



A review of the Neotropical genus *Eucalandra* Faust, 1899 (Coleoptera; Curculionidae: Dryophthorinae)

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Abstract

The genus *Eucalandra* Faust is reviewed, including a redescription of the genus, diagnoses of the four previously described species, *E. boxi* Marshall, *E. luteosignata* (Blanchard), *E. mexicana* (Champion), comb. n., and *E. setulosa* (Gyllenhal), and the description of a new species, *E. alas* Anderson, **sp. n.**, from Costa Rica. A key to the five now known species is provided, along with illustrations of the species and summaries of their natural history and distribution. These weevils are associated with bamboos.

Key words: biodiversity, weevils, new species, bamboo, taxonomy

Introduction

The genus *Eucalandra* Faust, 1899 was described in a key to accommodate the species *Sitophilus setulosus* Gyllenhal, 1838. Since that time it has received little taxonomic attention, and specimens are rarely encountered. Studies on the Dryophthorinae of Costa Rica and Panama (Anderson 2002, 2003) revealed a number of undescribed species in a number of genera in this subfamily, including *Eucalandra*. Originally, only *E. setulosa* (Gyllenhal) was presumed to occur in lower Central America (O'Brien & Wibmer 1982, Anderson 2002), but detailed examination of newly available specimens indicated an additional undescribed species to occur there. This new species is here described, together with a redescription of the genus *Eucalandra* and a diagnosis of each of the four previously described species. The distributions of all species are mapped and their known natural history is summarized.

Eucalandra is now known to contain five species, distributed from Mexico south into southern South America. O'Brien & Wibmer (1982) recognized only the widespread *E. setulosa* in Central America, with *E. mexicana* (Champion), comb. n., erroneously placed as a synonym of the introduced *Polytus mellerborgii* (Boheman). In their South American checklist Wibmer & O'Brien (1986) recognized three species, *E. boxi* Marshall from Venezuela, *E. luteosignata* (Blanchard) and *E. setulosa*. A further species, *E. alas* Anderson, **sp. n.**, is here described from Costa Rica.

Genus *Eucalandra* Faust, 1899

Eucalandra Faust, 1899: 25, type species: *Sitophilus setulosus* Gyllenhal, 1838, by original designation (Faust 1899: 544); Vaurie 1967: 185; O'Brien & Wibmer 1982: 221; Wibmer & O'Brien 1986: 366; Alonso-Zarazaga & Lyal 1999: 67; Anderson 2002: 7, 14; Anderson 2003: 415.

Calandra (in part); Champion 1910: 169.

Polytus (in part, error); O'Brien & Wibmer 1982: 221.

Redescription. Length 4.8–10.9 mm; width 1.5–3.3 mm. Body (Figs. 1–10) elongate, moderately robust, slightly dorsoventrally flattened in cross-section. Color black to reddish brown or variously infusate. Integument matte throughout, with distinct isodiametric microsculpture, variously punctate. Rostrum (Figs. 11–16) moderately long, straight (male) to slightly curved ventrally (female), variously deeply and densely punctate, carinate dorsally or not, males with dorsal surface punctate throughout and/or distinctly microtuberculate to apex, females with punctures small, indistinct, lacking sculpture, cylindrical in cross section. Peduncle of postmentum flat to very slightly convex. Antennae (Figs. 11–16) inserted basally on rostrum, separated from eyes by width of scape; scape about as long as to slightly shorter than funicle; funicle 6-segmented, segments short and broad, wider than long to slightly longer than wide (1 and 2); club oval, small, about as long as apical 3 to 4 funicular segments, basal glabrous shiny portion various in size, comprising almost entire length of club to about basal half to two-thirds of its length. Pronotum slightly longer than wide, flattened dorsally, variously punctate, with or without scales, scales if present generally concentrated along lateral margin (and along midline in some specimens) or scattered. Elytra moderately long, subparallel, broad, wider than pronotum at base; striae distinctly impressed, linearly arranged; vestiture of broad scales absent or present. Scutellum small, triangular, widest at or near midlength. Front coxae separated by more or less width of club, middle coxae by slightly more, hind coxae separated by about width of coxa or slightly less. Prosternum flat, punctate, evenly sloped anteriorly, prosternal process acuminate, mesosternal process flat, broad, emarginate at middle; mesosternum broadly exposed, in middle about half as long as metasternum; metasternum about as long as ventrites 1–4 combined. Femora sinuate subapically, expanded apically, especially front femora, inner margin of front femur with subapical, broadly rounded tooth; tibiae shorter than femora, variously finely, densely toothed and setose along inner margin, each with single large, gently curved tooth at inner apical angle; tibia (especially on front legs) curved inwardly. Tarsi with tarsites 1–3 with ventral surfaces densely pilose in apical two-thirds to only in area across apical margin, tarsite 3 much wider than 2, distinctly bilobed. Pygidium exposed, more or less vertical in orientation, punctate throughout, setose apically. Abdomen with 5 visible ventrites; ventrite 1 longest, slightly longer than 2 and 5; 3 and 4 short. Aedeagus elongate, ventrally arcuate, laterally with unsclerotized arcuate line dividing it into ventral (pedon) and broader dorsal (tectum) portions, apex not projected, variously emarginated in middle, median struts transversely fused near base, with basal sclerotized area extended medially and fused with base of tectum, struts subparallel to apex; internal sac with no evident internal structures; tegminal strut extended to slightly less half length of median struts. Tergite 8 of male produced and elongate, maximum length slightly more than maximum width at base; with moderately long setae at apex, apex evenly rounded. Paired sclerites of sternite 8 quadrate, length about 1.5 times maximum width. Genitalia of female not examined.

Distribution. Central Mexico south into South America.

Biology. Information about the natural history of *Eucalandra* species is sparse, but it appears that most of the species are associated with bamboos. The Venezuelan *E. boxi* was described from specimens reared from larvae found mining in a large wild bamboo, possibly of the genus *Guadua* (Marshall 1952). A number of specimens of *E. setulosa* were collected on the bamboo *Phyllostachys*, one specimen from Trinidad was collected on felled bamboo, and specimens have been collected in numbers in Ecuador on felled and split culms of *Guadua angustifolia* and in association with corn (*Zea mais*) and *Inga* sp. Specimens of *E. setulosa* have also been intercepted at United States customs ports in bamboo and bamboo packing. The new species, *E. alas*, was collected in Costa Rica and Panama at mid-elevation montane sites with bamboo present.

Key to the species of *Eucalandra*

- 1 Antennal club (Figs. 13–14) with basal shiny, glabrous portion comprising almost entire length of club, apical pilose portion limited to extreme apex and only clearly visible in distal (apical) view2

- 1' Antennal club (Figs. 11–12, 15–16) with basal shiny, glabrous portion comprising 0.5–0.8 of length of club, apical pilose portion comprising at least 0.2 length of club and clearly visible in lateral view3
- 2 Front femur (Fig. 21) with broad, rounded subapical tooth on inner margin, occluding area on front tibia with short, flat laminate extension from inner margin; pronotum (Fig. 3) with midline with narrow row of yellowish-white broad scales throughout length; lateral margins of pronotum (Figs. 3–4) with similar scales extended in broad row from base to near apex; mesepisternum (Fig. 4) with scales of similar size to those elsewhere on venter..... *E. boxi* Marshall
- 2' Front femur with inner margin simple, occluding area on front tibia simple, not modified; pronotum (Fig. 5) with midline glabrous throughout length (some specimens with few scattered scales at base); lateral margins of pronotum (Figs. 5–6) with broad yellowish-white scales arranged in broad row only from base to near midlength; mesepisternum (Fig. 6) with scales larger in size to those elsewhere on venter..... *E. luteosignata* (Blanchard)
- 3 Pronotum (Fig. 7) deeply, very densely and uniformly punctate; body lacking any broad flat scales; elytra with intervals deeply, densely uniformly punctate; front tibia with subapical tooth similar in size and form to apical tooth *E. mexicana* (Champion)
- 3' Pronotum (Figs. 1, 9) with punctation various but with punctures small and fine or with at least some impunctate areas; body with at least some broad pale scales; elytra with intervals impunctate or with punctures small, shallow and indistinct; front tibia with subapical tooth very small, much shorter than apical large tooth 4
- 4 Tarsi with tarsite 3 with dense fine ventral pilosity limited to area across apical margin; large white flat scales (Figs. 1–2) present on lateral margin of pronotum, mesepimeron, metepisternum, lateral portion of metasternum, elytral intervals 3 and 5 at base and anterior to declivity; inner margin of front tibia distinctly serrate *E. setulosa* (Gyllenhal)
- 4' Tarsi with tarsite 3 with dense fine ventral pilosity covering almost entire apical two-thirds; scale pattern (Figs. 9–10) various, not as above; inner margin of front tibia very finely, indistinctly serrate *E. alas* Anderson

Eucalandra setulosa (Gyllenhal)

(Figs. 1–2, 11–12, 22)

Sitophilus setulosus Gyllenhal in Schoenherr, 1838: 969 (type not examined).

Eucalandra setulosa; O'Brien & Wibmer 1982: 221; Wibmer & O'Brien 1986: 366; Alonso-Zarazaga & Lyal 1999: 67.

Diagnosis. Length 5.4–7.2 mm. Integument (Figs. 1–2) black (most of range) or with elytral humeral area and declivital area with red maculations (Ecuador). Antennal scape (Figs. 11–12) short and stout, club with basal shiny, glabrous portion comprising basal 0.6 of club length. Front femora with inner margin simple, occluding area on front tibiae simple, not modified; middle and hind femora and tibiae with inner margins simple. Front tibia with inner margin distinctly serrate throughout length. Hind tibia very slightly curved inwardly along outer margin. Tarsi with ventral pilose pads limited to narrow band across apex of tarsite 3. Tibiae with subapical tooth small, much smaller than larger, curved apical tooth. Large white flat scales (Figs. 1–2) present on lateral margin of pronotum, mesepimeron, metepisternum, lateral portion of metasternum, elytral intervals 3 and 5 at base and intervals 3, 5 and 7 (in some specimens) just anterior to declivity.

Material examined. **Argentina.** No locality, M. Richter (1, CWOB). **Bolivia.** Rio Beni, Rurrenabaque, xii (1, USNM). **Brazil.** Sao Paulo, Teodoro Sampaio, xi.1977, M. Alvarenga (1, CWOB). **Colombia.** Bucaramanga, 4.x.1971, stored corn (1, USNM); Sucre, 4. km. S. Toluviejo, 2.vii.1982, W.E. Clark & R.D. Cave (1, CWOB); Ibague, Claver (4, BMNH). 18.iv.1965, B. Ospina (1, CWOB); Palmira Valle, 11.viii.1941 (1, USNM). **Costa Rica.** Limon, Talamanca, Amubri, 70 m, 12–30.x.1992, G. Gallardo (1, CMNC); Hamburg

Farm, 8.iv.1925 (1, USNM); San Jose, 17.ii.1925 (1, USNM). **Ecuador.** Boliche, 7.iv.1970, P. Alcivar, *Inga* sp. (6, USNM); Los Rios, Hacienda Pichilingue, 18.vi.1945, F.A McClure, on felled and split culms of *Guadua angustifolia* (many, CMNC, USNM); Portoviejo, xi.1977, *Zea mais* (4, USNM). **Guatemala.** Retalhuleu, El Asintal, 4.viii.1989, N. Riczo (UVG), Vera Paz, Chacoj (2, BMNH). **Honduras.** Carmelina, 14.ii.1920 (1, USNM); Lombardia (1, USNM); Tela, 17.vii.1923 (1, USNM); 6 mi. E. Copan, 610 m, 23.vi.1968, J.E. Meyer (1, TAMU). **Mexico.** Nayarit, vic. Compostela, 10.vii.1933 (1, CWOB); 25.iii.1933 (5, CWOB); Oaxaca. Tuxtepec, 21.v.1923, (1, USNM); Vera Cruz, Pureza, 20.ix.1935 (1, USNM); Vera Cruz. Cordoba, 29.i.1900 (1, USNM); Vera Cruz, Comoapan-Eyipantla, 14–27.vi.1985, Van Heffern (1, CWOB); Orizaba, Hoge (1, BMNH); no location, Sharp (1, BMNH). **Panama.** Canal Zone. Tabernilla, 12.v.1907 (1, USNM); Cocle, Aguadulce, 7.xii.1985, S. Tapia (1, CWOB); Panama, Rio Ipeti, 1300m, 8.7°N 78.27°W, 6.xi.1979, K. Joplin (1, CWOB). **Peru.** Tingo Maria, 5/6.x.1944 (1, USNM). **Trinidad.** Tunapuna, 21–25.viii.1969, H. & A. Howden (1, CMNC); no location, attacking felled bamboo (1, BMNH). **Venezuela.** Chacao, near Caracas, 31.v.1926, H.E. Box (1, BMNH); Distrito Federale, 30.v.1938, C. Ballon, on *Phyllostachys* (3, CWOB); El Valle, 26.v.1938, on fresh cut *Phyllostachys* (1, USNM); Guanare, Corozal, ii.1969, R. Urriaga, on *Zea mais* (1, CWOB); Yaracuy, 23.x.1943, in bamboo stem (1, USNM); United States border interception from Ecuador, 26.iv.1952, in bananas (1, USNM); United States border interception from Trinidad at Mobile, Alabama, in bamboo (1, USNM); United States border interception from Guatemala at Philadelphia, Pennsylvania, in banana (1, USNM); United States border interception from Colombia at Washington DC, 13.vii.1937, dug out of bamboo slats (1, USNM); United States border interception from Sinaloa, Mexico at Nogales, Arizona, 12.i.1943, bamboo stems (1, USNM).

Distribution. Mexico south through Central America into South America and onto the island of Trinidad (Fig. 22).

Biology. Specimens from Venezuela were recorded from the bamboo *Phyllostachys* and a specimen from Trinidad was taken from felled bamboo. Specimens from Ecuador have been collected in numbers on felled and split culms of the bamboo *Guadua angustifolia* as well as in association with corn (*Zea mais*) and *Inga* sp., and specimens from Venezuela and Colombia have also been found on corn. At United States border ports specimens have been intercepted in bamboo and bamboo slats as well as in banana.

Comments. All specimens examined from Ecuador have the elytral humeral and the declivital areas with reddish maculations. No distinctions other than these color differences were noted in *E. setulosa* from elsewhere (including the male genitalia). The fully black specimens and those with red maculations are considered conspecific.

***Eucalandra boxi* Marshall**

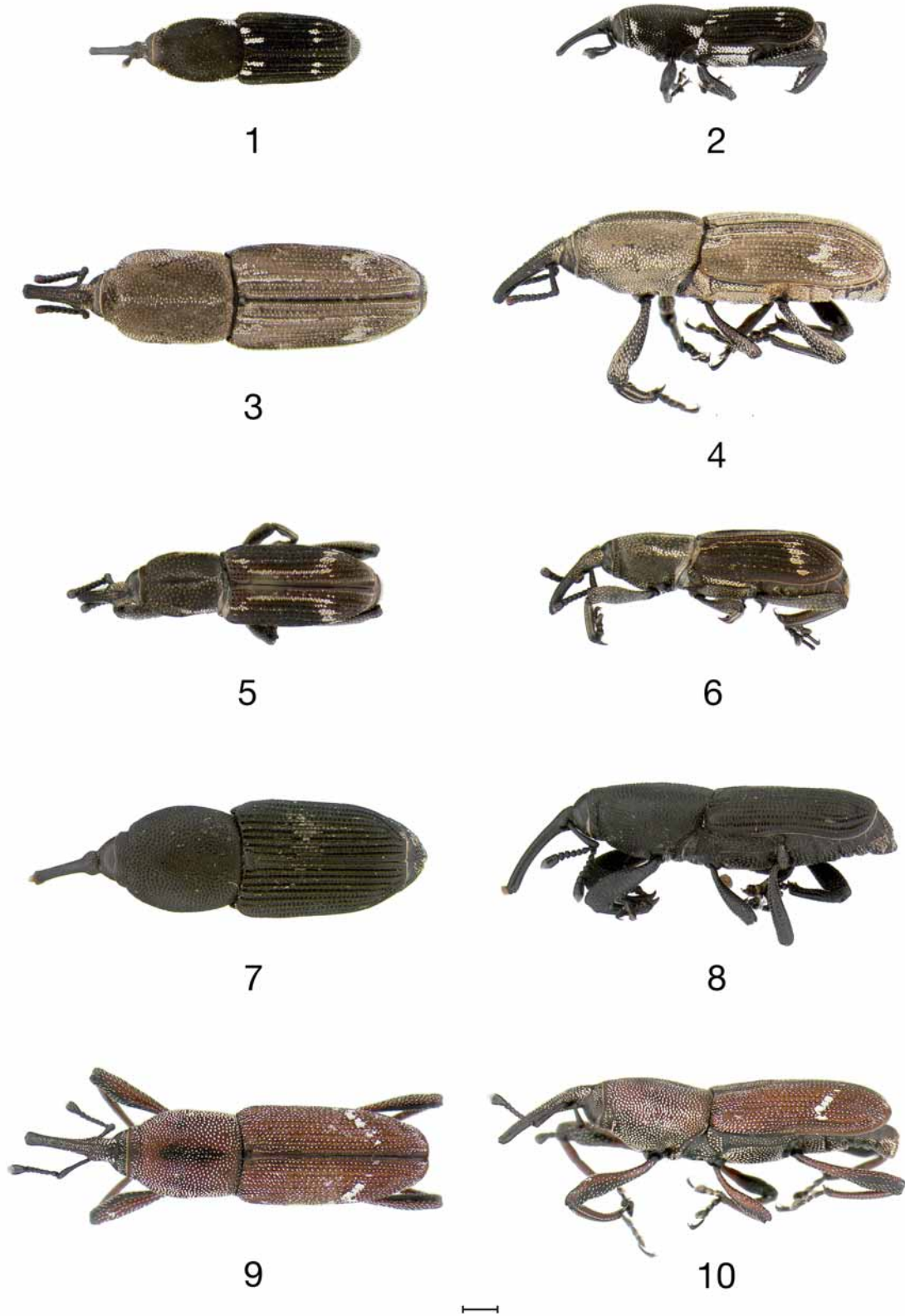
(Figs. 3–4, 12, 21–23)

Eucalandra boxi Marshall, 1952: 326; Wibmer & O'Brien 1986: 366.

Diagnosis. Length 8.1–10.6 mm. Integument (Figs. 3–4) reddish brown, variously infusate, scales present over much of body surface. Antennal scape (Fig. 12) short and stout, club with basal shiny, glabrous portion comprising almost entire length of club, apical pilose portion limited to extreme apex and only clearly visible in distal (apical) view. Front femur (Fig. 21) with broad, rounded subapical tooth on inner margin, occluding area on front tibia with short, flat laminate extension from inner margin, tooth less developed on middle and hind femora. Front tibia with inner margin very finely serrate towards apex. Hind tibia straight along outer margin. Tarsi with ventral pilose pads covering apical 0.5–0.8 of tarsite 3. Elytra (Figs. 3–4) with broad scales limited to intervals 3 and 5 towards base and in a condensed patch on intervals 5–7 just anterior to declivity.

Material examined. Holotype: **Venezuela.** Cojedia, W. of San Carlos, 175m, 2.iii.1951, H.E. Box, reared from large wild bamboo, *Guadua* sp.. Paratypes (4): with same label data (2, BMNH); United States border

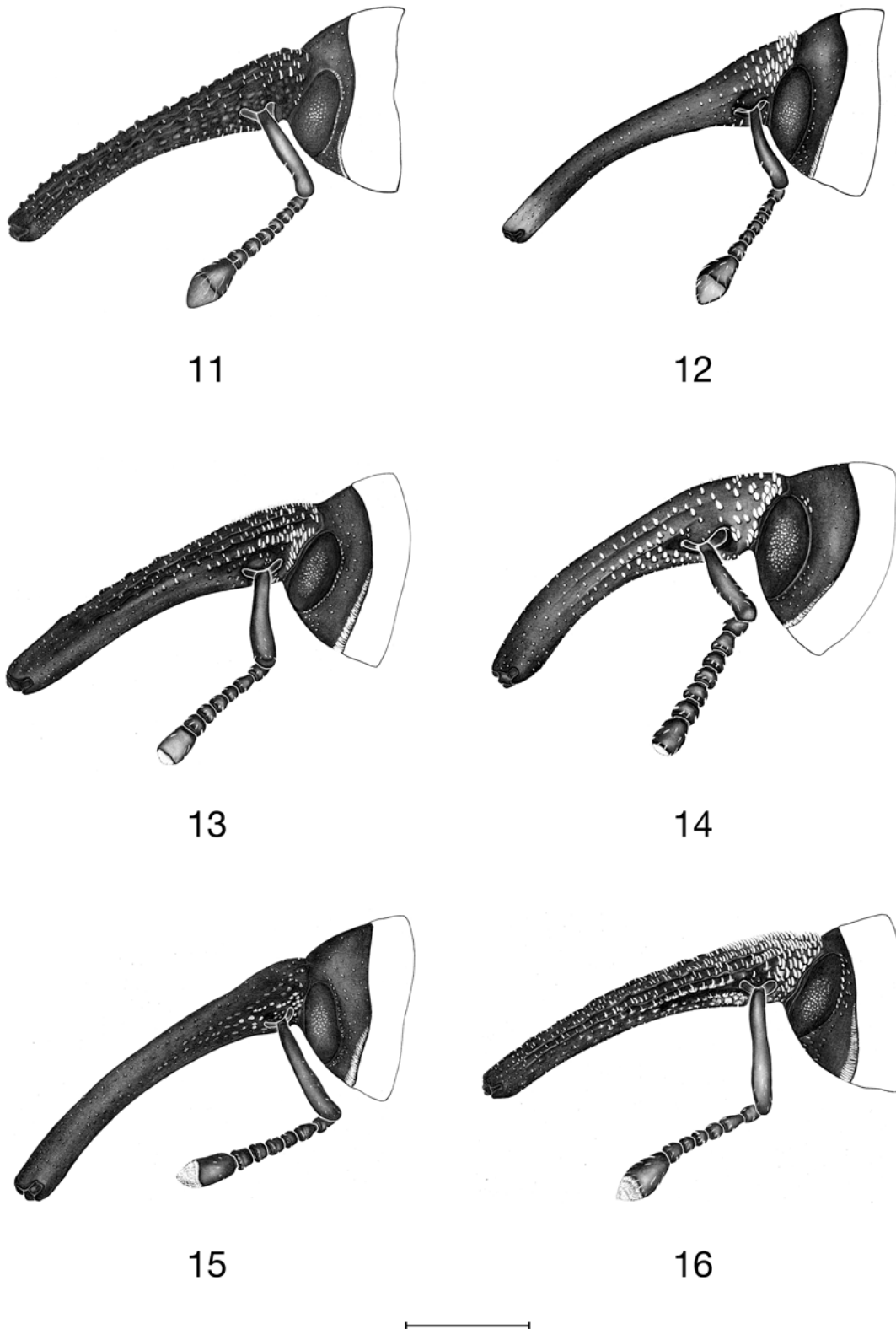
interception at Laredo, Texas, from Mexico, 13.vii.1936, in green bamboo pole (1, USNM); United States border interception from Mexico, 7.v.1967, R. Gonzalez, on *Bambusa* (1, USNM).



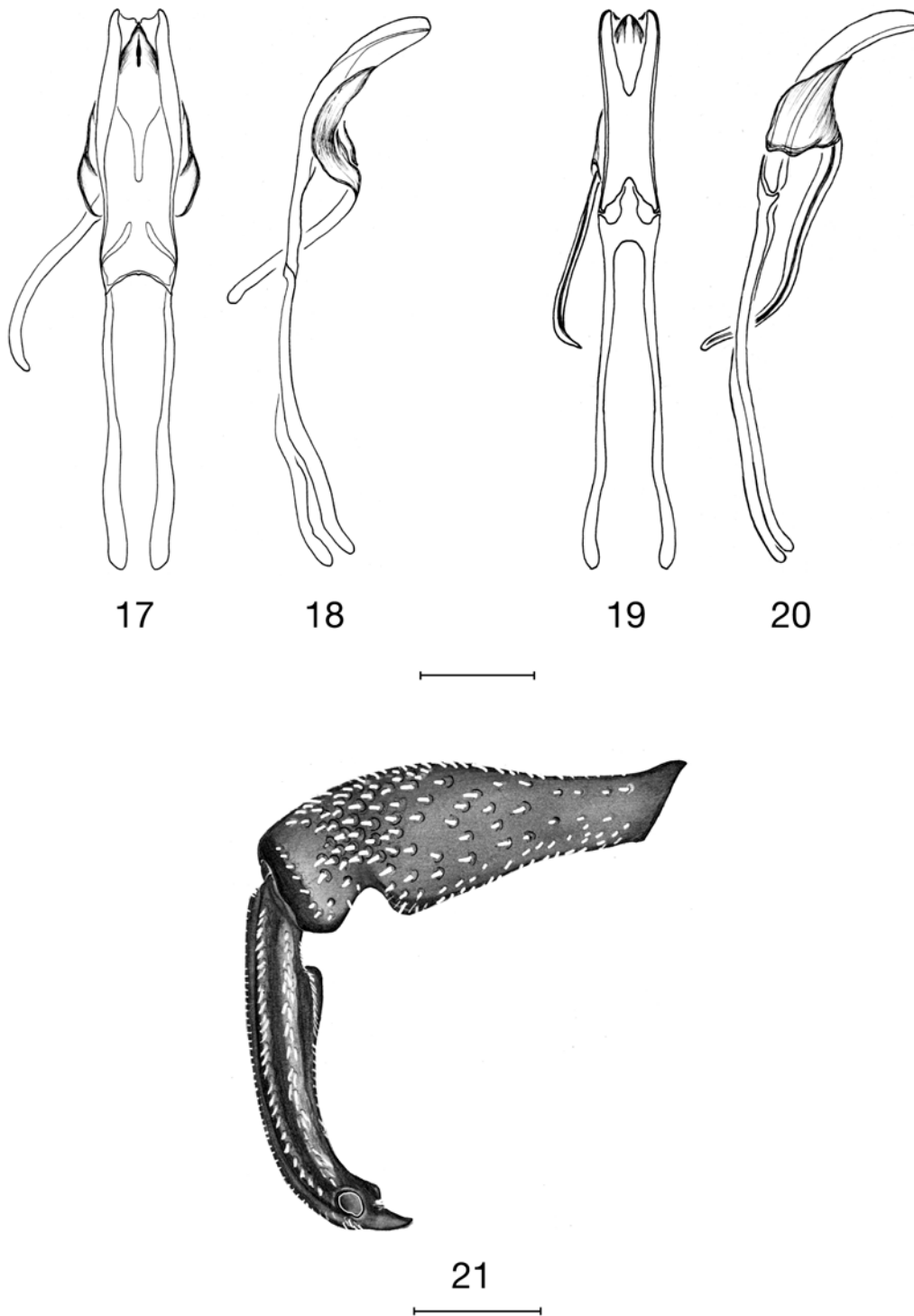
FIGURES 1–10. *Eucalandra*, dorsal and lateral habitus. 1–2, *E. setulosa* (Gyllenhal); 3–4, *E. boxi* Marshall; 5–6, *E. luteosignata* (Blanchard); 7–8, *E. mexicana* (Champion); 9–10, *E. alas* Anderson, **sp. n.**

Distribution. Venezuela; intercepted at United States border from Mexico (Fig. 23).

Biology. The type series was reared from a large, wild bamboo, possibly of the genus *Guadua* (Marshall 1952). Two other specimens have been collected at United States customs entry ports on *Bambusa* and in a green bamboo pole; both are labeled as from Mexico but it is uncertain whether they originated there.



FIGURES 11–16. *Eucalandra*, lateral view of head, rostrum and antenna. 11, *E. setulosa*, male; 12, *E. setulosa*, female; 13, *E. boxi*, male; 14, *E. luteosignata*, male; 15, *E. mexicana*, male; 16, *E. alas*, male.



FIGURES 17–21. *Eucalandra*, aedeagus (17–20) and front leg (21). 17, *E. mexicana*, dorsal view; 18, *E. mexicana*, lateral view; 19, *E. alas*, dorsal view; 20, *E. alas*, lateral view; 21, *E. boxi*, male.

***Eucalandra luteosignata* (Blanchard)**
(Figs. 5–6, 14, 23)

Sipalus luteosignata Blanchard in d’Orbigny, 1847: 203.
Eucalandra luteosignata; Wibmer & O’Brien 1986: 366.

Diagnosis. Length 6.7–10.1 mm. Integument (Figs. 5–6) black. Antennal scape (Fig. 14) short and stout, club with basal shiny, glabrous portion comprising almost entire length of club, apical pilose portion limited to extreme apex and only clearly visible in distal (apical) view. Front femora with inner margin simple, occluding area on front tibiae simple, not modified; middle and hind femora and tibiae with inner margins simple. Front tibia with inner margin very finely serrate towards apex. Hind tibia slightly curved inwardly along outer margin. Tarsi with ventral pilose pads covering apical 0.3–0.4 of tarsite 3. Lateral margins of pronotum (Figs. 5–6) with broad yellowish-white scales in a broad row from base to near midlength; mesepisternum with broad yellowish-white scales larger in size to those elsewhere on venter; elytra with broad scales throughout midlength of interval 3, base of 5, and 3–9 (lacking on 8 in some specimens) just anterior to declivity.

Material examined. Holotype: **Argentina.** Patagonie, Patagones, D’Orbigny 1834 (MNHN). Other specimens: **Argentina.** Guayaros, D’Orbigny 1834 (1, MNHN). **Brazil.** Nova Teutonia, Santa Catarina, x.1974, F. Plaumann (1, CMNC); Bahia, 12–29.i.1945 (2, BMNH); Rio de Janeiro, Nova Friburgo, E. Gounelle, ii–iv.1904 (1, MNHN); unknown, “Maller Kuma” (1, BMNH).

Distribution. Argentina and Brazil (Fig. 23), also recorded from Paraguay (Wibmer & O’Brien 1986).

Biology. Unknown.

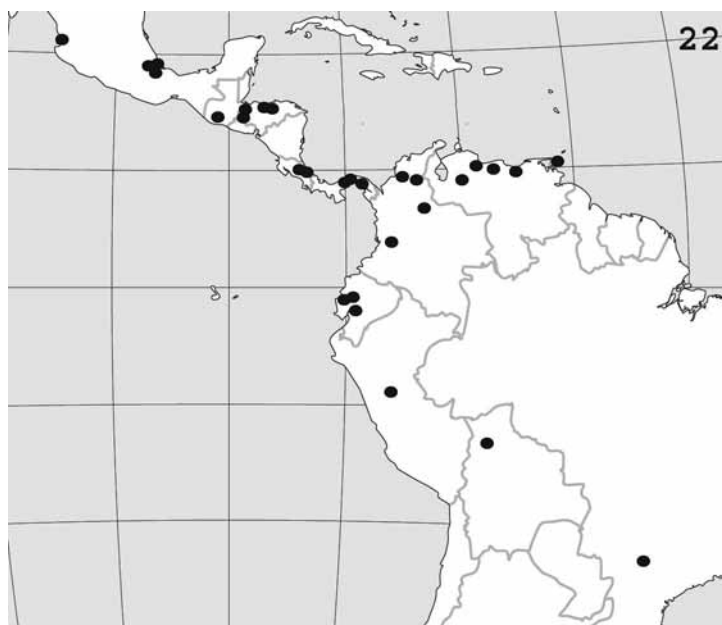


FIGURE 22. *Eucalandra setulosa*, distribution.

***Eucalandra mexicana* (Champion), comb. n.**

(Figs. 7–8, 15, 17–18, 23)

Calendra mexicana Champion, 1910: 170.

Polytus mexicana; O’Brien & Wibmer 1982: 221.

Diagnosis. Length 6.7–8.7 mm. Integument (Figs. 7–8) black, no broad scales present, surface deeply, densely punctate throughout. Antennal scape (Fig. 15) short and stout, club with basal shiny, glabrous portion comprising about 0.6 length of club. Front femora with inner margin simple, occluding area on front tibiae simple, not modified; middle and hind femora and tibiae with inner margins simple. Front tibia with inner margin smooth, not serrate. Hind tibia straight along outer margin. Tarsi with ventral pilose pads limited to narrow band across apex of tarsite 3. Tibiae with subapical tooth large, similar in size and form to apical tooth. Aedeagus as in figs. 17–18.

Material examined. Holotype: **Mexico**. Hidalgo, Zacualtipan, Hoge (BMNH). Other specimens: Oaxaca, 17 km N Haujuapan de Leon, 17°41.60' N 97°45.81' W, 29.vi.1996, H. Brailovsky & E. Barrera (1, CMNC; 1, CWOB).

Distribution. Mexico (Hidalgo and Oaxaca) (Fig. 23).

Biology. Unknown.

Comments. This species was erroneously placed as a synonym of the introduced *Polytus mellerborgii* (Boheman) in O'Brien & Wibmer (1982: 221). It is quite clearly a species of *Eucalandra* and here transferred to this genus.



FIGURE 23. *Eucalandra*, distribution; solid circle — *E. luteosignata*, open circle — *E. boxi*, asterisk — *E. mexicana*, plus — *E. alas*.

***Eucalandra alas* Anderson, sp. n.**

(Figs. 9–10, 16, 19–20, 23)

Description. Length 7.8–8.9 mm; width 2.3–2.6 mm. Integument (Figs. 9–10) reddish brown, dorsally with black chevron in middle of pronotum, venter black, legs variously infuscate; distinct yellow-white scales present, various in size, widespread over body, forming condensed patch of elytral intervals 5–8 just anterior to declivity (Costa Rica); or integument fully black, lacking distinct scales (Panama). Antennal scape (Fig. 16) as long as funicle, club with basal shiny, glabrous portion comprising basal 2/3 to 4/5 length of club. Front femora with inner margin simple, occluding area on front tibiae simple, not modified; middle and hind femora and tibiae with inner margins simple. Front tibia with inner margin very finely serrate towards apex. Hind tibia slightly curved inwardly along outer margin. Tarsi with ventral pilose pads large, covering almost entire ventral surface of tarsite 3. Aedeagus as in figs. 19–20.

Material examined. Holotype (male): “09 Marzo 2001 / INBio-OET-ALAS Transect / Costa Rica: Prov. Heredia / 16 km SSE La Virgen 1050- / 1150m, 10°16'N 84°05'W”, “09 Marzo 2001 / 11 M 08 028 / Transect”

(INBC 0003201036). Paratypes (5 males, 2 females): same data as holotype (1 female, CMNC); same data except 9.iv.2001 (1 male, CMNC); same data except 10–14.iv.2001, J. Prena (1 male, CMNC); 9 km. N.E. Vara Blanca, 1450–1550 m, ALAS, malaise trap (1 male, INBC); Cartago, Turrialba, 610 m, 3.vi.1973, G. Ekis (1 male, USNM); Panama. Chiriqui, Continental Divide Trail, 3–4.vii.1997, R. Morris & J. Wappes (1 female, CMNC); Costa Rica: Prov. Heredia / 16 km SSE La Virgen 1050- / 1150m, 10°16'N 84°05'W", 18 Marzo 2001 / Transect / 11 RG DBM 007" (1 female, INBC 0003224879).

Derivation of specific name. This species is named after the NSF funded Arthropods of La Selva inventory project (acronym, ALAS; Jack Longino and Robert Colwell, Co-Principal Investigators). Participants and employees in the project collected most of the specimens of this species and numerous other exciting insects during its almost 20 years of existence. The specific epithet "*alas*" is to be treated as a noun in apposition.

Distribution. Costa Rica and Panama (Fig. 23).

Biology. Specimens were collected from mid-elevation wet cloud forest between 1050 and 1550 m. Most specimens from Costa Rica were collected from malaise traps.

Comments. Apart from the differences in integument color and vestiture, the Panama and Costa Rica forms cannot be distinguished. Only one female from Panama has been examined and at present the two forms are considered conspecific.

Acknowledgements

I especially thank H el ene Perrin of the Mus eum national d'Histoire naturelle, Paris, France, for the loan of the types of *E. luteosignata* and Maxwell V.L. Barclay, The Natural History Museum, London, England, for those of *E. boxi* and *E. mexicana*. I also thank Jens Prena of the USDA Systematic Entomology Lab in Washington DC for assistance with the use of the Synoptics imaging system used to take the photographs, and Nadine Dup err e of Shefford, Quebec, for the expert preparation of the illustrations and plates.

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