEREDIA**,** 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500,268000, January (INBio-OET: CRI002233666), May (H.A. Hespenheide)(INBio: CRI002268324, ADP102312), 11.0 km SE La Virgen, 550 m, 10° 20' 0 N, 084° 04' 0 W, 1 male, March (INBio-OET: INB0003238058); 2 females, LIMÓN**,** Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, October (F. Nevermann) (INBio: ADP007946) April (NMNH: ADP007945); 1 female, Tortuguero, 10° 32' 22" N, 083° 30' 23" W, LN280000,590500, January–June (J. Solano) (INBIO: CRI001366231); 1 male, PUNTARENAS, Peninsula de Osa, Rancho Quemado, 200 m, 08° 40' 44" N, 083° 34' 00" W, LS292500,511000, September (F.A. Quesada)(INBio: CRI001191230). PANAMÁ. PANAMÁ. 1 female, Pipeline Road, June (S. Lingafelter)(SEMC: ADP07577), 1 female, Cerro Jefe, 700–750m, 09° 12' 0 N, 072° 21' 0 W, May (R.T. Allen)(NMNH: ADP011167).

Geographic distribution. (Fig. 36). Known only from lower Central America in Costa Rica and Panamá.

Hyboptera auxiliadora Erwin, new species
(Figs. 19, 20, 36)

Hyboptera dilutior Ball and Bousquet 2001:113 (not Oberthür 1884).

Holotype. Male. USA. TEXAS, Hidalgo County, Mission; Bentsen State Park, 26º 10' 22" N, 098º 22' 56" W, July (W.E. Steiner)(NMNH: ADP007623).

Derivation of specific name. The specific epithet, *auxiliadora,* is used as a noun in apposition based on the middle name of Mariá Auxiliadora Sanchez, who for many years was responsible for the welfare of participating visiting taxonomists at INBio and its facilities and who made life easy therein while we undertook our studies of the rich Costa Rican fauna and flora.

Common name. Auxiliadora's humped-wing carabid beetle.

Diagnosis. With the attributes of the genus as described above and elytral ground color black, surface with scattered metallic or brassy reflections; interval 5 with 6 tubercles.

Description. (Fig. 19). Size medium: ABL = 5.58 to 5.83 mm, SBL = 5.50 to 5.66 mm, TW = 2.92 to 3.16 mm. *Color:* Head and pronotal disc infuscated, elytra flavous with testaceous and piceous patches; mouthparts, appendages, margin of prothorax testaceous, venter infuscated. Metathorasic wings clear. *Luster:* Very shiny. *Microsculpture:* Dorsal surface with isodiametric meshes, less impressed on elytra. *Head:* Markedly broad, not as broad as pronotum; clypeus bi-carinate, carinae joining a midpoint; frons and occiput markedly and irregularly rugose; eyes very large, hemispheric, markedly produced; ultimate maxillary palpomere securiform, ultimate labial palpomere securiform and concave with margin of setae; antennae short, barely reaching humerus. *Prothorax:* Convex, disc transversely and irregularly rugose, side margin markedly explanate, straight to anterior hind angle, base medially lobed posteriorly. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Setiferous; normal ambulatory setae on sterna 3–5 and males with one pair of ambulatory setae on sternum 6, females with two pairs on sternum 6. *Male genitalia:* Phallus (Fig. 20) with ostium 1/4 length, catopic, and apex short and evenly rounded, endophallus with flagellum, flagellum not barbed. Parameres asymmetric, right very small, left very large.

Dispersal potential. The wings are fully developed and adults of other species of this genus are known to occur in the canopy of tropical forests, thus it is likely that this species is a moderate to strong flyer.

Way of life. See under genus and the known altitudinal range of this species is between 10 and 240 meters above sea level. The holotype was collected by W. Steiner from under bark of the tree *Celtis levigata* Willd. Vogt collected another individual from under the web tent of a psocid colony. Adults have been obtained in March, April, May, July, August, and September, hence they are active in both the dry and rainy seasons in the lowlands on both sides of the Cordillera Central.

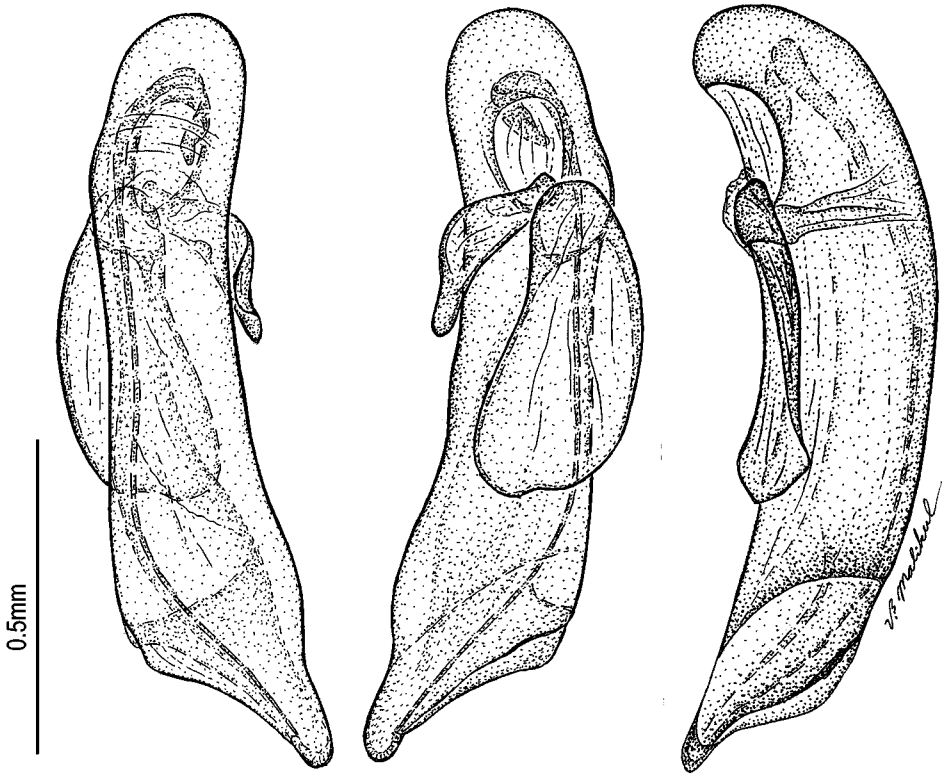

FIGURE 20. Phallus, dorsal, ventral, left lateral aspects of *Hyboptera auxiliadora* Erwin n.sp., specimen # ADP007623.

Other specimens examined. Paratypes: COSTA RICA. 1 female, GUANACASTE, 30.0 km N Liberia, Finca Jenny, 240 m, 10° 51' 0 N, 085° 34' 0 W, LN317150, 363700, August (E. Araya)(INBIO: CRI001711028; ADP007640); 1 male, PUNTARENAS, Estación Quebrada Bonita, Res. Biol. Carara, nr. Táracoles, 50 m, 09° 46' 0 N, 084° 36' 0 W, LN194500, 469850, March–April (P. Campos)(INBIO: CRI000545108, ADP007639). 1 female, LIMÓN, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, September (F. Nevermann)(NMNH: ADP007947). MÉXICO. 1 female, VERACRUZ, Lake Catemaco, 5.5 km N Catemaco, 330 m, 18° 25' 0 N, 095° 05' 0 W, August (G.E. Ball, T.L. Erwin, R. Leech)(UASM: ADP007621). USA, TEXAS: 1, male, Cameron County, Sabal Palm Grove Sanctuary nr. Southmost, 25° 54' 05" N, 097° 29' 50" W, May (R. Turnbow)(UASM: ADP007620), 1 female, Hidalgo County, Bentsen Rio Grande State Park, 26º 10' 22" N, 098º 22' 56" W, July (C.A. Triplehorn)(OSUC: ADP007622), 1 female, SE Hidalgo County, October (G.B. Vogt)(NMNH: ADP007638).

Geographic distribution. (Fig. 36). The known range of this species extends from Texas, USA, south to Costa Rica.

Onota Chaudoir 1872

Onota Chaudoir 1872:165. Type species: *Onota bicolor* Chaudoir 1872:165 (designated by Bousquet & Larochelle 1993:280). Type locality: BRAZIL, Santa Catarina.

Pseudolebia Basilewsky, 1942:162. This is **not** a synonym of *Onota* Chaudoir as cited in Lorenz (1998:153). An adult of *Pseudolebia* Basilewsky was clearly illustrated in Basilewsky's contribution and the type species occurs in Madagascar. Only the species epithet, "bicolor" of *Pseudolebia bicolor* Basilewsky is something in common with the present species.

Diagnosis. (cf. Fig. 21). Head and pronotum smooth, not punctate, pale in color markedly contrasting with dark elytra. Antennomere 4 multisetiferous from basal third to apex, in addition to apical ring setae. Pronotum with lateral margin moderately reflexed from base to apex. Elytron at basal third depressed, surface uneven, without trace of tubercles, laterally at apical third without callus. Male endophallus with flagellum; flagellum apex not barbed.

Dispersal potential. The wings are fully developed, thus it is likely that these beetles are moderate to strong flyers.

Geographic distribution. A widespread Nearctic and Neotropical genus known from Florida, USA, throughout Central America, south to Brazil and Bolivia, and east to French Guiana.

Notes. Ten species are known to constitute this genus, most of which occur only in South America.

Onota angulicollis (Reiche)

(Figs. 21, 22, 37)

Lebia? angulicollis Reiche 1842:312. Holotype male, found and labeled by H. Reichardt in MNHP (Muséum National d'Histoire Naturelle, Paris). Type area: COLOMBIA.

Common name. Reiche's angle-necked carabid beetle.

Diagnosis. With the attributes of the genus as described above and head, prothorax, venter, and appendages testaceous; elytra metallic blue. Sides of pronotum narrowly explanate, moderately sinuate anterior to hind angle, subangulate at mid-lateral setigerous pore.

Description. (Fig. 21). Size small: ABL = 5.42 to 6.42 mm, SBL = 4.5 to 5.92 mm, TW = 2.16 to 2.5 mm. *Color:* Head, prothorax, venter and appendages testaceous; elytra metallic blue or blue-green. Metathorasic wings grey. *Luster:* Dorsal and ventral surfaces very shiny. *Microsculpture:* Head, pronotum, and elytra with transverse meshes. *Head:* Slightly broader across eyes than pronotum; frontal furrows absent except for small grooves at margin of clypeus; frons convex; eyes large, hemispheric; ultimate labial palpomere fusiform; antennae of moderate length, reaching just posterior of humerus. *Protho-*

rax: Moderately convex, side margin narrowly explanate, subangulate at mid-lateral setiferous pore, moderately sinuate anterior to hind angle. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, glabrous, except normal ambulatory setae on sterna 3–5 and males with one pair of ambulatory setae on sternum 6, females with two pairs on sternum 6. *Male genitalia:* Phallus (Fig. 22) with ostium of 1/5 its length, apex short, rounded; phallus catopic; internal sac with long flagellum, flagellum apex not barbed. Parameres asymmetric, left larger that right, right very small.

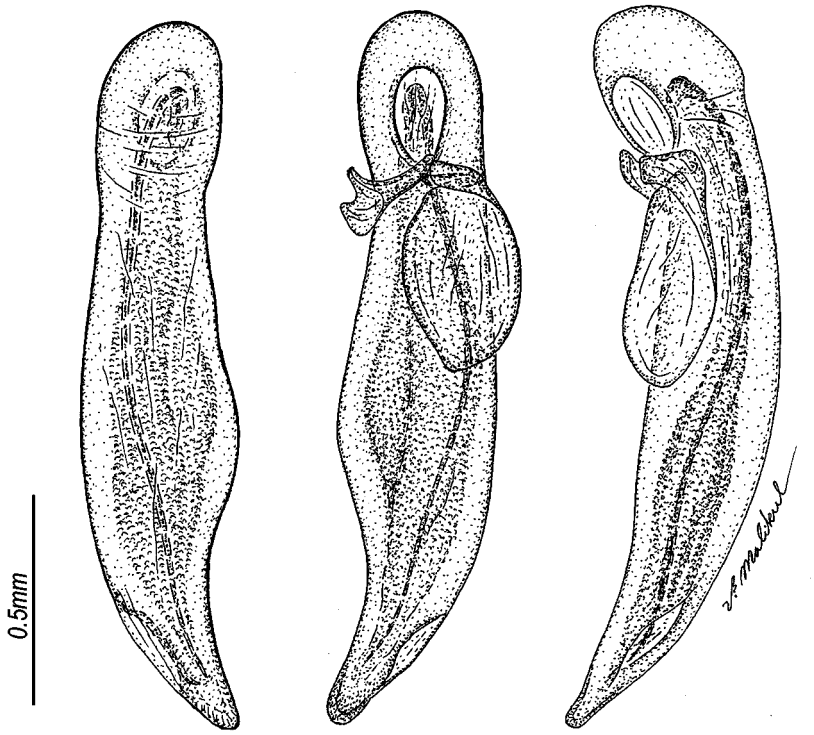

FIGURE 22. Phallus, dorsal, ventral, left lateral aspects of *Onota angulicollis* (Reiche), specimen # ADP008662.

Way of life. Member of this genus are arboreal, or at least they are found off the ground. The Florida species runs on the leaves of the common *Sabal* palmetto. The ALAS project has collected them by fogging the tree *Meliosma vernicosa* (Liebm.) Griseb. Nevermann found them on rotten logs and by beating dry leaves of the palm *Cryosophila warscewiczii* (H. Wendl.) Bartlett. In South America, I have collected them commonly with insecticidal fogging techniques from the rain forest canopy, suspended dry leaf clumps, and from dead palm fronds hanging on *Astrocaryum murumuru* Mart.. The known altitudinal range of this species is between 10 and 650 meters above sea level. Adults have been

obtained in all months of the year and they are widespread on both sides of the Cordillera Central and active in both the dry and rainy seasons in the lowlands.

Other specimens examined. COSTA RICA. 1 female, CARTAGO, 1.6 km N Turrialba, Rio Reventazon, IICA EXPERIMENTAL STATION, CATIE, 600–650 m, 09° 53' 0 N, 083° 39' 0 W, February (H.F. & A. Howden)(UASM: ADP054762), 1 male, May (J.M. & B.A. Campbell)(CNC: ADP057216); 1 male, HEREDIA, 3.0 km S Puerto Viejo, Finca La Selva, Estación Biologica La Selva, 50–150 m, 10° 25' 55 N, 084° 00' 32 W, January (INBio-OET: CRI002725263), 1 sex unknown, Sarapiqui, Finca Naranjo Valenciana, 2.0 km S Pueblo Nuevo, 90 m, LN271800,523750, July-August (M. Ortiz) (INBIO: CRI000883875); 1 male, LIMÓN, Cahuita, 09° 45' 44" N, 082 °52' 15" W, September (N.D. Penny)(CAS: ADP100195), 3 females, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, March (F. Nevermann)(NMNH: ADP008612, ADP008617, ADP008616), 1 female, April (NMNH: ADP008609), 1 female, August (MCZ: ADP008629), 2 females, September (NMNH: ADP008621, ADP008626), 3 females, October (NMNH: ADP008620, ADP008639, ADP008607), 4 males, February (NMNH: ADP008619, ADP008614, ADP008615, ADP008610), 1 male, March (NMNH: ADP008613), 6 males, June (NMNH: ADP008632, ADP008635, ADP008618, ADP008628, ADP008627, ADP008631), 1 male, August (NMNH: ADP008608), 4 males, September (NMNH: ADP008624, ADP008625, ADP008622, ADP008623), 3 males, October (NMNH: ADP008633, ADP008638, ADP008611), 2 males, November (NMNH: ADP008630, ADP008634), 2 sex unknown, R.B. Hitoy Cerere, Valle La Estrella, 100–140 m, 09° 40' 0 N, 083° 01' 0 W, LN184750,639500,29, July (F. A. Quesada #1313)(INBIO: CRI000405111, CRI000405111); 1 male, PUNTARENAS, Reserva Fial, Golfito Dulce, Estero Aguijas, 250–350 m, 08° 32' 12" N, 083° 25' 32" W, January A. Azofeifa)(INBio: INB0003031097), 1 female, 25 km NW Puerto Jimenez, La Palma, 10 m, 09° 29' 0 N, 084° 19' 0 W, October, November (P. Hanson)(UCRSJ: ADP100196), 1male, 1 female, 2.0 km S Parrita, Palo Seco, 80 m, 09° 29' 0 N, 084° 19' 0 W, December (NMNH: female, ADP008637, male ADP008636), 2 sex unknown, Peninsula de Osa, Rancho Quemado, 200 m, LS292500,511000, September (F. Quesada)(INBIO: CRI001191229, CRI001191233), 1 sex unknown, May, (F. Quesada)(INBIO: CRI000942414), 3 sex unknown, July, (F. Quesada)(INBIO: CRI000730896, CRI000730897, CRI000730898), 1 sex unknown, February (F. Quesada)(INBIO: CRI000453900), 5 sex unknown, April, (F. Quesada)(INBIO: CRI000354599, CRI000354701, CRI000366495, CRI000354669, CRI000354704), 1 sex unknown, P. N. Corcovado, Estación Sirena, LS270500,508300, 0–100m, April (G. Rodriguez)(INBIO: CRI000496288)

Geographic distribution. (Fig. 37). This is a widespread species known from Nicaragua south to Brazil, east to Surinam.

Otoglossa Chaudoir 1872

Otoglossa Chaudoir 1872:158. Type species: *Otoglossa tuberculosa* Chaudoir 1872:158 (designated by Reichardt 1964:49). Type locality: BRAZIL, Minas Gerias.
Heraldinium Liebke, 1927:101. Type species: *Heraldinium nevermanni* Liebke, 1927:102, (original designation). Synonymized by Reichardt 1964:49.

Diagnosis. (cf. Fig. 23) Form unusual for lebiine carabids: head and pronotum markedly narrow, elytra broad and box-like with multiple tubercles or calluses on intervals 1–7. Prothorax nearly cylindrical, with very narrow and slightly dentate lateral pronotal bead. Head with large semi-hemispheric eyes and gradually, yet markedly, constricted neck. Male and female with small v-shaped indentation medial on posterior margin of sternum 6. Male endophallus with flagellum, flagellum apically barbed.

Geographic distribution. The known range of this widespread Neotropical genus extends from Costa Rica south into southeastern Perú, east to French Guiana and south to southeastern Brasil (Rio de Janeiro).

Notes. This genus is now known to contain three species. Amongst the Cryptobatia Group, only male adults of *Otoglossa* and *Pseudotoglossa* have a barbed apex on the flagellum of the endophallus of the male genitalia. Whilst the adults have a very different aspect, it must be noted here that a rigorous phylogenetic analysis may indicate that the two genera should be classified in two subgenera within the genus *Otoglossa*.

Otoglossa nevermanni (Liebke)

(Figs. 23, 24, 38)

Heraldinium nevermanni Liebke, 1927:102. Lectotype female, in NMNH, Type #54408, COSTA RICA. LIMÓN, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, July (F. Nevermann)(NMNH: ADP008578). Synonymized by Erwin (1975).

Common name. Nevermann's narrow-necked carabid beetle.

Diagnosis. With the attributes of the genus described above and head, palpomeres, and prothorax piceous, elytra brown with purplish tinge marginally, other appendages testaceous.

Description. (Fig. 23). Size small: ABL = 5.6 to 6.0 mm, SBL = 4.5 to 4.7 mm, TW = 2.3 to 2.7 mm. *Color:* Head, pronotum, and anterior half of prosternum piceous, elytra and tergum 6 brown, elytra with slight violaceous reflections at sides; appendages testaceous, except slightly infuscated antennal flagellum; venter testaceous except head and anterior half of prosternum piceous, sternum 6 slightly infuscated. *Luster:* Dorsal surface very shiny. *Microsculpture:* Head and elytra with transverse closed meshes, more course on vertex of head, variously contorted in direction by the markedly contoured and tuberculate surfaces of elytron; pronotum disc without meshes. *Head:* Ovoid on stalked constricted

neck, with large prominent eyes; clypeus and frons depressed; vertex with shallow median sulcus. *Prothorax:* Narrow, tubular, markedly flanged at base, with narrow lateral bead, and slightly dentate at lateral seta; basal seta present. *Pterothorax:* Normal for fully winged carabid. *Legs:* Normal for lebiines, except hind tibia narrowed and slightly arcuate distal to middle (this attribute also found in some members of the genus *Agra*). *Abdomen:* Sterna normal for lebiines, except male with two pairs of setae at posterior margin of sternum 6, female with on pair. *Male genitalia:* Phallus (Fig. 24) with ostium 1/4 its length, apex moderately elongate, rounded, lobed; phallus catopic; internal sac with long flagellum, barbed at apex. Parameres asymmetric, left larger that right, right very small.

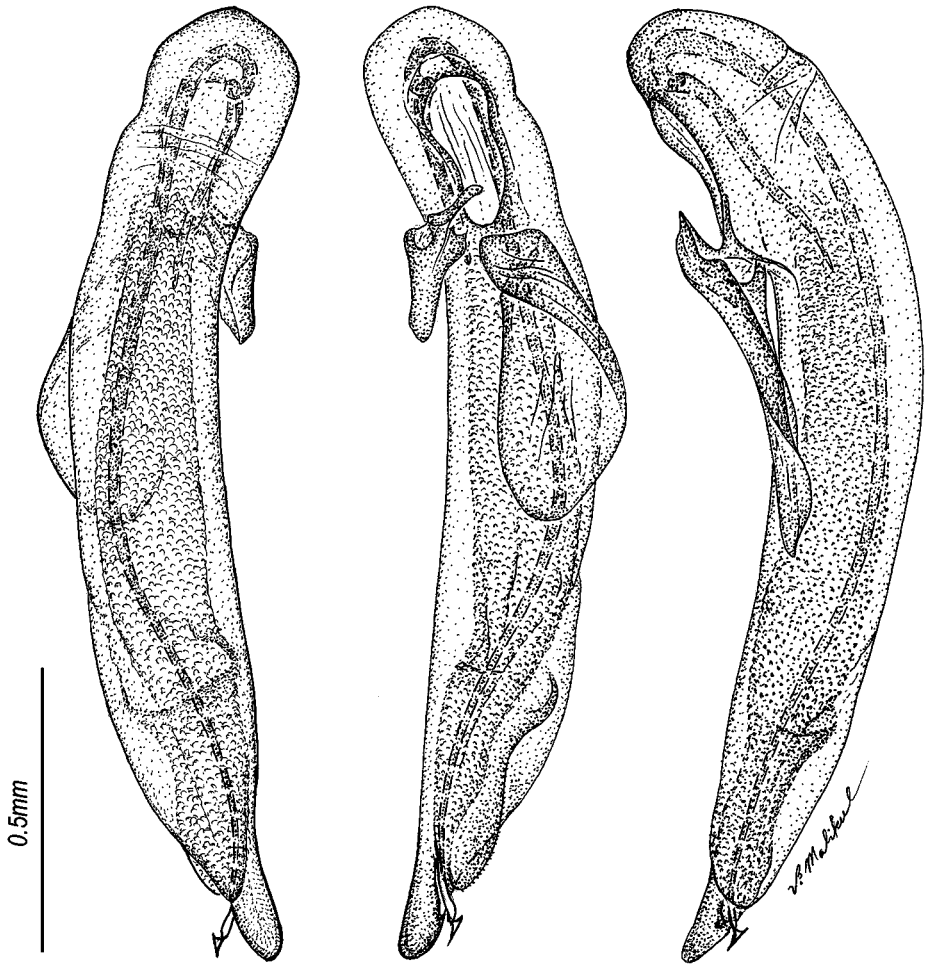

FIGURE 24. Phallus, dorsal, ventral, left lateral aspects of *Otoglossa nevermanni* (Liebke), specimen # ADP100392.

Dispersal potential. These beetles are fully winged. None that I have studied have been collected at black light, but they likely disperse readily by flight since their rotten log habitat is a temporary one and very dispersed in lowland tropical forests.

Way of life. Nevermann collected these beetles on rotten logs. His notes do not suggest that they were in association with fungi, however that is likely. I have collected adults of other species with canopy fogging techniques in South America, so they also occur in the canopy. The known altitudinal range of this species is between 10 and 150 meters above sea level. Adults have been obtained east of the Cordillera Central in January, June, and August, hence they are active in both the dry and rainy seasons in the lowlands.

Other specimens examined. COSTA RICA. 1 male, HEREDIA, 3.0 km S Puerto Viejo, Finca La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, LN535500,268000, January (INBio-OET)(INBio: CRI002725221); 1 male, LIMÓN, 30.0 km N Cariari, Sector Cerro Cocori, Finca de E. Rojas, 150 m, 10° 35' 29" N, 083° 42' 29" W, LN28600,567500, August (E. Rojas)(INBIO: CRI002021286, ADP100392); Paralectotypes: 1 female, 2 males, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, July (F. Nevermann)(NMNH: ADP008578) August (NMNH: ADP008575) November (NMNH: ADP008577) June (NMNH: ADP008576). PANAMÁ. 1 male, COLÓN, 6 km SE Colón, June (E. Giesbert)(CAS: ADP100394).

Geographic distribution. (Fig. 38). Known only from lower Central America in Costa Rica and Panamá.

Notes. The two specimens cited by Erwin (1975) as missing have been found, thus Liebke's entire series from the Nevermann collection is now located in the NMNH.

Pseudotoglossa Mateu 1961

Pseudotoglossa Mateu 1961:173. Type species: *Otoglossa terminalis* Chaudoir 1872:161 (original designation). Type locality: BRAZIL, Petrópolis.

Diagnosis. (cf. Figs. 25, 27, 29, 31). Head, pronotum, and elytra smooth, not punctate, dark in color markedly contrasting with apex of elytra and abdomen. Antennomere 4 multisetiferous in apical half, in addition to apical ring setae. Pronotum with lateral margin very narrowly reflexed from base to apex, subangulate at mid-lateral setiferous pore. Elytron at basal third depressed, surface uneven, without trace of tubercles, with callus laterally at apical third. Male endophallus with flagellum; flagellum apex barbed.

Dispersal potential. These beetles are fully winged and likely are good dispersers.

Geographic distribution. This widespread genus is found from México south to Brazil, east to French Guiana.

Notes. Four species of eight in the Neotropical Region which constitute this genus occur in Costa Rica. Adults of six additional undescribed species from México and South America are in NMNH and await revision (Erwin & Ball, in prep).

Key to the Costa Rican species of *Pseudotoglossa* Mateu 1961

1 Elytron with only the extreme posterior beaded margin pale, otherwise dorsal surface black with dark bluish reflections ..... ***P. marginella* (Bates)**

1' Elytron with at least apical seventh pale, otherwise dorsum black with dark bluish reflections or bright metallic blue **2**

2 Head, pronotum and elytron bright metallic blue; pronotum long and narrow (Fig. 29) ***P. rufitarsis* (Chaudoir)**

2' Head, pronotum and elytron black with or without dark bluish reflections, pronotum short (Figs. 27, 31) **3**

3(2') Eye diameter to gena length ratio: 0.73 to 0.83 (Fig. 27). Head, pronotum and elytra black, without metallic reflections. Apex of phallus with slight knob. Smaller adults, SBL = 4.0 to 4.87 mm ..... ***P. obscurella* (Bates)**

3' Eye diameter to gena length ratio: 0.57 (Fig. 31). Head, pronotum and elytra black, with metallic blue reflections. Apex of phallus straight, without knob. Larger adults, SBL = 5.33 to 5.54 mm ..... ***P. terminalis* (Chaudoir)**

***Pseudotoglossa marginella* (Bates)**
(Figs. 25, 26, 39)

Otoglossa marginella Bates 1883:199. Lectotype, female, labeled by me in BMNH (The Natural History Museum, London). Type locality: PANAMÁ, Bugaba.

Common name. Margined false-tongued carabid beetle.

Diagnosis. With the attributes of the genus as described above and head, antennal scape, prothorax, femora, and elytra black, dorsum with faint metallic blue reflections; venter of head and thorax black; abdomen, apical extreme margin of elytron, apical 2/3 of tibia, and tarsomeres rufous; antennal flagellum and palpi infuscated. Pronotum markedly narrow, side margin beaded, not explanate, moderately sinuate anterior to hind angles, subangulate at mid-lateral setiferous pore. Elytral intervals slightly convex.

Description. (Fig. 25). Size small: ABL = 5.33 to 5.87 mm, SBL = 4.83 to 5.66 mm, TW = 1.83 to 2.66 mm. *Color:* See Diagnosis. Wings pale. *Luster:* Very shiny. *Microsculpture:* Dorsal surface of head and elytra with very shallowly impressed isodiametric meshes, meshes slightly transverse on pronotum. *Head:* Markedly broader across eyes than pronotum; frontal furrows shallowly impressed to front margin of eye; eyes very large, hemispheric; frons and vertex continuously swollen, not divided; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Moderately convex, side margin narrowly explanate in anterior half, beaded in basal half, subangulate at mid-lateral setiferous pore, moderately sinuate anterior to hind angle. Hind angles slightly lobed posterior to seta. *Pterothorax:* Normal for

Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae and a few very short and scattered setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 26) with ostium 1/4 its length, catopic; Phallus apex slightly elongate, knobbed; endophallus with long flagellum, flagellum apex barbed. Parameres asymmetric, left larger than right, right small.

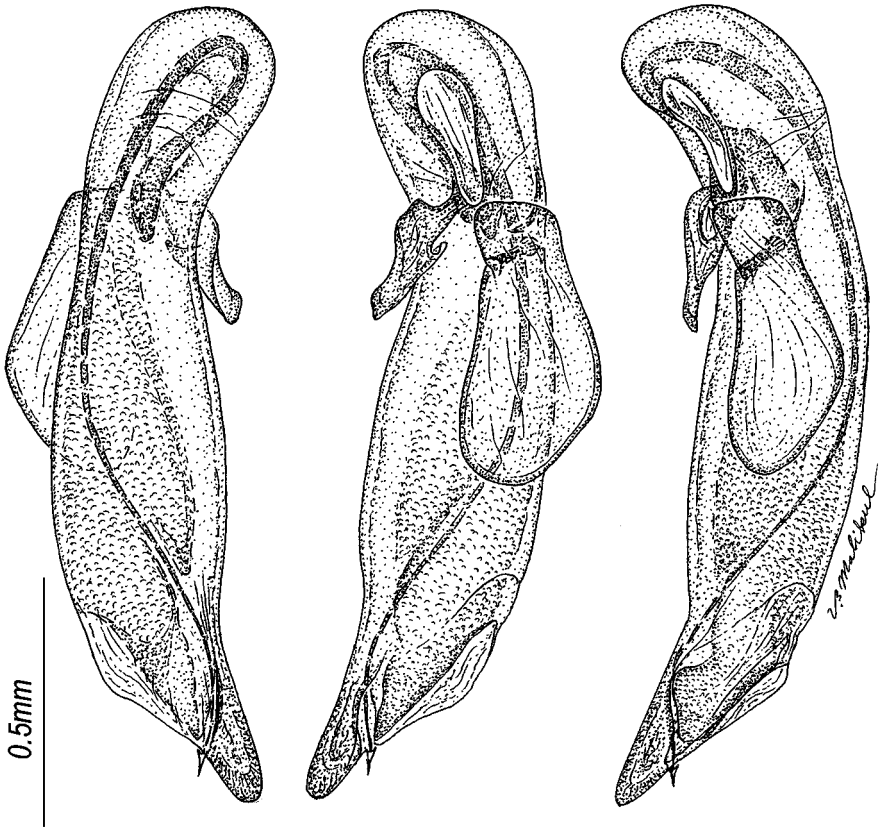

FIGURE 26. Phallus, dorsal, ventral, left lateral aspects of *Pseudotoglossa marginella* (Bates), specimen # CRI000672994.

Way of life. Unknown, but probably like other members of the genus. The known altitudinal range of this species is between 50 and 500 meters above sea level. Adults have been obtained west of the Cordillera Central in March, April, and July, hence they are active in both the dry and rainy seasons in the lowlands.

Other specimens examined. COSTA RICA. 1 female, PUNTARENAS, Estación La Leona, Alrededores, 100–200 m, 08° 27' 35" N, 83° 29' 15" W, July (A. Azofeifa)(INBIO: INB00035116213), 2 females, 5 males, Peninsula de Osa, Rancho Quemado, 200, 08° 40' 44" N, 83° 34' 00" W, April (J.C. Saborio)(INBIO: female, CRI000672994, male,

CRI000672997), (F.A. Quesada)(INBIO: males CRI000366574, CRI000354689, CRI000453907, CRI000354651, female CRI000366494), 1 female, Quepos, 80 m, 09° 24' 0 N, 084° 09' 0 W, June (R.A. Zuniga)(INBIO: CRI001334590), 1 female, Táracoles, Estación Quebrada Bonita, 50 m, 09° 46' 0 N, 084° 36' 0 W, March–April (P. Campos)(INBIO: CRI000869164); 1 female, SAN JOSÉ, 1.5 km N Bijagual, Estación Bijagual, 500 m, 09° 44' 49" N, 084° 33' 48" W, March (J.C. Saborio)(INBIO: CRI002215067).

Geographic distribution. (Fig. 39). Known only from lower Central America in Costa Rica and Panamá.

***Pseudotoglossa obscurella* (Bates)**
(Figs. 27, 28, 39)

Otoglossa obscurella Bates 1878:608. Holotype. Male, MNHP (Muséum National d'Histoire Naturelle, Paris). Type locality: NICARAGUA, Chontales.

Common name. Dull false-tongued carabid beetle.

Diagnosis. With the attributes of the genus as described above and head, antennal scape, prothorax, and elytra rufopiceous to black, elytra with faint metallic bluish reflections; venter of head, thorax and legs except tarsi black; abdomen, apical sixth of elytron and tarsi rufous; antennal flagellum and palpi infuscated. Eye diameter to gena length ratio: 0.73 to 0.83. Pronotum markedly narrow, side margin beaded, not explanate, moderately sinuate anterior to hind angle, subangulate at mid-lateral setiferous pore.

Description. (Fig. 27). Size small: ABL = 4.67 to 5.33 mm, SBL = 4.0 to 4.87 mm, TW = 1.67 to 2.0 mm. *Color:* See Diagnosis. Wings grey. *Luster:* Very shiny. *Microsculpture:* Dorsal surface of head and elytra with very shallowly impressed isodiametric meshes, meshes slightly transverse on pronotum. *Head:* Markedly broader across eyes than pronotum; frontal furrows shallowly impressed to midpoint of eye delimiting convex frons; eyes large, hemispheric; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. Eye diameter to gena length ratio: 0.73 to 0.83. *Prothorax:* Moderately convex, side margin narrowly beaded, subangulate at mid-lateral setiferous pore, moderately sinuate anterior to hind angle. Hind angle lobed posterior to seta. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae and a few very short and scattered setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 28) with ostium 1/3 its length, catopic; phallus apex moderately elongate; endophallus with long flagellum, flagellum apex barbed. Parameres asymmetric, left larger that right, right small.

Way of life. Nevermann recorded these beetles on rotting logs. The known altitudinal range of this species is between 10 and 150 meters above sea level. Adults have been

obtained east of the Cordillera Central in February, April, June, August, and October, hence they are active in both the dry and rainy seasons in the lowlands.

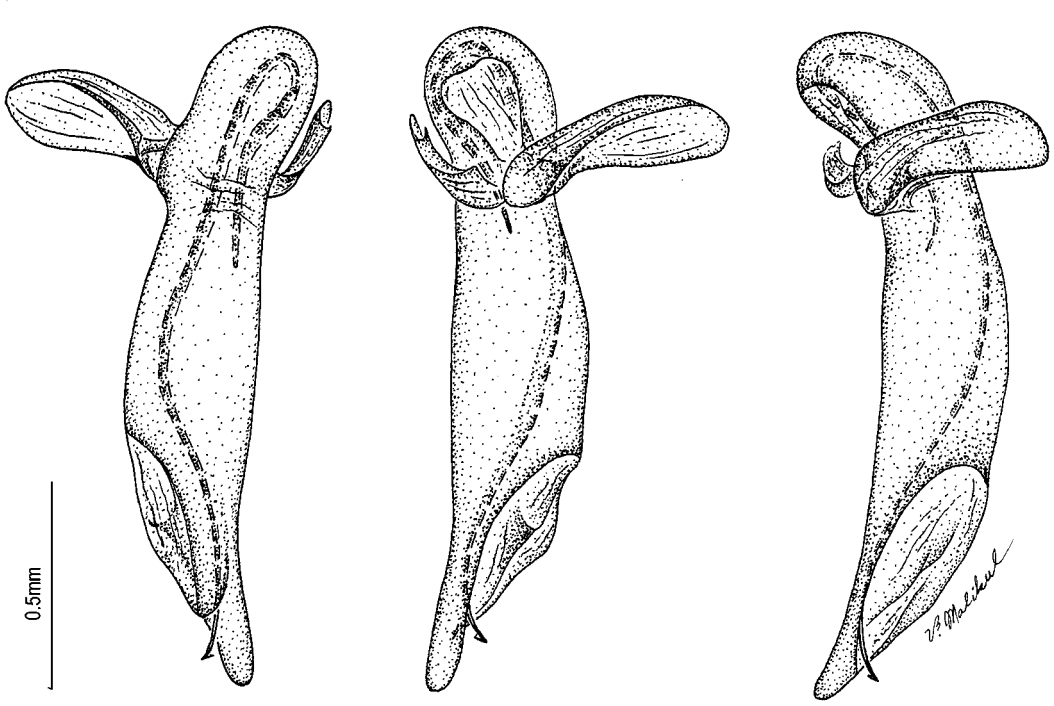

FIGURE 28. Phallus, dorsal, ventral, left lateral aspects of *Pseudotoglossa obscurella* (Bates), specimen # ADP008585.

Other specimens examined. COSTA RICA. 1 female, HEREDIA, 3.0 km S Puerto Viejo, Finca La Selva, Estación Biologica La Selva, 50–150 m, 10° 25' 55" N, 084° 00' 32" W, June (H.A. Hespenheide)(HAH: ADP102308); LIMÓN, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, February (F. Nevermann)(NMNH: ADP008588), June, (NMNH: ADP008586), April (F. Nevermann)(NMNH: ADP008598, ADP008602, ADP008604), May (NMNH: ADP008584), June, (NMNH: female, ADP008586, male, ADP008583), October (NMNH: ADP008590, ADP008591, ADP008589), 1 female, R.V.S. Jaguarandi, Sector Cerro Cocori, Finca de E. Rojas, 150 m, 10° 32' 24" N, 083° 42' 59" W, August (E. Rojas)(INBIO: CRI001136340).

Geographic distribution. (Fig. 39). Known from Belize south to Colombia.

***Pseudotoglossa rufitarsis* (Chaudoir)**
(Figs. 29, 30, 39)

Otoglossa rufitarsis Chaudoir 1877:231. Lectotype female, selected by Mateu (1961), in MHNP (Muséum National d'Histoire Naturelle, Paris). Type locality. NICARAGUA. Chontales.
Otoglossa coelestina Bates 1878:607. Synonymized by Bates 1883:198.

Common name. Red-footed false-tongued carabid beetle.

Diagnosis. With the attributes of the genus as described above and head, antennal scape, prothorax, and elytra metallic blue; venter of head, thorax and legs except tarsi black with metallic blue reflections; abdomen, apical sixth of elytron and tarsi rufous; antennal flagellum and palpi infuscated. Pronotum markedly narrow, side margin beaded, not explanate, moderately sinuate anterior to hind angle, subangulate at mid-lateral setiferous pore.

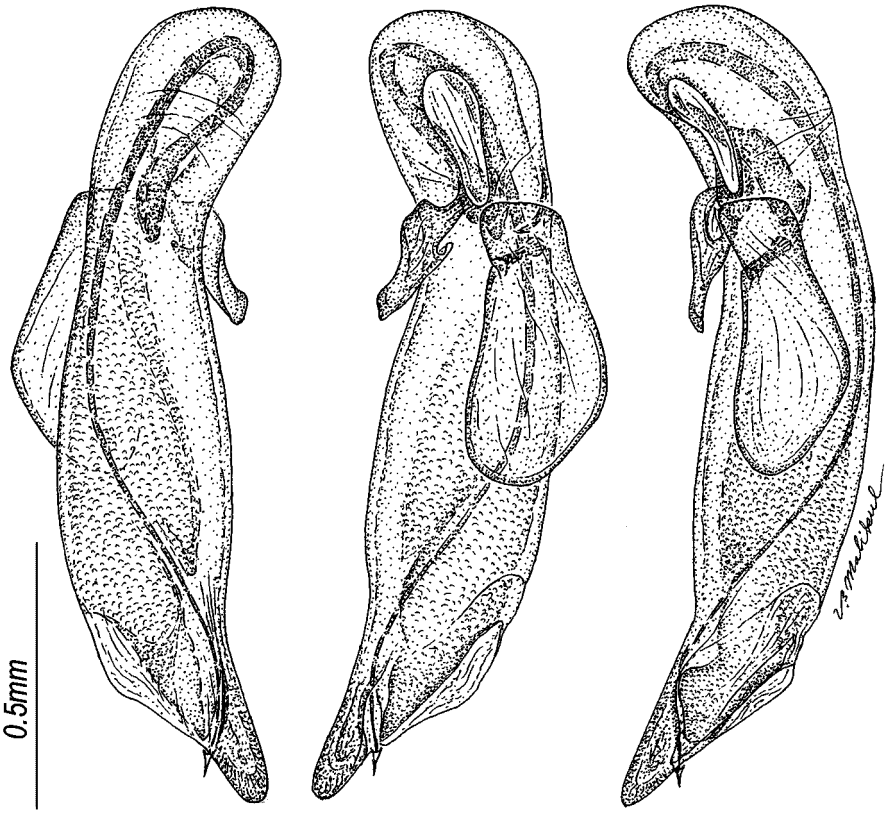

FIGURE 30. Phallus, dorsal, ventral, left lateral aspects of *Pseudotoglossa rufitarsis* (Chaudoir), specimen # ADP057305.

Description. (Fig. 29). Size medium: ABL = 6.25 to 6.92 mm, SBL = 6.0 to 6.54 mm, TW = 2.5 mm. *Color:* See Diagnosis. Wings grey. *Luster:* Very shiny. *Microsculpture:*

Dorsal surface with very shallowly impressed isodiametric meshes. *Head:* Markedly broader across eyes than pronotum; frontal furrows absent except for small groove at margin of clypeus; clypeus with callus, frons convex; eyes large, hemispheric; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Moderately convex, side margin narrowly beaded, subangulate at mid-lateral setiferous pore, moderately sinuate anterior to hind angle. Hind angle lobed posterior to seta. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae and a few very short and scattered setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 30) with ostium 1/3 its length, catopic; Phallus apex slightly elongate, rounded; endophallus with long flagellum, flagellum apex barbed. Parameres asymmetric, left larger that right, right small.

Way of life. Adults of this species are found by beating suspended dry leaf clumps. The known altitudinal range of this species is between 700 and 1500 meters above sea level. Adults have been obtained in the Cordillera Central in February, April, May, June, July, and November, hence they are active in both the dry and rainy seasons at middle altitudes.

Other specimens examined. COSTA RICA. 1 male, CARTAGO, 20.0 km E Turrialba, June (J.E. Wappes)(JEWC: ADP057833), 1 male, 1 female, nr Tres Equis, 09° 54' 0 N, 083° 39' 0 W, June (J.E. Wappes)(JEWC: male ADP057832, female ADP057831), 1 female, 10 km SE Turrialba, La Suiza, 09° 51' 0 N, 083° 37' 0 W, (P. Schild)(NMNH: ADP055873); 1 female, GUANACASTE, 9.0 km S Santa Cecilia, Estación Pitilla, 700 m, 10° 59' 33" N, 085° 25' 46" W, April (P. Rios, R. Blanco)(INBIO: CRI000211427); 2 females, PUNTARENAS, Estación Las Mellizas, Finca Cafrosa, 1300 m, 08° 53' 0 N, 082° 47' 0 W, May (M. Ramirez, G. Mora)(INBIO: CR1000264581), November (CR1000079521); 2 females, Monteverde, 1500 m, 10° 18' 0 N, 084° 48' 0 W, February (R.S. Anderson)(CNC: ADP057305), Monteverde, Pension Quetzal, 1380 m, 10° 18' 0 N, 084° 48' 0 W, May (M. Jameson, B.C. Ratcliffe)(SEMC: ADP100492); 1 female, SAN JOSÉ, 100 m N de la Plaza de Platanares, Naranjo, 800 m, 09° 12' 0 N, 083° 38' 0 W, July (R. Gonzalez)(INBIO: INB0003356216).

Geographic distribution. (Fig. 39). Known from México to Panamá.

Notes. Mateu (1961) studied two specimens, one from Colombia and one from Brazil (both in the MNHP). He believed that these represented a dark form, hence a subspecies of *P. rufescens* (Chaudoir) and he provided the name *Pseudotoglossa rufitarsis nigrescens* Mateu 1961:176. After my study of many additional specimens of this genus and all of its known species and types, I believe Mateu misidentified his two specimens; they are *P. terminalis* (Chaudoir). Among the series I have studied of that species, the attributes he used are part of the variation found within that species, and its range is far more extensive than any other in the genus, extending from México to southern Brazil and Paraguay.

***Pseudotoglossa terminalis* (Chaudoir)**
(Figs. 31, 32, 39)

Otoglossa terminalis Chaudoir 1872:161. Type specimen: Lectotype designated by Mateu (1961), in MNHP (Muséum National d'Histoire Naturelle, Paris). Type locality: BRAZIL, Petrópolis.
Pseudotoglossa rufitarsis nigrescens Mateu 1961:177, **new synonymy**.

Common name. Terminally pale false-tongued carabid beetle.

Diagnosis. With the attributes of the genus as described above and head, antennal scape, prothorax, and elytra rufopiceous to black, elytra with faint metallic blue reflections; venter of head, thorax and legs except tarsi black; abdomen, apical sixth of elytron and tarsi rufous; antennal flagellum and palpi infuscated. Eye diameter to gena length ratio: 0.57. Head very large in proportion to pronotum. Pronotum broad for genus, side margin beaded, not explanate, moderately sinuate anterior to hind angle, subangulate at mid-lateral setiferous pore.

Description. (Fig. 31). Size small: ABL = 5.75 to 5.92 mm, SBL = 5.33 to 5.54 mm, TW = 2.33 to 2.67 mm. *Color:* See Diagnosis. Wings grey. *Luster:* Very shiny. *Microsculpture:* Dorsal surface of head and elytra with very shallowly impressed isodiametric meshes, meshes slightly transverse on pronotum. *Head:* Markedly broader across eyes than pronotum; frontal furrows shallowly impressed to front margin of eye; eyes very large, hemispheric; frons and vertex continuously swollen, not divided; ultimate labial palpomere slightly securiform; antennae of moderate length, reaching just posterior of humerus. Eye diameter to gena length ratio: 0.57. *Prothorax:* Moderately convex, side margin narrowly beaded, subangulate at mid-lateral setiferous pore, moderately sinuate anterior to hind angle. Hind angle slightly lobed posterior to seta. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* Sterna normal for Agrina, mostly glabrous, except normal paired ambulatory setae and a few very short and scattered setae on sterna 3–5; males and females with two pairs long setae on sternum 6. *Male genitalia:* Phallus (Fig. 32) with ostium 1/3 its length, catopic; Phallus apex slightly elongate, rounded; endophallus with long flagellum, flagellum apex barbed. Parameres asymmetric, left larger that right, right small.

Way of life. Elsewhere adults of these beetles have been fogged from the forest canopy. In Costa Rica they have been beaten from suspended dead foliage and collected at UV lights. The known altitudinal range of this species is between 50 and 500 meters above sea level. Adults have been obtained from east of the Cordillera Central in January, February, March, August, and November, hence they are active in both the dry and rainy season in the lowlands.

Other specimens examined. COSTA RICA. 1 male, LIMÓN, R.V.S. Jaguarandi, Sector Cerro Cocori, Finca de E. Rojas, 150 m, 10° 32' 24" N, 083° 42' 59" W, August (E. Rojas)(INBIO: CRI002021416). 1 male, 1 female, Rio Reventazon, Ebene, Hamburg Farm, 10 m, 10° 15' 0 N, 083° 28' 0 W, (F. Nevermann), 1 female, February NMNH:

ADP008587), 1 male, October (NMNH: ADP008585), 1 male, 1 female, November (NMNH: male, ADP008600, female, ADP008599), 1 female, January (NMNH: ADP008601), 1 male, March (C.P. Dodge)(MCZ: ADP008605).

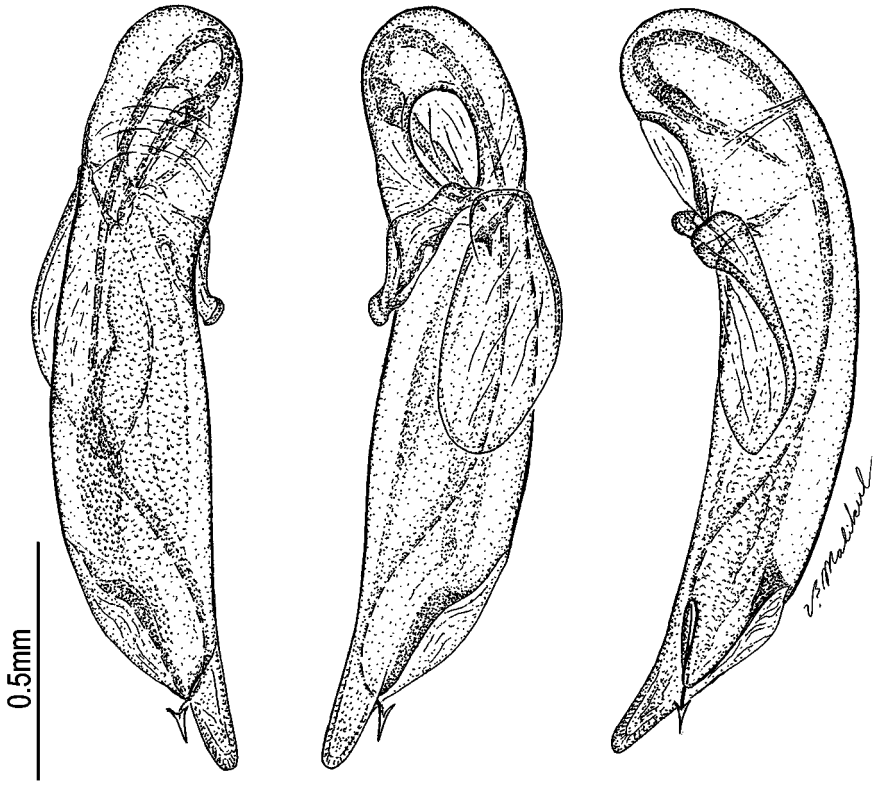

FIGURE 32. Phallus, dorsal, ventral, left lateral aspects of *Pseudotoglossa terminalis* (Chaudoir), specimen #ADP008605.

Geographic distribution. (Fig. 39). This widespread species is presently known from México, south to Brazil and Paraguay, east to French Guiana.

Valeriaaschero Erwin 2004

Type species: *Valeriaaschero flora* Erwin 2004:15.

This member of the Cryptobatida Group, with two known species, was discussed in a recent contribution (Erwin 2004). An additional specimen has been obtained since then of the type species, *Valeriaaschero flora* Erwin, thus providing a new locality (Fig. 40). The specimen was collected in a Malaise trap.

Other specimens examined. COSTA RICA. 1 female, HEREDIA, 11.0 km SSE La Virgen, 450–550 m, 10° 20' 0 N, 084° 04' 0 W, April (INBio-OET: INB0003237069).

Acknowledgements

I thank Milagros Servat who adroitly prepared the data bases for all + 30,000 specimens of Carabidae of Costa Rica at NMNH and a few hundred more at INBio; Warren Steiner who prepared and dissected specimens, as well as managed production of the illustrations; and Vichai Malikul who prepared the illustrations of the male genitalia. I also thank the INBio staff and the ALAS Project directed by Jack Longino who provided some of the valuable specimens used in this study. The Department of Entomology and INBio provided funding to carry out the museum work that made this publication possible. I also express my deep appreciation to Valeria Aschero for critically reading the manuscript and translating the abstract into Spanish and to G. E. Ball for numerous and insightful suggestions that improved the manuscript substantially.

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