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from Central America (Coleoptera: Cerambycidae)

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## A new genus and two new species of Pteroplatini Thomson from Central America (Coleoptera: Cerambycidae)

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**Abstract.** A new genus and species in the tribe Pteroplatini Thomson, *Nubosoplatus inbio* Swift, and a new species of *Corynellus* Bates, *C. lampyrimorphus* Swift, are described from cloud forest habitats in Costa Rica.

**Key words.** Central America, Cerambycinae, new genus, new species, taxonomy, key to species, mimicry

**Resumen.** Un nuevo género y especie en la tribu Pteroplatini Thomson, *Nubosoplatus inbio* Swift, y una nueva especie de *Corynellus* Bates, *C. lampyrimorphus* Swift, se describen de los hábitats de los bosques nubosos en Costa Rica.

**Palabras clave.** Centroamérica, Cerambycinae, nuevo género, nuevas especies, taxonomía, clave para especies, mímica

### Introduction

Eight Neotropical genera comprise the tribe Pteroplatini (Cerambycidae: Cerambycinae) (Monné et al. 2007) in the Western Hemisphere. Members of the tribe are mimetic upon various models, the most common of which are Lycidae (Coleoptera) (Linsley 1961a). However, other Coleoptera families involved in the mimetic assemblage include Cantharidae, Lampyridae, and Cleridae, as well as the order Lepidoptera (Linsley 1961b).

Intensive collecting over the last two decades in Costa Rica by Instituto Nacional de Biodiversidad (INBio) biologists and parataxonomists has yielded specimens of several undescribed pteroplatine taxa, two of which are described herein. More recently, one of these taxa has been collected by a number of field biologists on expeditions to Costa Rica. Most of the known localities for these species are in mountainous cloud forest habitats at elevations above 1,000 m.

Specimens of an undescribed pteroplatine, from mid to upper elevations in the Cordillera de Tilarán, differ markedly from any other members of the tribe. Placement within an existing genus would likely destabilize generic limits, or cause the redefinition of any genus into which it may be placed. Therefore, a new genus is proposed to recognize several unique combinations of characters present in this taxon. A second species, placed in the genus *Corynellus* Bates, is described from cloud forest habitats in the Cordillera de Guanacaste. It is hoped that future phylogenetic investigations into the tribe will help resolve relationships of the current taxa. Napp and Martins (2006) provided a generic key to the Pteroplatini, and their modified key incorporating the new genus described herein is provided. Additionally, a key to all the species of *Corynellus* is presented.

### Materials

The following collections were examined for this study: CASC (California Academy of Sciences Collection, San Francisco, California, U.S.A.); EMEC (Essig Museum of Entomology Collection, University of California, Berkeley, California, U.S.A.); FSCA (Florida State Collection of Arthropods, Gainesville, Florida, U.S.A.); INBio (Instituto Nacional de Biodiversidad, Santo Domingo, Heredia, Costa Rica); ISPC (Ian Swift Private Collection, Santa Clarita, California, U.S.A.); USNM (National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.). Types are deposited in the collection of INBio, and paratypes as indicated by their institutional acronyms. An additional paratype has been deposited in

both the Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brasil (MNRJ) and the Museu de Zoologia, Universidade de São Paulo, São Paulo (MZSP).

### ***Nubosoplatus* Swift, new genus**

(Figure 1A-C, 3)

**Description** (both sexes). Form: elongate, dorsoventrally flattened, elytra parallel-sided.

**Head:** with front short, transverse, gena obtusely rounded at apex, about one-half the length of the lower eye lobe, palpi subequal in length, apical palpomeres cuneate, apices obliquely truncate to rounded; antennal tubercles weakly produced, rounded, scape robust, conical, narrowing anteriorly, basal antennomeres (III-VI) elongate, subconical to subcylindrical, each thickened apically, apical antennomeres (VII-XI) slightly flattened and acutely expanded externally at apices, XI simple, antennomeres lacking carinae, penicilli, setal fringes or other modifications, III and IV subequal in length to one another, each about one-third shorter than V, V slightly shorter than VI, VI subequal in length to VII.

**Thorax:** subquadrate in dorsal outline, anterior and posterior margins equilateral in width, feebly constricted, pleura angulate, slightly inflated to weakly and broadly tuberculate, dorsal surface flattened medially; prosternum broad, male with impressed, punctate areas on the pleura, procoxal process narrow, arcuate between coxae, apex expanded, rounded, procoxal cavities open posteriorly; mesosternal process short, transverse, becoming declivous anteriorly from coxae, mesocoxal process broad, extending to posterior margin of coxae, apex longitudinally impressed, bilobed, only slightly expanded laterally; metasternum flat medially, weakly expanded posteriorly; metepisternum parallel-sided anteriorly, tapered at posterior one-quarter, scent pore evident; scutellum subquadrate, apex rotundate-truncate.

**Elytra:** integument bicostate on each elytron, epipleura vertical at basal one-third, lateral declivity weakly indicated at margin of subhumeral costa, margins weakly explanate laterally on apical one-half, integumental sculpturing more pronounced in female, apices rounded to suture, thinly fringed with short setae.

**Legs:** with femora clavate, tibia stout, thickened and expanded apically.

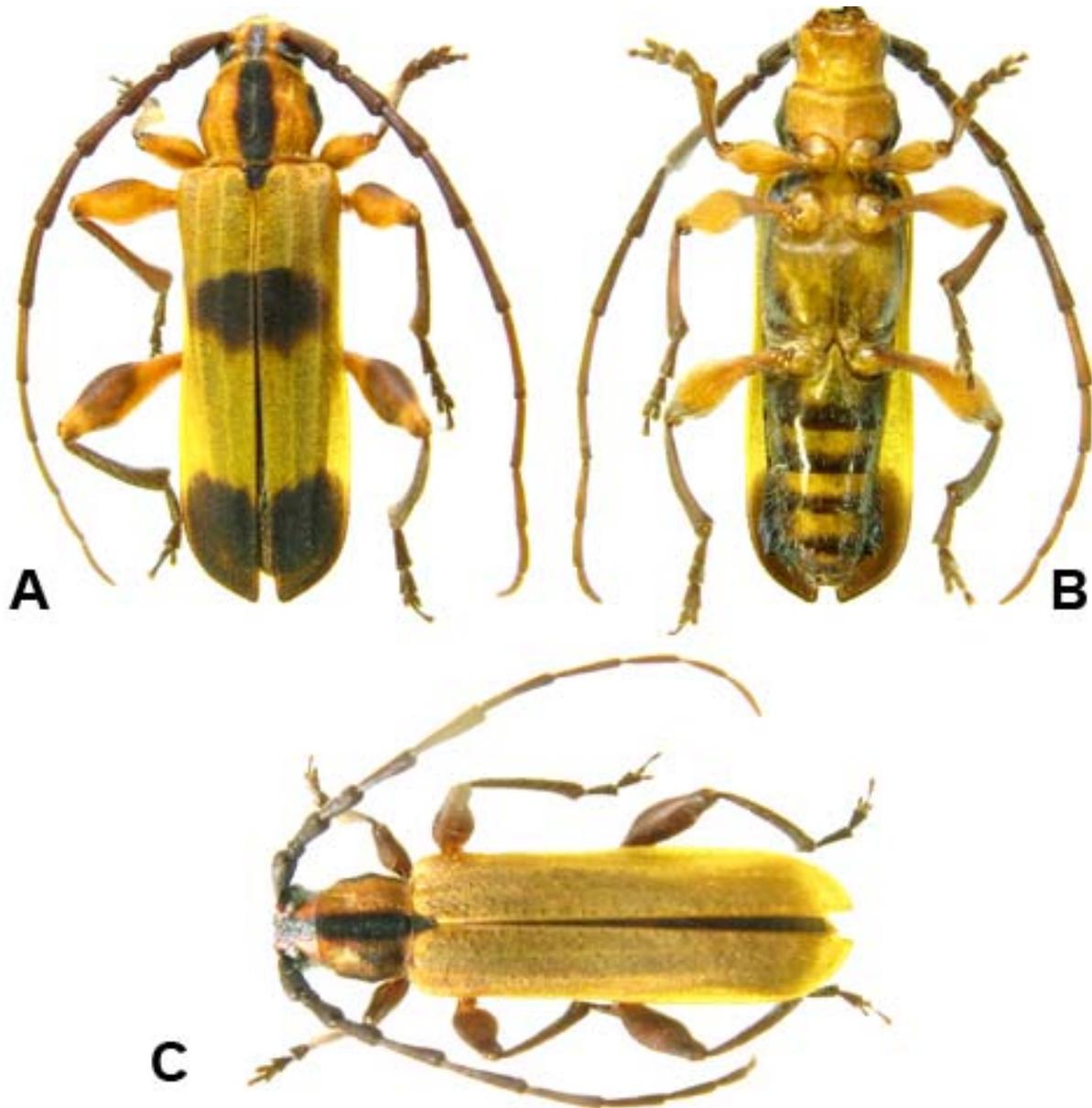
**Abdomen:** unmodified in either sex.

**Type species.** *Nubosoplatus inbio* Swift.

**Diagnosis.** *Nubosoplatus* is placed within the tribe Pteroplatini, based upon overall character similarities with *Pteroplatus* Buquet. Among pteroplatine genera, *Nubosoplatus* keys to the couplet containing *Pteroplatus* and *Corynellus* in Napp and Martins (2006). There are many characters shared with members of the genus *Pteroplatus*, including the costate elytra, similar pronotal sculpturing, bilobed mesosternal process, and overall coloration and pattern. However, *Nubosoplatus* may be distinguished by the basal antennomeres which are not penicillate-fimbriate, and exceed the elytral apices in the males, broader procoxal process, and the elytra which are parallel-sided, and less strongly sculpted.

Female specimens of *Nubosoplatus* share several characters with *Corynellus*. Both sexes are yellow-orange in color and have unmodified antennae. The much shorter genae, laterally expanded pronotum, cuneate apical palpomeres, broader mesocoxal process, and longer antennomere ratios will distinguish *Nubosoplatus*. *Corynellus* has the gena and frons more elongate and subequal in length to the lower eye lobes, appearing more prognathic, the pronotum is evenly rounded, the apical palpomeres are elongate and unexpanded, and the antennae are shorter wherein III is slightly longer than IV, with V about one-fourth longer than IV, IV-VII subequal to one another in length.

**Etymology.** This generic epithet is a combination of *nuboso* (Spanish = cloud), and *platus* a reference to the tribal name. It alludes to the cloud forest habitat of this pteroplatine taxon. It is masculine in gender.



**Figure 1.** *Nubosoplatus inbio*, males. **A)** Dorsal habitus. **B)** Ventral habitus. **C)** Dorsal habitus showing color variation.

***Nubosoplatus inbio* Swift, new species**

(Figure 1A-C, 3)

**Description.** *Male:* as in figure 1A-C, form moderately robust, parallel-sided, integument opaque, abdomen glossy, dorsal coloration orange-yellow with black maculae.

*Head:* very finely, densely or confluent punctate, thinly-clothed with fine, appressed pubescence with sparse, long, erect, golden setae; temporal region glabrous and impunctate; front-clypeal suture glossy, impunctate, front laterally impressed before lower eye lobes, vertex weakly, longitudinally impressed; eyes emarginate, lower lobe moderately large, subtriangularly rounded, upper lobes moderately narrow, rounded, separated on vertex by about one-fourth more than the greatest width of the antennal scape, ommatidia fine; antennae surpassing elytral apices by about one antennomere, scape, pedicel, and

III-VI glossy, moderately coarsely, densely punctate, clothed with short, appressed, black to dark orange setae and sparse, longer suberect setae, apical antennomeres dull, minutely, poriferous and minutely pubescent, sparsely scattered longer setae at apices of VII and VIII.

*Thorax:* wider than long, widest across lateral tumid areas, pleura obtusely, broadly angulate-tuberculate to enlarged at middle, narrowly angulated anteriorly, with a low, obtusely-angulate postmedian tumescence at the pleura of the disk, apex and inner margin of tumescence with glossy, impunctate calli, lateral portions of disk on apical one-half broadly impressed, midline and basal one-half of disk unmarked, surface finely to moderately coarse, densely, irregularly punctate, a dull, impunctate longitudinal postmedian callous on midline; prosternum with large, quadrate, coarsely rugosely punctate impression at either side of narrow midline, thinly clothed with appressed pubescence and scattered erect setae; meso- and metasternum finely punctate, sparsely pubescent; metepisternum minutely punctate and pubescent; scutellum slightly longer than broad, impressed medially, finely, densely punctate, thinly clothed with appressed black pubescence.

*Elytra:* with sides parallel, rounded to suture, sutural angle narrowly rounded; integument minutely granulate, finely, shallowly, sparsely punctate basally, becoming nearly impunctate apically, moderately densely clothed with short, appressed pubescence and sparse, longer, thicker, erect setae, lateral margin fringed with short, suberect setae, denser apically.

*Legs:* with femora clavate, apices rounded, finely, irregularly punctate, sparsely pubescent; tibiae weakly curved anteriorly, finely, densely punctate and pubescent, metatibia with two short, thin apical spurs; tarsi moderately expanded, first metatarsomere subequal in length to following two together.

*Abdomen:* weakly concave, surface finely, moderately densely punctate and pubescent with black appressed setae, apex of fifth sternite and fifth tergite broadly subtruncate, thinly fringed with long setae.

*Length:* 8.33-12.54 mm, mean = 10.74,  $n = 11$ .

*Female:* Coloration and pattern variation as in the male, differing by the broader, more explanate dorsum; antennae extending only to apical two-thirds of elytra, antennomeres abbreviated, basal antennomeres more conical, apical antennomeres subcylindrical; pronotal tumescences less-strongly developed; prosternum lacking impressed punctate areas, surface finely, uniformly punctate and pubescent, procoxal process slightly broader; mesocoxal process more flattened; legs less robust, femora less clavate; abdomen more elongate and convex, fifth sternite broadly rounded apically, weakly impressed medially, fifth ventrite elongate, flattened, broadly rotundate to truncate apically, weakly notched medially.

*Length:* 7.98-13.80 mm,  $n = 7$ ; (both sexes) overall range 7.98-13.80 mm,  $n = 18$ .

**Type material.** *Holotype* male and *allotype* deposited in INBio from: Costa Rica, Guanacaste Province, Cacao Biological Station, southeast side of Volcán Cacao, 1,000-1,400 m, July 1989-March 1990, in Malaise trap, LN323300, 375700.

Additional *paratypes*: two males and two females, same data as holotype (INBio); three males and one female from: Costa Rica, Puntarenas Province, Monteverde, 29-31 December 1979 and 24 December 1985, E. Giesbert collector (FSCA); one male from: Costa Rica, Puntarenas Province, San Luis Monteverde, 1,000-1,350 m, December 1994, LN 250850 449250 #6169, Z. Fuentes, collector (MZSP); one female from: Costa Rica, Guanacaste Province, Cabro Muco Biological Station, Volcán Miravalles, 1,100 m, 16 March-03 April 2003, in Malaise trap, LN 299769 411243 #73586, in Malaise trap #8, J. Azofeifa, B. Hernández, J. D. Gutiérrez, collectors (MNRJ); one female from: Costa Rica, Monteverde, 4,000', 09 July 1983, H. W. Colby, collector (CASC); one male from: Costa Rica, Puntarenas Province, Monteverde, 1350 m, 23 November 1987, no collector (USNM); two males, two females from: Costa Rica, Puntarenas Province, Monteverde Cloud Forest Reserve, 10°19'03.42"N/84°48'26.62"W, 1,499 m, 28-30 May 2007, I. Swift, A. M. Ray, B. D. Streit, collectors (EMEC).

**Diagnosis.** This species is distinctive from similar-appearing pteroplatine taxa by the characters enumerated in the generic diagnosis. Immaculate female *N. inbio* may be similar in coloration to *Corynellus ochraceus* Bates, but differ by the much less coarsely punctate elytral disk, and longer appendages. Among the type material no two maculate specimens are exactly alike in the extent and configuration of the dark maculae, with the antemedian elytral maculae ranging from narrow to fully expanded into a broad band across the disk and extending anteriorly along the suture. A few specimens have the antennae tinged with orange including VI-XI, and femora entirely tan-orange with black.

The type series is generally colored with the head yellow-orange, a median longitudinal black vitta and post-ocular black macula, prothorax yellow-orange with moderately-broad longitudinal median vitta and a broad lateral vittae on either side below disk, prosternum and median portion of mesosternum orange, elytra orange to yellow-orange, ranging from immaculate to having black maculae at apical one-third to one-fourth and including an antemedian sutural maculae or transverse band, the anterior margin usually extending along suture to scutellum, scutellum black, appendages and underside all or partially orange to black; body pubescence golden on orange-yellow integument, black on dark integument, including maculae, femoral pubescence pale, antennal and tibial pubescence dark.

The variation in elytral maculation is similar to that exhibited in other mimetic cerambycid species found in the region, including *Mimiptera fulvella* (Bates) (Lepturinae: Lepturini) and *Lycomorphoides simulans* Linsley (Lepturinae: Lepturini), which also have immaculate and maculated forms. Although participation in a mimetic complex has not yet been conclusively demonstrated for these taxa, the common dorsal pattern variability suggests that they may be involved in more than one mimetic assemblage, perhaps involving Cantharidae (immaculate forms) and Lycidae (maculate forms).

**Ecology.** The larval habits are unknown, but specimens have been taken walking and mating on freshly-cut *Psidium guajava* L. (Myrtaceae) in cloud forest habitats in and around the Monteverde Cloud Forest Reserve in the Cordillera de Tilarán. A few specimens were taken at building lights around the reserve. Most of the type series was taken during the primary montane dry season in Costa Rica, between late December and early March, with the remainder having been collected in July and August, during the “little dry season” or *veranillo*.

**Etymology.** The specific epithet honors the Instituto Nacional de Biodiversidad (INBio), whose early collecting efforts and exploration of Costa Rica’s biodiversity first brought attention to this taxon. It is a noun in apposition.

### Modified Key to the Pteroplatini

A modified key to the Pteroplatini is presented based on Napp and Martins’ (2006) revised key to the genera of the tribe. In their key, *Nubosoplatus* will run to couplet seven. This couplet can be modified, as presented below, to accommodate this new genus as well as *Pteroplatus* and *Corynellus*.

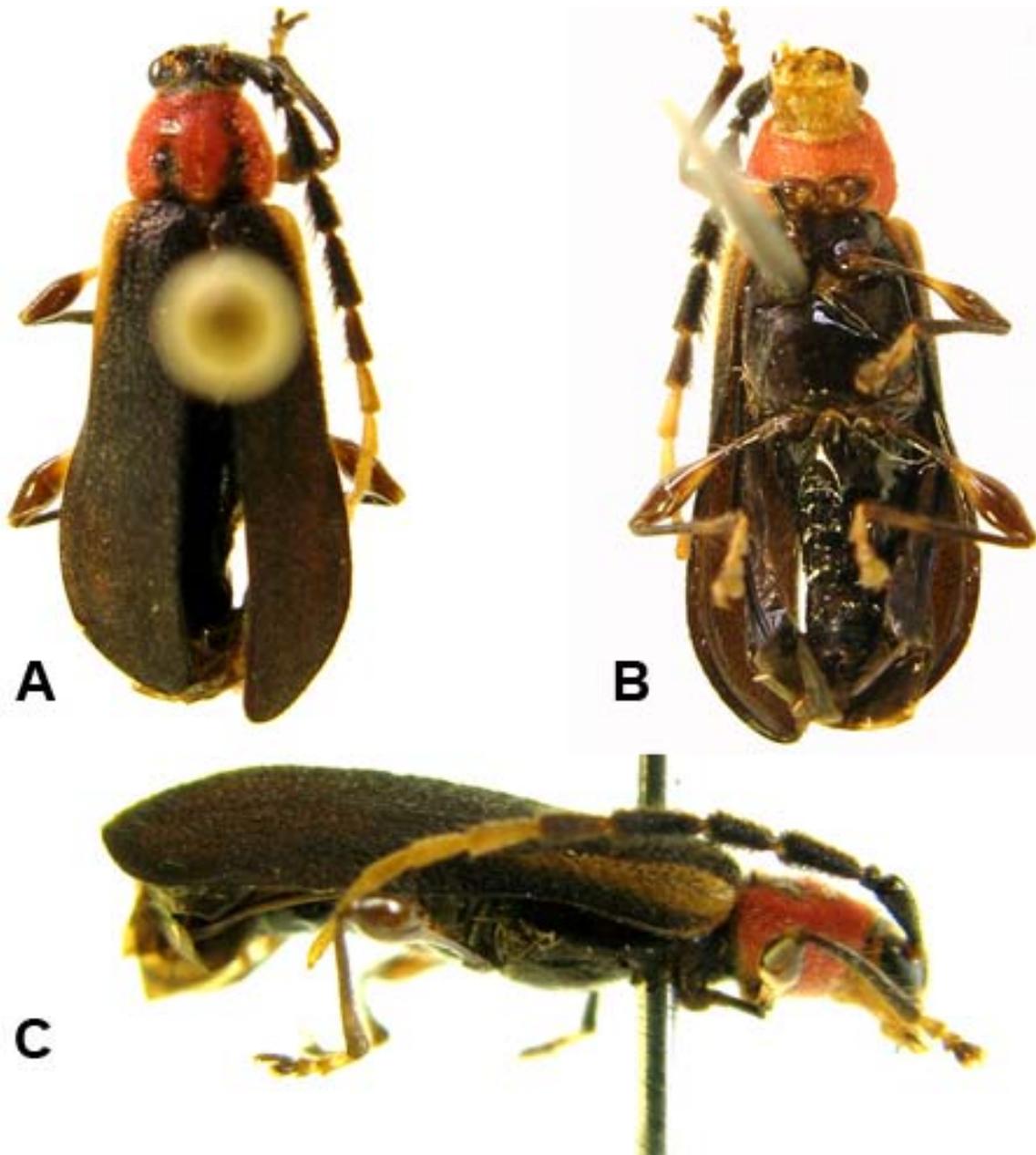
- 7(6) Elytra not costate-vittate; pronotum evenly, smoothly rounded; antennomere V longer than VI; femora abruptly clavate ..... ***Corynellus* Bates**  
 — Elytra costate-vittate; pronotum enlarged to weakly tuberculate; antennomere V shorter than or equal to VI; femora gradually clavate ..... **8**
- 8(7) Elytra distinctly explanate towards apex, costae deeply sculptured; basal antennomeres with penicillate tufts of setae, antennae not exceeding elytral apices in males ..... ***Pteroplatus* Buquet**  
 — Elytra parallel-sided, weakly costae to nearly vittate; antennae lacking penicillate tufts of setae, antennae exceeding elytral apices in males ..... ***Nubosoplatus* Swift**

### ***Corynellus lampyrimorphus* Swift, new species**

(Figure 2A-C, 3)

**Description.** *Female:* as in figure 2A-C, form dorsoventrally flattened, elytra explanate apically, integument black with red-pink pronotum.

*Head:* densely punctate, clothed with small, appressed pubescence; central frons region glabrous, frontoclypeal suture somewhat obscured, glabrous; eyes emarginate, lower lobe large, rounded, upper lobes moderately narrow, rounded, separated on vertex by about twice the width of the lower lobe, ommatidia fine; antennae attaining about three-quarters of the elytral apices, scape distinctly conical, glossy,



**Figure 2.** *Corynellus lampyrimorphus*, female. A) Dorsal habitus. B) Ventral habitus. C) Lateral habitus.

with black erect setae, II-VI black, fairly densely clothed with short, erect, black setae of varying sizes and thickness, VII-XI yellow-white, clothed in minute appressed yellow setae.

*Thorax*: subtriangular in outline, widest below middle, weakly constricted posteriorly, wider than long, integument red-pink with two black maculae at either side of the midline; two unraised glabrous calli at either side lateral to the midline, lacking any tubercles; clothed with short appressed red-pink pubescence evenly throughout; evenly moderately punctate throughout (except calli), punctures spaced from others roughly by their diameter; scutellum equilaterally subquadrate, apical margin somewhat rounded, clothed with short, black, appressed setae; prosternum weakly concave, similar in vestiture to notum, procoxal cavities closed by less than their width, prosternal process narrow, weakly enlarged

posteriorly; meso- and metasternum glabrous, flat, glossy, with sparse suberect elongate setae, mesocoxal process narrow, much less than the width of a coxa, parallel-sided with two lobes directed posteriorly.

*Elytra*: distinctly explanate in outline, becoming so broadly and evenly from the humeri; integument black with short, appressed, suberect black and golden pubescence, the humeri and lateral margins with narrow, linear, yellow-tan vittae, terminating before the middle; punctation moderate, even throughout, upper declivity of punctures broadly rounded, not coarse or abrupt; apices broadly rounded to suture, sutural angle rounded, apical margin sparsely fimbriate with erect black setae, basal margins lacking setae.

*Legs*: femora abruptly clavate-pedicellate, black with tinges of yellow-tan at base of femora and apex of tibia, glabrous, glossy; metatarsi with two short spines; tarsi yellow-tan except tarsomere III which is black, tarsal claw inserted into III greater than half its length.

*Abdomen*: black to dark brown, narrowly tapering posteriorly, giving the abdomen a distinct “V” shape (lampyroid), glabrous, with sparse, erect, pale setae; ventrite V fimbriate-ciliate on apical margin, moderately emarginate ventrally and dorsally.

*Length*: 8.60-8.71 mm,  $n = 2$

*Male*: unknown.

**Type material.** *Holotype* female, deposited in INBio from: Costa Rica, Guanacaste Province, Pitilla Biological Station, 9 km south of Santa Cecilia, 700 m, March 1990, P. Rios, C. Moraga, and R. Blanco collectors.

Additional *paratype*: one female: Costa Rica, Hamburg Farm [= Hamburgo], Sta. Clara Pr. [= Limon] 23 February 1934, Nevermann Collection (EMEC).

**Diagnosis.** This species is placed in the genus *Corynellus*, with which it shares several characters, including the smooth, rounded pronotal shape, the broadly explanate and non-carinate elytra, non-penicillate antennae, and abruptly clavate femora. It differs from all members of the genus in having the apical antennomeres yellow-white, elytra entirely black with the exception of the humeri, the red-pink pronotum, and the narrowing V-shaped abdomen.

Within the genus, *C. lampyrimorphus* shares several characters with *C. mimulus* Bates, which include the black elytral apices, and black maculae on either side of the middle of the pronotum. *Corynellus lampyrimorphus* differs, however, by the characters previously mentioned.

*Corynellus* species are quite rare in collections, and the lack of larger series of most of the species makes differentiation difficult. Confounding this difficulty is the tendency of most mimetic cerambycid species to engage in more than one model (Linsley 1961a).

**Discussion.** A Costa Rican paratype of *C. cinnabarinus* Chemsak and Linsley (1979) that was “tentatively assigned” to that species appears to share several characters with *C. ochraceus* Bates. It should be considered conspecific with that taxon.

In the Linsley *et al.* (1961) key to *Corynellus*, *C. aureus* Linsley is described as having “penicillate” antennae. Upon examining the holotype, the antennae appear to possess moderately dense erect setae that do not form tufts or “penicilli”. Therefore, this character should not be associated with this genus, as it may cause confusion and create difficulty defining other genera such as *Pteroplatus*. Although not containing a full description, the characterization of *Corynellus* by Napp and Martins (2006) in their key should be used to define and diagnose the genus within the tribe.

### Key to the species of *Corynellus*

The key presented herein to the species of *Corynellus* should be considered tentative at best. Large series of many of the species are lacking, and data on overall intra- and interspecific character variation are not well supported.

1. Elytra maculated partly or entirely with black ..... 2
- Elytra unmarked, orange, red, or yellow-orange ..... 3



**Figure 3.** Map depicting the known range and localities of *Nubosoplatus inbio* (circles), and *Corynellus lampyrimorphus* (triangles).

- 2(1). Black elytral maculations confined to the apical half and suture; pronotum with three maculae, orange to yellow-orange in color ..... *C. mimulus* Bates  
 — Black elytral maculations on entire elytral disc, or nearly so; pronotum with only two maculae, red-pink in color ..... *C. lampyrimorphus* Swift
- 3(1). Pronotum with central black macula, connecting and continuing to posterior half of head .....  
 ..... *C. ochraceus* Bates  
 — Pronotum and head unmarked ..... 4
- 4(3). Legs entirely black; head, pronotum, and elytra red-orange .....  
 ..... *C. cinnabarinus* Chemsak and Linsley  
 — Legs entirely yellow orange; head, pronotum, and elytra orange to yellow-orange .....  
 ..... *C. aureus* Linsley

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