

The beetle family Carabidae of Costa Rica and Panamá: Descriptions of four new genera and six new species with notes on their way of life (Insecta: Coleoptera)

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Abstract

A new genus and two new species of Bembidiini, Tachyina, (type localities in parentheses) *Tachysbembix sirena* Erwin **new genus, new species** (P.N. Corcovado, Llorona, 20 km N Estación Sirena, 1–100 m, 08° 37' N 083° 42' W, LS 270500,508300) and *Tachysbembix wendyporrasae* Erwin **new genus, new species** (Guanacaste, Nandayure, Estero Jabilla, sea level, 10° 02' N 085° 11' W, LN 199225,395300), two new genera and two new species of Lachnophorini, *Pseudophorticus puncticollis* **new genus, new species** (Limón, Hamburg Farm, Rio Reventazon, Ebene, 100 m, 10° 15' N, 083° 28' W) and *Guatemalteca virgen* Erwin **new genus, new species** (Heredia, 16.0 km SSE La Virgen, 1050–1150 m, 10° 16' N, 84° 05' W, LN527381,257085), and a new genus and two new species of Lebiini, Agrina, *Valeriaaschero flora* Erwin **new genus, new species** (Guanacaste, P.N. Guanacaste, Estación Pitilla, Santa Cecilia, 700 m, 10° 59' 33" N, 085° 25' 46" W, LN330200,380200) and *Valeriaaschero nigrata* Erwin **new genus, new species** (Puntarenas, Península de Osa, Rancho Quemado, 200 m, 8° 40' 44" N, 83° 34' 00" W, LS292500,511000) are diagnosed, described and illustrated. Thus far, all species are known only from Costa Rica except *Valeriaaschero flora* Erwin which also occurs in northwestern Panamá. The bembidiines live at the sea shore; the lachnophorines live amongst leaf litter in lowland or cloud forests; the lebiines are arboreal in lowland forests. This paper validates the names of the new genera and species so that information about them can be made available for enhancing the National Biodiversity Inventory Project of Costa Rica. In addition, the following species described originally in the genera *Euphorticus* or *Lachnophorus* are transferred to *Pseudophorticus*: *Pseudophorticus semirufa* (Bates) from *Lachnophorus* (Bates 1878); *Pseudophorticus lucidus* (Bates) from *Lachnophorus* (Bates 1883); *Pseudophorticus subauratus* (Bates) from *Euphorticus* (Bates 1884), **new combinations**.

Key words: Costa Rica, Panamá, Carabidae, Bembidiini, Lachnophorini, Lebiini, INBio.

Resumen

Se describen e ilustran un nuevo género y dos nuevas especies de Bembidiini, Tachyina, *Tachysbembix sirena* Erwin **genero nuevo, especie nueva** (P.N. Corcovado, Llorona, Estación Sirena, 1–100 m, 08° 37' N 083° 42' W, LS 270500,508300) y *Tachysbembix wendyporrasae* Erwin **genero nuevo, especie nueva** (Guanacaste, Nandayure, Estero Jabilla, sea level, 10° 02' N 085° 11' W, LN 199225,395300); dos nuevos géneros y especies de Lachnophorini, *Pseudophorticus puncticollis* **genero nuevo, especie nueva** (Limón, Hamburg Farm, Rio Reventazon, Ebene, 100 m, 10° 15' N, 083° 28' W) y *Guatemalteca virgen* Erwin **genero nuevo, especie nueva** (Heredia, 16.0 km SSE La Virgen, 1050–1150 m, 10° 16' N, 84° 05' W, LN527381,257085); y un nuevo género y dos nuevas especies de Lebiini, Agrina, *Valeriaaschero flora* Erwin **genero nuevo, especie nueva** (Guanacaste, P.N. Guanacaste, Estación Pitilla, Santa Cecilia, 700 m, 10° 59' 33" N, 085° 25' 46" W, LN330200,380200) y *Valeriaaschero nigrita* Erwin **genero nuevo, especie nueva** (Puntarenas, Peninsula de Osa, Rancho Quemado, 200 m, 8° 40' 44" N, 83° 34' 00" W, LS292500,511000). Las localidades tipo se indican entre paréntesis. A excepción de *Valeriaaschero flora*, que también se encuentra en Panamá, todas las otras especies se conocen solo para Costa Rica. La especie de Bembidiini vive en la costa del mar, una de la especies de Lachnophorini vive entre la hojarasca en bosques de tierras bajas y la otra en bosques nublados, las especies de Lebiini son arborícolas en bosques de tierras bajas. Este artículo valida los nombres de los nuevos géneros y especies con el propósito de que la información sobre ellos pueda utilizarse en enriquecer el Inventario Nacional de Biodiversidad de Costa Rica. Por otra parte, las siguientes especies descritas originalmente como los géneros *Euphorticus* o *Lachnophorus* se transfieren a *Pseudophorticus*: *Pseudophorticus semirufa* (Bates) desde *Lachnophorus* (Bates 1878); *Pseudophorticus lucidus* (Bates) desde *Lachnophorus* (Bates 1883); *Pseudophorticus subauratus* (Bates) desde *Euphorticus* (Bates 1884), **nuevas combinaciones**.

Palabras claves: Costa Rica, Panamá, Carabidae, Bembidiini, Lachnophorini, Lebiini, INBio

Introduction

This is the third in a new series of papers with diagnoses of new taxa for the beetle family Carabidae in Costa Rica (Erwin 2000, 2002). Full descriptions of all taxa, 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/ubis>. These new generic level taxa are included in the Key to Tribes and Genera of Carabidae of Costa Rica which is also on the INBio website at the following URL: <http://www.inbio.ac.cr/es/serv/servic>.

Hence, the purpose of this paper is to validate the names of the new genera and species (Erwin & Johnson, 2000), so that they can be made available for the INBio website and for enhancing the National Biodiversity Inventory Project of Costa Rica.

Specimens and methods

Methods and species concepts follow those previously described (Erwin and Kavanaugh, 1981; Kavanaugh and Erwin, 1991). The species format for validation and diagnosis follows as closely as possible that suggested in Erwin and Johnson (2000) and as used in Erwin (2000). 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 longer elytron (measured from apex of scutellum to apex of elytron); and TW, (total width), measured across both elytra at their widest point.

Sixty-eight specimens are included in this study. They are from the NMNH collections in Washington, DC and those in INBio, Costa Rica, as well as from the ALAS Project with headquarters at Estación Biológica La Selva, Costa Rica. The ALAS specimens will be deposited in INBio and NMNH upon completion of the study. Some duplicates of *Guatemala malteca virgen* are in the California Academy of Sciences (CAS) collection.

The habitus images of the new species portray most of the character states referred to in the web key mentioned above. Illustrations of male genitalia are standard for descriptive taxonomy of carabid beetles. Geographical data are presented for the new species based on all known specimens available at the time of manuscript preparation. Up to date distribution maps for each species will be found at the website mentioned above. Herein (Fig. 13), a composite of current geographical data for all species described in this contribution is presented. Common names for species are required in Spanish for the INBio web site; hence they are provided here in English and are presented in Spanish at the INBio web site.

Accounts of taxa

Tribe Bembidiini

Tachysbembix Erwin, new genus

(Figs. 1, 3)

Type species. *Tachysbembix sirena* Erwin, **new species**

Derivation of genus name. The first specimen of this genus noticed by me was collected by R.W. & J.R. Matthews at the type locality in January 1980 when one of them found a beetle prey item in a nest of a “bembix” wasp. The beetle prey item was a bembidiine species that shares many attributes with the members of the carabid genus *Tachys* Stephens, hence a combination of the wasp name *Bembix* Fabricius and the likely adelphotaxon *Tachys*, results in *Tachysbembix*, two Latin feminine nouns combined.

Diagnosis. (Fig. 1). Terminal maxillary palpomere sublimate, much shorter and more slender than penultimate palpomere; anterior tibia markedly notched apicolaterally; mentum with 2 deep foveae, each circular in form; recurrent groove of elytron elongate, prolonged anteriorly beyond seta Ed6 then curved posteriorly in form of a hook, laterally remote from seta Ed6; elytral interneur 8 shallow, not markedly bent medially; microsculpture granulate, surface dull.

Geographic distribution. México to Ecuador along the Neotropical portion of the Pacific Coast.

Notes. Five more species occurring outside of Costa Rica await description in this unusual genus with strictly halophilic species (Erwin, in prep). Members of this new genus differ from those of the likely adelphotaxon, *Tachys* Stephens, in the form and location of the elytral recurrent groove, the bent elytral interneur 8, the markedly cordiform pronotum, and the extensive granulate-isodiametric microsculpture.

***Tachysbembix sirena* Erwin, new species**

(Figs. 1, 2, 13)

Holotype. Male. COSTA RICA: Osa, P.N. Corcovado, Llorona, 20km N Estación Sirena, 1–100 m, 08° 37' N 083° 42' W, LS 270500,508300, January (R.W. Matthews & J.R. Matthews)(INBio: ADP103930).

Derivation of specific name. The specific epithet, *sirena*, is used as a noun in apposition and is based on the Estación Sirena in Corcovado National Park in reference to one of the places near which members of this species are found and the way of life of all species in this new genus, that is near the ocean where the songs of Sirens can be heard on foggy nights.

Common name. Sirena cream-colored seaside carabid.

Diagnosis. As described for genus and differs from the other known species of this genus in Costa Rica by the infuscated anterior and posterior margins of the pronotum, large maculation of the elytra disc, and the relatively longer elytra in relation to the length of the pronotum. (Ratio: elytra/pronotum = 3.47)

Description. (Fig. 1). Size small: ABL = 3.7 to 3.9 mm, SBL = 3.5 to 3.7 mm, TW = 1.3 mm. *Color:* Testaceous except most of elytral disc which is diffusely infuscated. *Luster:* Surface dull. *Microsculpture:* Microsculpture isodiametric, granulate. *Head:* Large, about as wide as pronotum; frontal furrow absent; eyes large, hemispheric. *Prothorax:* Transverse, convex, side margin with small dent near base, hind angle absent, margin narrowly reflexed. *Pterothorax:* Mesepisternum multisulcate along anterior margin. Metathorax with fully developed flight wings. Elytra with interneurs 1 and 8 well impressed, 2–7 nearly effaced, traced in part by small punctures. *Legs:* Normal for Tachyina. *Abdomen:* Normal for Tachyina. *Male genitalia:* Aedeagus — phallus narrow, slightly arcuate,

endophallus without armature, left paramere markedly elongate, narrow, unisetose, right paramere short, broader than left paramere, bisetose (Fig. 2).

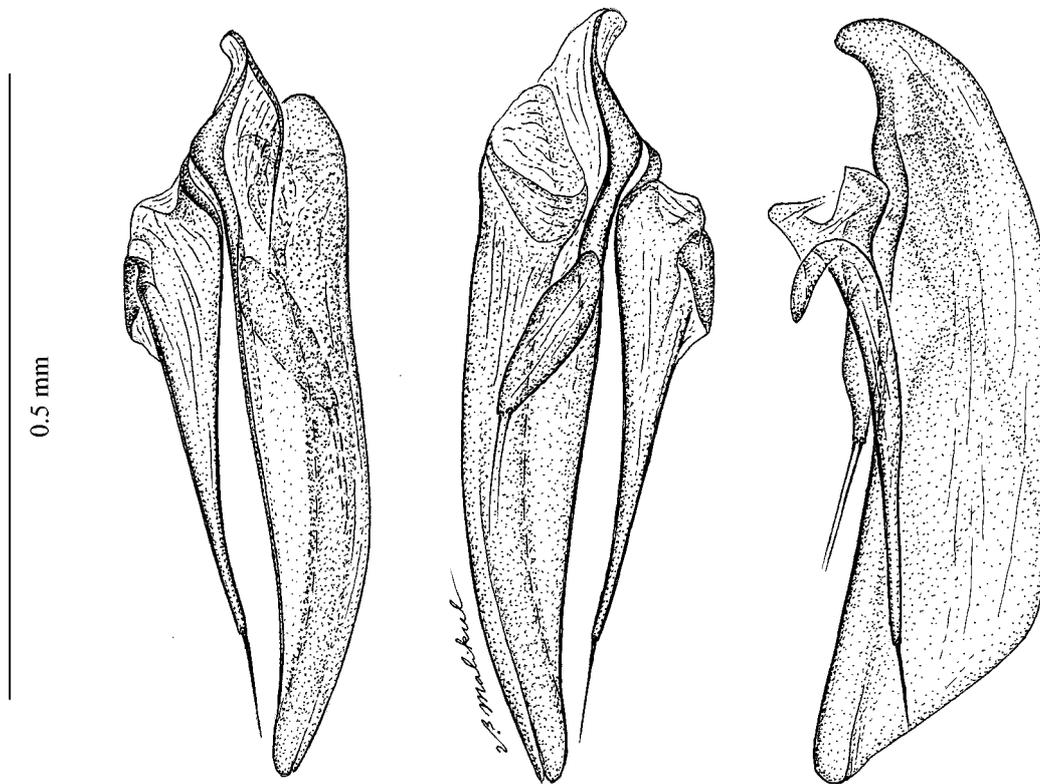


FIGURE 2. Aedeagus, dorsal, ventral, left lateral aspects of *Tachysbembix sirena* Erwin n. sp.

Dispersal potential. The wings are fully developed and the two known specimens flew to black light, thus it is likely that this species is a moderate to strong flyer.

Way of life. The three records here and information associated with those specimens from the five undescribed species I have studied suggest that the beetles of this genus live near the sea on lightly-colored sandy substrate. This suggestion is supported by the adult coloration and their granular-isodiametric microsculpture which is common in sea shore species, such as *Thalassotrechus barbarae* (Horn), *Bembidion puritanum* Hayward, *Cillenus palosverdes* (Kavanaugh & Erwin), and *Bembidion tigrinum* LeConte, as well as some undescribed *Tachys* spp. from the intertidal zone of Baja California.

Other specimens examined. Paratypes: 2 females (Guanacaste, Nandayure, Estero Jabilla, sea level, 10° 02' N 085° 11' W, LN 199225,395300, December (W. Porras, #73830) (INB0003718766, INB0003718765).

Geographic distribution. (Fig. 13). Known only from the pacific coast of Costa Rica.
Notes. The specimens collected by Parataxonomist Wendy Porras were attracted to her blacklight.

***Tachysbembix wendyporrasae* Erwin, new species**
(Figs. 3, 4, 13)

Holotype. Male. COSTA RICA: Guanacaste, Playa del Coco, 35 km W Liberia, sea level, 10° 33' N, 85° 40' W, July (R.T. Allen)(NMNH: ADP 102219).

Derivation of specific name. The specific epithet, *wendyporrasae*, is used as a noun in apposition based on the full name of one of the Parataxonomists at INBio, Wendy Porras, who is superb at collecting carabid beetles and has contributed significantly to the species richness of the INBio collections. She also managed to collect both known species of this genus in Costa Rica at Estero Jabilla, indicating sympatry of the two species.

Common name. Wendy's cream-colored seaside carabid.

Diagnosis. As described for genus. Adults differ from those of the other known species of this genus in Costa Rica by the central infuscated maculation of the elytra disc and the relatively shorter elytral length in relation to the length of the pronotum. (Ratio: elytra/pronotum = 3.33)

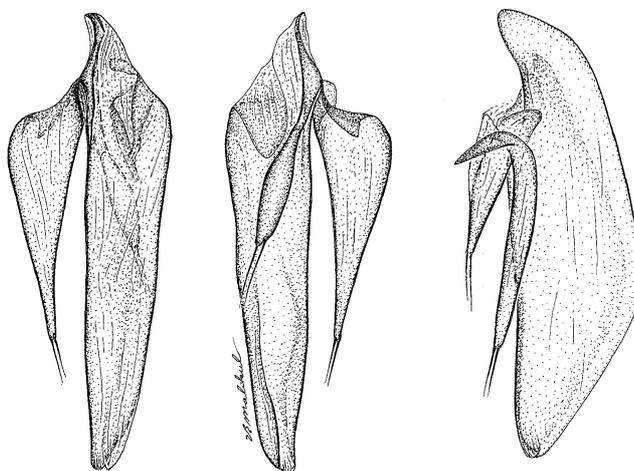


FIGURE 4. Aedeagus, dorsal, ventral, left lateral aspects of *Tachysbembix wendyporrasae* Erwin new species.

Description. (Fig. 3). Size small: ABL = 3.3 to 3.4 mm, SBL = 3.2 to 3.3 mm, TW = 1.1 to 1.3 mm. *Color:* Testaceous, only the central elytral disc infuscated, elytral. *Luster:*

Surface dull. *Microsculpture*: Microsculpture isodiametric, granulate. *Head*: Large, about as wide as pronotum; frontal furrow absent; eyes large, hemispheric. *Prothorax*: Transverse, convex, side margin with small dent near base, hind angle absent, margin narrowly reflexed. *Pterothorax*: Mesepisternum multisulcate along anterior margin. Metathorax with fully developed flight wings. Elytra with interneurs 1 and 8 distinctly impressed, 2-7 nearly effaced, traced in part by small punctures. *Legs*: Normal for Tachyina. *Abdomen*: Normal for Tachyina. *Male genitalia*: Aedeagus - Phallus narrow, not arcuate, endophallus without armature, left paramere moderately elongate, broad, bisetose, right paramere short, broad, bisetose (Fig. 4).

Dispersal potential. The wings are fully developed and all specimens flew to black light, thus it is likely that this species is a moderate to strong flyer.

Way of life. The three records here and information associated with those specimens from the five undescribed species outside of Costa Rica I have studied suggest that the beetles of this genus live near the sea on lightly-colored sandy substrate. This suggestion is support by the adult coloration and their granular isodiametric microsculpture which is common to such sea shore species as *Thalassotrechus barbarae* (Horn), *Bembidion puritanum* Hayward, *Cillenius palosverdes* (Kavanaugh & Erwin), and *Bembidion tigrinum* LeConte, as well as some undescribed *Tachys* spp. from the intertidal zone of Baja California.

Other specimens examined. Paratypes: 1 male, 1 female (Guanacaste, Nandayure, Estero Jabilla, 0 m, 10° 02' N 085° 11' W, LN 199225,395300, December (W. Porras, #73830) (male, INB0003718768, female INB0003718767).

Geographic distribution. (Fig. 13). Known only from the pacific coast of Costa Rica.

Notes. The specimens collected by Parataxonomist Wendy Porras were attracted to her blacklight.

Tribe Lachnophorini

Pseudophorticus Erwin, new genus

(Fig. 5)

Type species. *Pseudophorticus puncticollis* Erwin, **new species**

Derivation of genus name. Some species of this new genus were described originally in either the genus *Euphorticus* or *Lachnophorus*, but those collectives in my opinion were too inclusive, hence “false *Euphorticus*” or *Pseudophorticus*, used as a masculine noun, seems appropriate for those species that are not true *Euphorticus*.

Diagnosis. (Fig. 5). Ultimate palpomeres fusiform, pointed, not acuminate or subulate. Elytral interneurs more deeply punctate on anterior half, slightly less so on posterior half; elytron with densely setigerous disc with scattered supplemental stiff pale setae, setae erect and at least a few longer; elytron without transverse depression; elytral apex obliquely truncate; abdominal sterna III-VII with extensive vestiture.

Geographic distribution. Neotropical, from Costa Rica to Perú and Brazil (probably also in Bolivia and Venezuela).

Notes. Members of this new genus differ from *Euphorticus* in several attributes. *Euphorticus* adults have a smooth surface on the pronotum, *Pseudophorticus* adults are markedly rugose and punctate. *Euphorticus* adults have long black setae sparsely distributed dorsally, *Pseudophorticus* adults have shorter amber-colored setae densely distributed dorsally. *Euphorticus* adults require moist or wet soils in open habitats, *Pseudophorticus* adults live inside the forest on dry (even dusty) soils, or for example on the soils pushed up to the surface by members of the ant genus, *Atta* Fabricius. Adults lack the transverse elytral sulcus found in members of *Lachnophorus*.

In addition, the following species described originally in the genus *Euphorticus* or *Lachnophorus* are transferred to *Pseudophorticus*: *Pseudophorticus semirufa* (Bates) from *Lachnophorus* (Bates 1878:603); *Pseudophorticus lucidus* (Bates) from *Lachnophorus* (Bates 1883:154); *Pseudophorticus subauratus* (Bates) from *Euphorticus* (Bates 1884:293), **new combinations**.

***Pseudophorticus puncticollis* Erwin, new species**

(Figs. 5, 6)

Holotype. Female. COSTA RICA: Limón, Hamburg Farm, Rio Reventazon, Ebene, 100 m, 10° 15' N, 083° 28' W, March (F. Nevermann)(NMNH: ADP 004531).

Derivation of specific name. Members of this species have a deeply punctate (pock-marked) pronotum, hence the Latin adjective *puncticollis* describes them well.

Common name. Costa Rican multi-pocked carabid.

Diagnosis. With the attributes of the genus and elytron with pale humeral macula and a second macula marginally at apical third; flight wings absent.

Description. (Fig. 5). Size moderately small: ABL = 4.6 to 4.7 mm, SBL = 4.5 to 4.6 mm, TW = 2.1 mm. *Color:* Rufescent; elytron with pale humeral macula and a second macula marginally at apical third; appendages testaceous. *Luster:* Surface very shiny. *Microsculpture:* Finely engraved transverse meshes. *Head:* Broad, nearly as broad as pronotum; convex; short frontal furrows, ending anterior to eye. *Prothorax:* Cordiform, hind angles small, obtuse. *Pterothorax:* Metasternum short; flight wings reduced to a scale. *Legs:* Normal for the lachnophorines. *Abdomen:* all abdominal sterna except first visible one with extensive vestiture. *Male genitalia:* Phallus slightly arcuate, apex broadly acuminate; endophallus without armature (Fig. 6).

Dispersal potential. The two known specimens are not winged, an unusual condition for lowland tropical carabid beetles. One species from Perú is wing-dimorphic (reduced to a small scale or fully formed). Other species in Perú tend to follow the fruit falls of figs (Erwin 1985) which are patchy both temporally and micro-geographically, hence good dispersal attributes are normally needed to follow this important lowland forest resource. The way of life for the present species is not known.

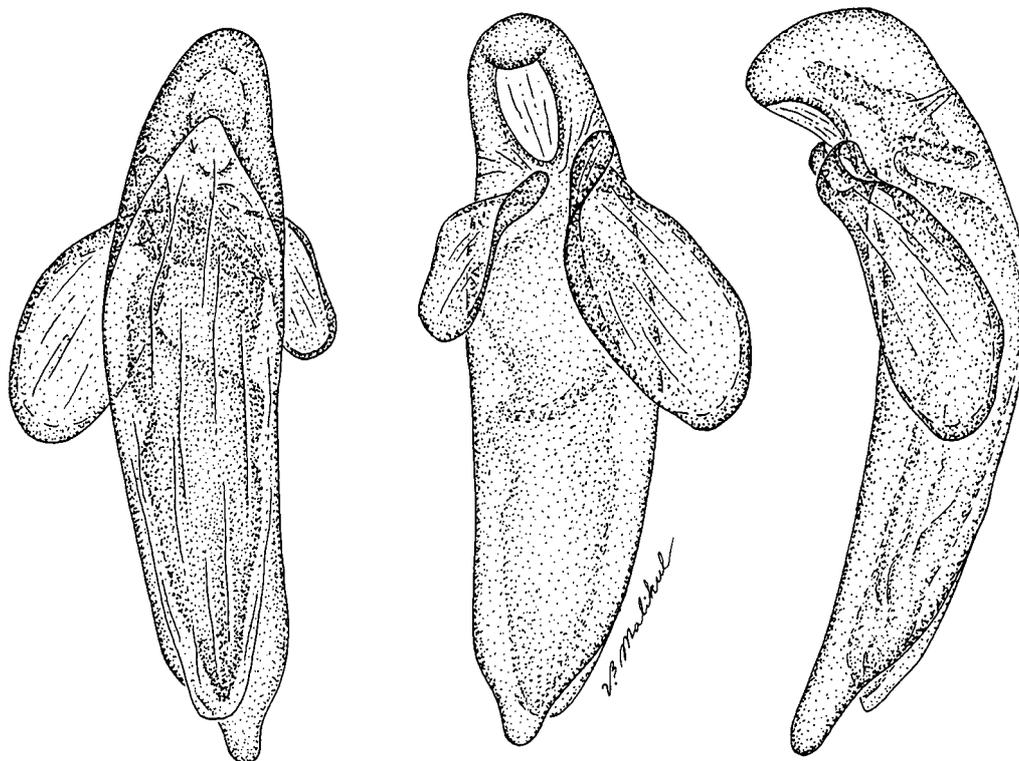


FIGURE 6. Aedeagus, dorsal, ventral, left lateral aspects of *Pseudophorticus puncticollis* Erwin new species.

Way of life. The information associated with specimens of this genus elsewhere, for example in Perú, indicate that they live inside the lowland forest and can be found along any trail there with activity in the daytime. They are also active at night as member of a fig fall guild (Erwin 1985).

Other specimens examined. Paratype: 1 male, COSTA RICA: Limón, Hamburg Farm, Rio Reventazon, Ebene, 100 m, 10° 15' N, 083° 28' W, March (F. Nevermann)(NMNH: ADP 004532).

Geographic distribution. (Fig. 13). Known only from Costa Rica.

Notes. Representatives of several other species are in the NMNH collections; their elytral markings are different, or they have rufous head and pronotum rather than piceous as in the present species, and they are all fully winged. A monographic revision of this group is necessary and will likely be scientifically rewarding because of the wingless state of this species and the association with *Atta* ants of other species.

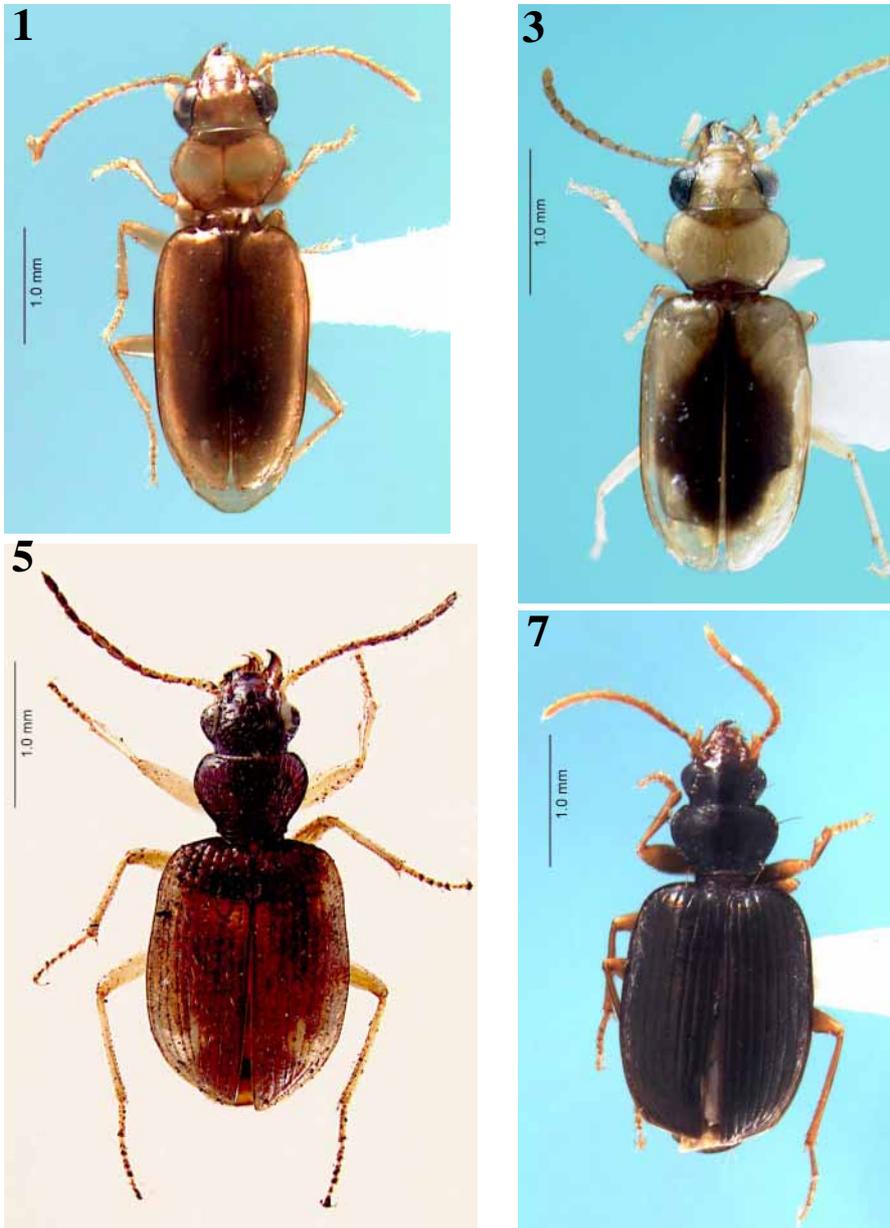


FIGURE 1. Dorsal habitus of *Tachysbembix sirena* Erwin new species. **FIGURE 3.** Dorsal habitus of *Tachysbembix wendyporrasae* Erwin new species. **FIGURE 5.** Dorsal habitus of *Pseudophorticus puncticollis* Erwin new species. **FIGURE 7.** Dorsal habitus of *Guatemalteca virgen* Erwin new species.

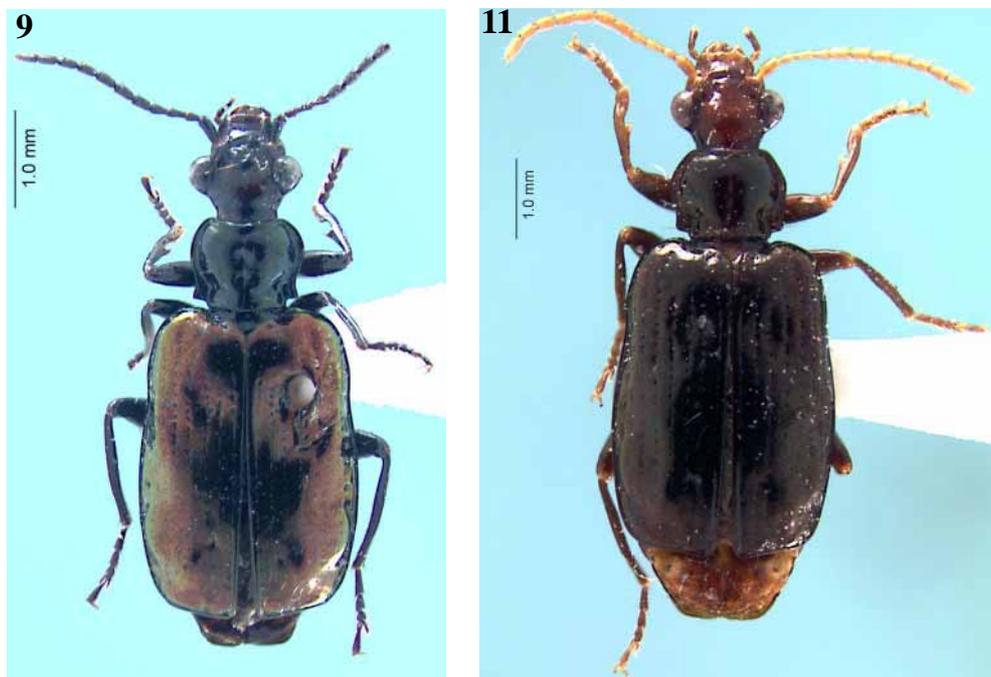
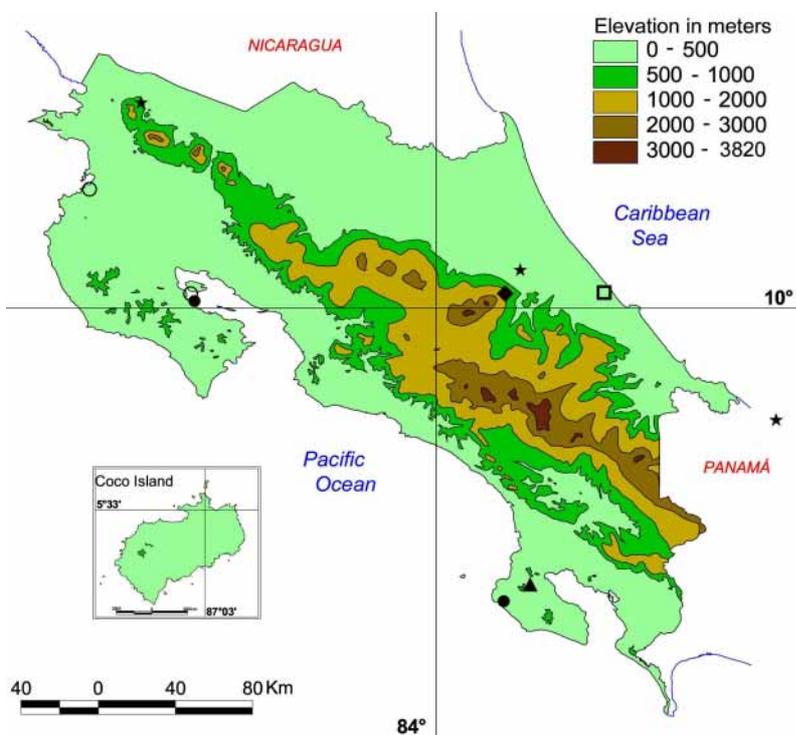


FIGURE 9. Dorsal habitus of *Valeriaaschero flora* Erwin new species. **FIGURE 11.** Dorsal habitus of *Valeriaaschero nigrita* Erwin new species.

FIGURE 13. Geographical distribution map of the new taxa in Costa Rica and Panamá: *Tachysbembix sirena* Erwin new species (solid circle — ●), *Tachysbembix wendyporrasae* Erwin new species (open circle — ○), *Pseudophorticus puncticollis* Erwin new species (open box — □), *Guatemalteca virgen* Erwin new species (diamond — ◆), *Valeriaaschero flora* Erwin new species (star — ★), *Valeriaaschero nigrita* Erwin new species (triangle — ▲). Note star (★) in Panamá (see text).



***Guatemalteca* Erwin, new genus**

(Fig. 7)

Type species. *Guatemalteca virgen* Erwin, **new species**

Derivation of genus name. I first collected a member of this genus in Guatemala in May of 1973 along a small brook and even though I didn't know what it was, I did recognized it as something extraordinary. Hence, the name *Guatemalteca*, a feminine noun, is a reminder of that collecting event and refers to the fact that at least one species of this new genus is resident in Guatemala.

Diagnosis. (Fig. 7). Labial palpomere 3 acuminate apically; male anterior tarsi with well-developed ventral adhesive setae on basal 3 tarsomeres; elytron with dorsal surface markedly iridescent; legs pale; elytron without ocellate fovea; dorsal surface not green; head and pronotum smooth, without marked punctures; elytron glabrous, with discal (third interval) and lateral umbilicate fixed setae only; venter of female with vestiture on sterna 3–6 only, a pair of ambulatory setae on sternum 3–5 and 4 ambulatory setae on sternum 6; venter of male glabrous except for a pair of ambulatory setae on sterna 3–6. Male genitalia remarkable small for length of adult.

Geographic distribution. Neotropical cloud forests, from México to Perú and can be expected in the Yungas of Bolivia and Argentina.

Notes. This lineage of beetles is without reference in the literature, hence everything about them is reported here for the first time in association with the Costa Rican species. However, many more species are in the cloud forests of Latin America and this could be an important monographic project for the taxonomist who has an interest in cloud forest carabid beetles. In fact, as it turned out, my classmate and later colleague at the NMNH, Donald R. Whitehead, had collected one specimen of this genus in México in 1963. This specimen was placed amongst the Platynini in the collection of G. E. Ball for many years until Ball recognized it as something special, as well. This lineage is probably related to the *Eucaerus*, *Lachnaces*, *Askelpia* lineages of Lachnophorini.

***Guatemalteca virgen* Erwin, new species**

(Figs. 7, 8, 13)

Holotype. Male. COSTA RICA: Heredia, 16.0 km SSE La Virgen, 1050–1150 m, 10° 16' N, 084° 05' W, LN527381,257085, April (Proyecto Alas Transect) (INBio-OET: INB0003214696).

Derivation of specific name. The specific epithet, *virgen* in Spanish, is used as a noun in apposition based on the type locality which is near La Virgen, Heredia, Costa Rica.

Common name. Virgin cloud forest carabid.

Description. (Fig. 7). Size moderately small: ABL = 4.6 to 5.6 mm, SBL = 4.4 to 5.1 mm, TW = 1.8 to 2.3 mm. *Color:* Brown; appendages testaceous. *Luster:* Very shiny with

iridescent reflections. *Microsculpture*: Very fine transverse lines. *Head*: Narrow, narrower than pronotum and highly convex; eyes medium, not produced; antennae with gradually expanded terminal antennomeres. *Prothorax*: Pronotum markedly cordiform, hind angles rounded with a very small setiform dent. *Pterothorax*: Flight wings fully developed. *Legs*: Normal for lachnophorines. *Abdomen*: Normal for lachnophorines, except vestiture of female restricted to sterna 3–6. *Male genitalia*: Phallus remarkably small, flat and broad with no internal sclerites; left paramere markedly large (Fig. 8).

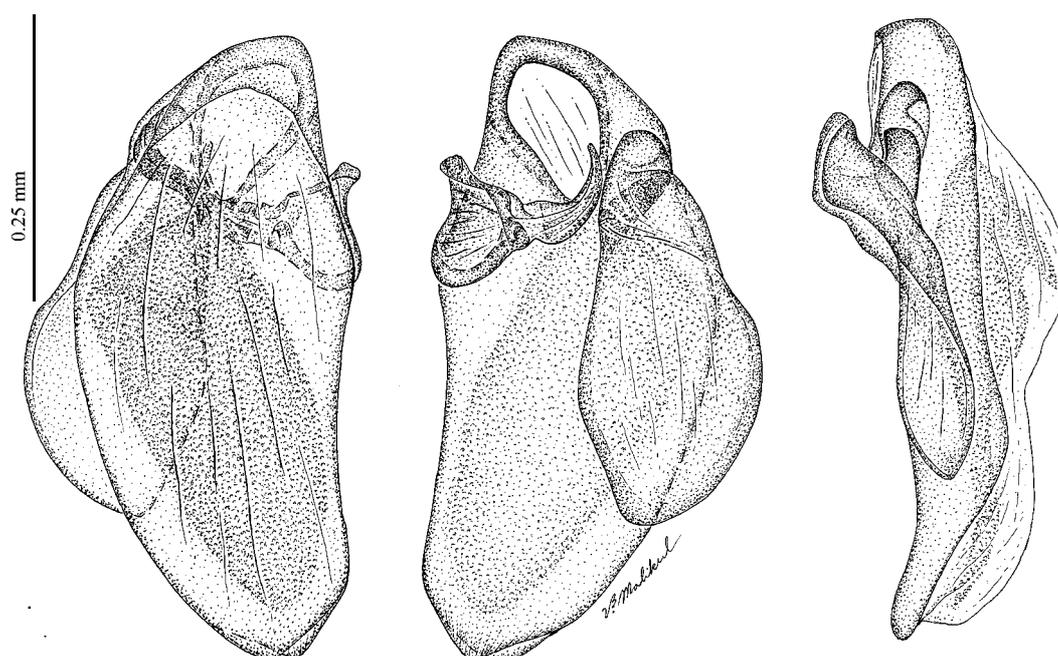


FIGURE 8. Aedeagus, dorsal, ventral, left lateral aspects of *Guatemalteca virgen* Erwin **n. sp.**

Dispersal potential. These beetles have been collected by the Parataxonomists associated with the ALAS Project in malaise traps, flight intercept traps, and at black lights, thus they are active dispersers.

Way of life. A related species in Guatemala occurs along small streams under stones. In Ecuador, species are very active at night on wet open ground with mosses in cloud forests at 2200–2400 m.

Other specimens examined. Paratypes: 59, COSTA RICA: Heredia, 16.0 km SSE La Virgen, 1050 – 1150 m, 10° 16' N, 084° 05' W, LN527381,257085, February, March, April (Proyecto Alas Transect)(INBio-OET: 33 females, INB0003203405, INB0003205365, INB0003205366, INB0003209404, INB0003209509, INB0003209510, INB0003209587, INB0003210165, INB0003210288, INB0003210542, INB0003210543, INB0003210627, INB0003210836, INB0003210934, INB0003211576, INB0003211606, INB0003211607, INB0003211608, INB0003214516, INB0003214540, INB0003214713, INB0003214908,

INB0003214968, INB0003214979, INB0003215010, INB0003215145, INB0003215208, INB0003215237, INB0003210482, INB0003214872, INB0003214917, INB0003209737, INB0003211335); 26 males, INB0003209508, INB0003205205, INB0003205312, INB0003209115, INB0003209562, INB0003209642, INB0003209737, INB0003210482, INB0003210483, INB0003210572, INB0003211335, INB0003214557, INB0003214612, INB0003214613, INB0003214794, INB0003214805, INB0003214834, INB0003214872, INB0003214917, INB0003214938, INB0003215050, INB0003215062, INB0003215126, INB0003215162, INB0003215256, INB0003215278, INB0003215383.

Geographic distribution. (Fig. 13). Known only from one Costa Rica site at lower middle altitudes, but undoubtedly more widespread in Costa Rican cloud forests.

Notes. See notes under genus description above. Members of this species are quite varied in size.

Tribe Lebiini

Valeriaaschero Erwin, new genus

(Figs. 9, 11)

Type species. *Valeriaaschero flora* Erwin, new species

Derivation of genus name. The generic name, *Valeriaaschero*, used as a feminine noun based on the first and last name of my Argentine student and good friend, Valeria Aschero, who shared with me the rediscovery of **another** incredibly rare and little known carabid beetle species (much like the one described here) in the Salinas Grandes of Argentina: *Cicindis horni* Bruch (Erwin & Aschero in prep).

Diagnosis. (Figs. 9, 11). Head ventrally without suborbital setigerous punctures; mandible widened near base, scrobe wide, lateral margin markedly rounded; antennomere 4 glabrous except for apical ring setae; neck not markedly narrowed, head not pedunculate; posterior tibial spurs subequal, their margins smooth; elytron at basal third depressed, surface uneven; penultimate setigerous puncture of elytron umbilicate series not displaced laterally; elytron without trace of tubercles, although marginal intervals with callus at apical third.

Geographic distribution. Known only from the two species, one of which is described herein from lowland forests east of the Cordilleras in Costa Rica and northwestern Panamá and the other from west of the Cordilleras in the Osa Peninsula of Costa Rica.

Notes. Members of this genus differ from those of *Aspasiola* Chaudoir, its likely adelphotaxon, by the following structural attributes: broad, non-constricted neck; quadrate pronotum; proportionately longer and narrower elytra with deeper transverse impression at anterior third, and markedly developed callus marginally at basal third; male endophallus without flagellum.

***Valeriaaschero flora* Erwin, new species**

(Figs. 9, 10, 13)

Holotype. Male. COSTA RICA: Guanacaste, P.N. Guanacaste, Estación Pitilla, Santa Cecilia, 700 m, 10° 59' 33" N, 085° 25' 46" W, LN330200,380200, November (C. Moraga)(INBio: CRI001162521).

Derivation of specific name. Members of this species occur in the tree species *Goethalsis meiantha* (Donn. Sm.) Burret, hence the Latin noun used in apposition, *flora*, implies something of their way of life.

Common name. Valeria's violet arboreal carabid.

Diagnosis. With the attributes of the genus and vertex of head dark rufous, antennal scape infuscated, and elytra metallic coppery violaceous or brassy green depending upon angle of view.

Description. (Fig. 9). Size medium: ABL = 5.9 to 6.4 mm, SBL = 5.7 to 5.9 mm, TW = 2.4 to 2.6 mm. *Color:* Pronotum brassy green; elytra metallic coppery violaceous or brassy green; head with vertex rufous; appendages and venter partially infuscated, partially dark rufous. *Luster:* Very shiny, color reflections change depending upon angle of view. *Microsculpture:* Effaced from dorsal surfaces. *Head:* Slightly wider than pronotum across eyes; frontal furrows markedly impressed to posterior margin of eyes; frons with convex callous at middle; eyes large, markedly produced; ultimate labial palpomere securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Narrow, quadrate, markedly convex, margins moderately explanate, sinuate before moderately produced acute hind angles. *Pterothorax:* Normal for Agrina, fully winged. *Legs:* Normal for Agrina. *Abdomen:* 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 — tubular, catopic, apex long and narrow, endophallus without armature, parameres small, left more so than right (Fig. 10).

Dispersal potential. These beetles are fully winged and likely are good dispersers, as are most arboreal beetles.

Way of life. These beetles belong in a subtribal level clade in which all the species are arboreal. One specimen (CRI002729942) was fogged from the tree *Goethalsis meiantha* (Donn. Sm.) Burret, as part of the ALAS Project at La Selva.

Other specimens examined. Paratypes, 1 female: COSTA RICA:, Heredia, 3.0 km S Puerto Viejo, Estación Biologica La Selva, 50–150 m, 10° 25' 55" N, 84° 00' 32" W, LN535500,268000 May (Proyecto Alas)(INBio-OET: CRI002729942); 1 male: Heredia, 3.0 km S Puerto Viejo, Estación Biologica La Selva, 50–150 m, 10° 25' 55" N, 84° 00' 32" W, LN535500,268000 July (N. Franz)(SEMC: ADP 100407); 1 male: PANAMA, Bocas del Toro, Corriente Grande, 100 m, 9° 17' 30" N, 082° 32' 41" W, January (Stockwell)(NMNH: ADP59903).

Geographic distribution. (Fig. 13). Known only from Costa Rica and northwestern Panamá.

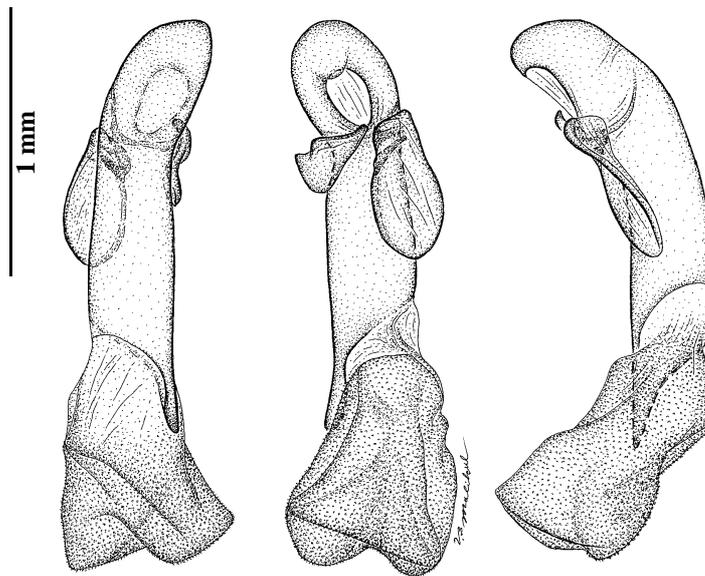


FIGURE 10. Aedeagus, dorsal, ventral, left lateral aspects of *Valeriaaschero flora* Erwin **n. sp.**

***Valeriaaschero nigrita* Erwin, new species**

(Figs. 11, 12, 13)

Holotype. Male. COSTA RICA: Puntarenas, Peninsula de Osa, Rancho Quemado, 200 m, 8° 40' 44" N, 83° 34' 00" W, LS292500,511000, September (F.A. Quesada)(INBio: CRI001408247).

Derivation of specific name. Members of this species resemble the preceding species except in coloration, hence the Latin adjective, *niger*, from which *nigrita* is derived, suggests the color of their dark elytra and infuscated pronotum.

Common name. Valeria's somber arboreal carabid.

Diagnosis. With the attributes of the genus and top of head bright rufous contrasting markedly with dark genae, testaceous antennae, and elytra shiny piceous.

Description. (Fig. 11). Size medium: ABL = 6.3 mm, SBL = 5.7 mm, TW = 2.4 mm. *Color:* Pronotum shiny piceous with rufous lateral explanations; elytra shiny piceous; head with entire top bright rufous; appendages and venter partially infuscated, partially dark rufous. *Luster:* Very shiny throughout. *Microsculpture:* Effaced from dorsal surfaces. *Head:* Slightly wider than pronotum across eyes; frontal furrows markedly impressed to posterior margin of eyes; frons with convex callous at middle; eyes large, markedly produced; ultimate labial palpomere securiform; antennae of moderate length, reaching just posterior of humerus. *Prothorax:* Narrow, quadrate, markedly convex, margins moderately

explanate, sinuate before moderately produced acute hind angles. *Pterothorax*: Normal for Agrina, fully winged. *Legs*: Normal for Agrina. *Abdomen*: Normal for Agrina; glabrous, except normal ambulatory setae on sterna 3–5 and males with two pair of ambulatory setae on sternum 6, female unknown. *Male genitalia*: Aedeagus — phallus tubular, catopic, apex moderately long and narrow, endophallus without armature, parameres small, right more so than left (Fig. 12).

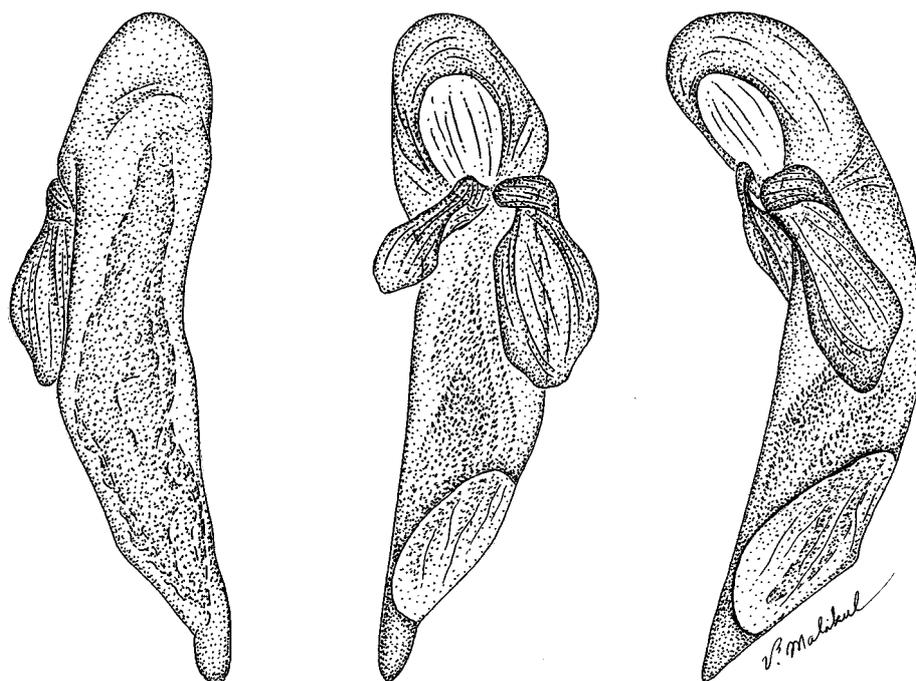


FIGURE 12. Aedeagus, dorsal, ventral, left lateral aspects of *Valeriaaschero nigrita* Erwinnew species

Dispersal potential. These beetles are fully winged and likely are good dispersers, as are most arboreal beetles.

Way of life. These beetles belong in a subtribal level clade in which all the species are arboreal, however the single known specimen's method of capture was not recorded.

Geographic distribution. (Fig. 13). Known only from Costa Rica.

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