

MERINGODES WAPPES AND LINGAFELTER (COLEOPTERA: CERAMBYCIDAE: CERAMBYCINAE), A NEW GENUS OF RHOPALOPHORINI FROM BOLIVIA

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ABSTRACT

Meringodes Wappes and Lingafelter, a monotypic **new genus** of Rhopalophorini, is described from Santa Cruz Department, Bolivia. *Meringodes* is most similar to *Disaulax* Audinet-Serville, although it also possesses characters of *Thalusia* Thomson and *Cosmisoma* Audinet-Serville. A diagnosis and description of the genus is given and a **new species**, *Meringodes solangeae* Wappes and Lingafelter, is described. Images of both *Disaulax hirsuticornis* (Kirby) and *M. solangeae* are included to facilitate identification.

Key Words: longhorn beetle, Santa Cruz Department, taxonomy, morphology

The diversity of Cerambycidae in Bolivia is astonishing. In a recent checklist, 1,259 species were documented for the country, three-quarters of which were from Santa Cruz Department (Wappes *et al.* 2006). Since that paper, many dozens of new species from Bolivia have been described (Monné and Bezark 2010). Our research has enabled us to make many more identifications such that the known Bolivian cerambycid fauna now exceeds 1,500 identified species.

We describe herein a new genus of one of the most splendid beetles we have encountered. Based on the synapomorphies identified on the strict consensus tree of Marques and Napp (2003), this genus belongs in the tribe Rhopalophorini. Monné and Bezark (2010) list 24 genera currently in the Rhopalophorini. Fifteen of these were listed in the tribe by Marques and Napp (2003). Five additional genera were transferred into the tribe by Mermudes and Napp (2004) and one new genus was described by Napp and Monné (2009). Although Napp and others have greatly contributed to our knowledge of systematics and morphology in Rhopalophorini (and other tribes), no keys have been written to facilitate identification of all genera of Rhopalophorini.

The single specimen representing the new genus herein shows affinities in some characters with *Disaulax hirsuticornis* (Kirby) (Figs. 3–4), a striking species in the Rhopalophorini that was originally described by Kirby (1818) in *Saperda* F. and

moved into *Disaulax* Audinet-Serville (Audinet-Serville 1833). Some characters are also shared with *Thalusia* Thomson and *Cosmisoma* Audinet-Serville, however, it possesses so many novel characters that it is necessary to erect a new genus for the species. We provide a generic diagnosis and description based on the external character states given by Marques and Napp (2003) and a description of the only known species.

MATERIAL AND METHODS

The single known specimen of the new genus described herein was captured on one of 10 collecting expeditions among us to Bolivia. In an effort to acquire additional specimens, we also examined all relevant collections of Bolivian Cerambycidae (including Florida State Collection of Arthropods [FSCA], Gainesville, FL, USA, American Coleoptera Museum [James E. Wappes Collection, ACMT], San Antonio, TX, USA, Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, Museu de Zoologia Universidade de São Paulo, São Paulo, Brazil, Noel Kempff Museum Collection [MNKM], Santa Cruz de la Sierra, Bolivia, and National Museum of Natural History, Smithsonian Institution [USNM], Washington, DC, USA). Websites of photographs mostly taken by SWL (Martins *et al.* 2010; Monné *et al.* 2010) and those included in Bezark (2010) facilitated this work. External

characters of the unique specimen representing the new genus were carefully compared against the matrix of Marques and Napp (2003) in order to determine its affinities.

Images were taken with a Zeiss AxioCam HRC camera attached to a Zeiss Discovery V20 stereomicroscope with Sycop-controlled motorized zoom. Objectives included PlanApo S 1.0× and 0.63×. Specimen illumination used a Zeiss KL 2500 LCD with ring light attachment. Axiovision software enabled preparation of montaged images and automatically calibrated measurements.

Meringodes Wappes and Lingafelter, new genus
(Figs. 1, 2, 5, 6, 8, 10)

Diagnosis. This genus is unique with the combination of the following features: antennomeres 1–5 conspicuously pubescent-tufted bicolored orange and black (Figs. 1, 2, 5) (unicolorous black in *Disaulax*, Figs. 3–4; the brush is limited to antennomere 5 of most species of *Cosmisoma* and the antennae lack a brush of pubescence in *Thalusia*); scape and antennomere 4 short and subequal in length, less than 0.6× length of antennomere 5 (antennomere 4 over 0.8× length of antennomere 5 in *Disaulax*; about 0.8× length of antennomere 5 in *Cosmisoma* and *Thalusia*); head with elongate frons and genae demarcated by pronounced frontal-genal ridge and inverted V-shaped ante-clypeal sulcus (Fig. 8) (head is weakly produced anteriorly with horizontal ante-clypeal sulcus in *Disaulax* [Fig. 9], *Thalusia*, and most *Cosmisoma* species); eyes finely faceted; maxilla with developed and elongate, narrow galea (Fig. 8); pronotum elongate, without tubercles or calli (Fig. 6) (pronotum less elongate and more produced at middle in *Thalusia* and most *Cosmisoma* species and with a middle impunctate callus in *Disaulax* [Fig. 7]); posterior femur elongate with long peduncle, sulcate ventrally, and with abrupt, short club (metafemora of *Disaulax*, *Thalusia*, and *Cosmisoma* are similar); metatibia strongly curved beyond apical half and with a dense brush of long and short pubescence along the curved portion (Figs. 1, 2) (metatibia of *Thalusia* is similar; metatibia of female *Disaulax* is elongate, weakly curved apically, and lacks a brush of pubescence [Figs. 3–4]; with few exceptions, the metatibia of *Cosmisoma* lacks a pubescent brush).

Description. Specimen coding based on external and applicable characters (character number followed by state number in parentheses) from Marques and Napp (2003): Head with weakly developed constriction at posterior region, 1(0); frons

not depressed, 2(0), 3(0); head projecting in front of eyes with genae and frons elongate, 4(1); genae not bulging, 5(0); eye lobe constriction away from antennal tubercle, 6(1), 7(1); eye facets extremely fine, 8(3); lower eye lobe well developed with upper margin contiguous with frontal line, 9(1); antennae moderately long, surpassing elytral apex by less than 2 antennomeres, 10(1) (note: this is based on the unique female; males would presumably have longer antennae, as in *D. hirsuticornis*); antennae with 11 antennomeres, 11(0); scape slightly thicker at apex than base, 12(2); scape without sulcus or depression at base, 13(0), 14(0); antennomere 4 shortened, 15(1); antennomeres 3 and 5 elongate, 16(0); antennomeres 6–11 gradually shortening, 18(0); antennomeres without spines, 20(0), 21(0); scape and antennomeres 3–5 punctate, but without asperites, 22(0); antennomeres 1–5 with dense tufts of setae, 23(0), 24(1), 25(0), 26(0); galea strongly developed, 27(1), 28(1), 29(0); maxillary palpomere 1 elongate, cleft at middle, palpomeres 2–3 subconical, short, palpomere 4 elongate, 30(0); mentum quadrangular, 31(1); prothorax transverse, 32(0); prothorax longer than wide, narrowing anteriorly, evenly rounded laterally, 33(0), 34(1), 35(1), 36–40(0); anterior coxal cavity evenly angled to closed laterally, 41(2); anterior coxal cavities nearly closed posteriorly, 42(1); scutellum not concave at middle, 47(0); mesosternal process approximately as wide as mesocoxa, without lateral projections, 48(1), 49(0); elytron with fasciae of golden pubescence, 54(1); middle leg shorter than posterior leg, 61(0); hind leg without asperites, 62(0); hind leg with peduncle elongate, cylindrical (sulcate ventrally), and clavate portion short, 63(1), 64(0), 65(0), 66(1), 67(1); metatibia elongate, strongly curved at apical half, with tuft of pubescence along apical half, 69(1), 70(2), 74(1); metatarsus with pubescence dense and short dorsally, longer pubescence ventrally, 80(1), 81(0); metatarsomere 1 nearly twice length of tarsomeres 2–4, 82(0).

Etymology. The name is derived from the Greek μῆριγγ (bristle) and the suffix -οδεις denoting fullness or plenty; the gender is masculine.

Type Species. This genus is known only from *Meringodes solangeae* Wappes and Lingafelter, described below.

***Meringodes solangeae* Wappes
and Lingafelter, new species**
(Figs. 1, 2, 5, 6, 8, 9)

Type Material. Holotype, female: “Bolivia, Santa Cruz; Rd to Amboro above Achira; 14–15

Figs. 1–4. 1) *Meringodes solangeae*, dorsal habitus of female holotype; 2) *M. solangeae*, ventral habitus; 3) *Disaulax hirsuticornis*, dorsal habitus; 4) *D. hirsuticornis*, ventral habitus.





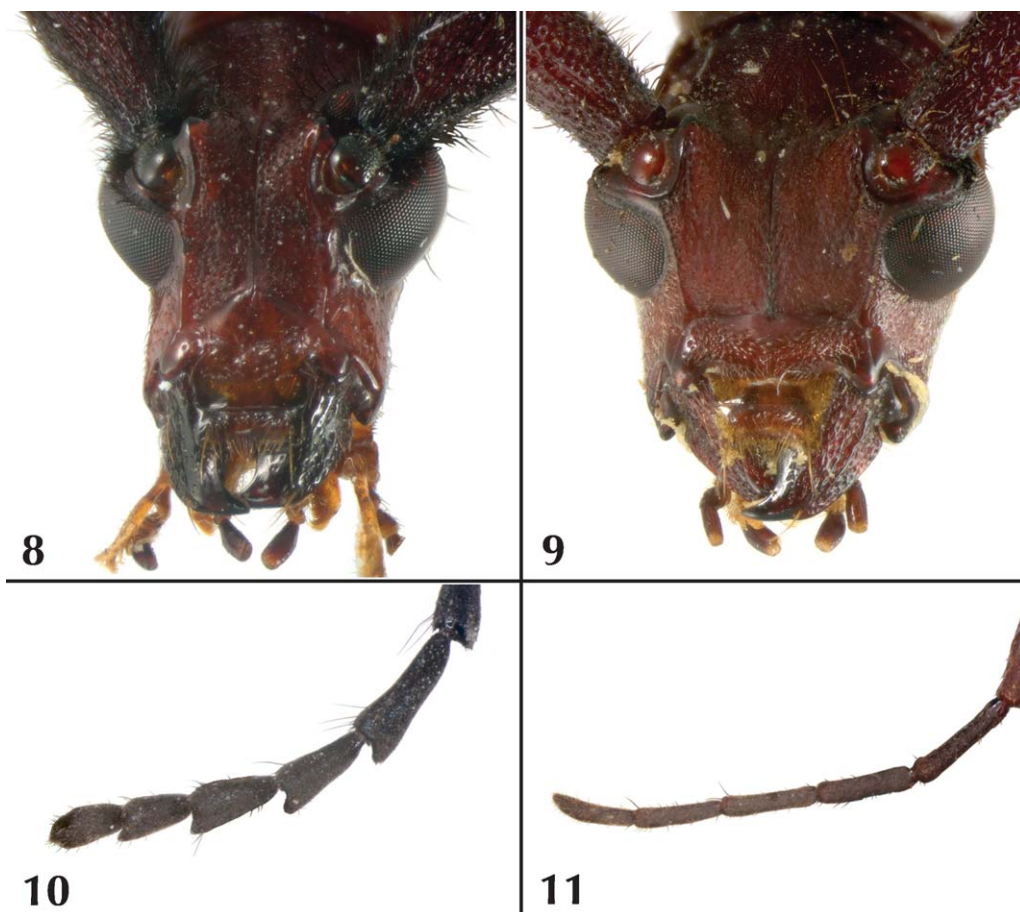
Figs. 5–7. 5) *Meringodes solangeae*, lateral habitus of female holotype; 6) *M. solangeae*, pronotum detail; 7) *Disaulax hirsuticornis*, pronotum of female.

Oct 2006; Wappes, & Nearn's" (on long-term loan to USNM from ACMT, to be deposited in MNKM).

Diagnosis. This species is distinctive due to the conspicuous brushes of orange and black pubescence on antennomeres 1–5, the narrow, arcuate band of golden pubescence on the elytra, and the metatibial brush of black setae. The antennal proportions, including the short scape and antennomere 4 (0.6× relative to length of antennomere 5) and successively, abruptly decreasing length of antennomeres 6–11, the elongate pronotum (1.4× longer than wide), and head with inverted V-shaped ante-clypeal sulcus are also diagnostic.

Description. Female. Moderate size, 14.8 mm long; 3.3 mm wide at humeri; integument of head, pronotum, and elytra mostly red with slight violet sheen; antenna and legs dark reddish brown, appear-

ing black. **Head:** With sparse, black setae; moderately punctate, particularly on vertex and occiput; frons and genae elongate, demarcated by pronounced frontal-genal ridge and inverted V-shaped ante-clypeal sulcus; eye extremely finely faceted, upper lobe reduced, widely separated, removed from antennal tubercles; lower lobe large but not strongly protuberant laterally; interantennal impression deep with antennal tubercles elevated in V-shape with vertex groove arriving at middle and extending to apex of ante-clypeal sulcus; antennal tubercle with distinct ridge along margin connecting to frontal-genal ridge; antenna of female extending beyond elytral apex by 1–2 antennomeres; scape and antennomeres 2–5 with conspicuous, complete tufts of long setae most pronounced along mesal margin as follows: scape with relatively short, black



Figs. 8–11. 8) *Meringodes solangeae*, head of female holotype; 9) *Disaulax hirsuticornis*, head of female; 10) *M. solangeae*, last five antennomeres of female holotype; 11) *D. hirsuticornis*, last five antennomeres of female.

setae, antennomere 2 with relatively longer black setae, antennomere 3 with long, orange setae along mesal margin and shorter, black setae laterad, antennomere 4 with mixture of long orange and black setae along mesal margin, antennomere 5 with long, black setae along basal two-thirds and long, orange setae along apical third with exception of extreme apex which has long, black setae; elsewhere, antennomeres covered with less conspicuous short, black setae and scattered longer black setae at apices; scape and antennomere 4 relatively short, subequal in length; antennomere 3 long, approximately as long as pronotum and extending beyond elytral base, antennomeres 5–11 each decreasing in length successively, antennomeres 6–10 produced apicolaterally. **Pronotum:** Distinctly longer than broad, slightly narrower anteriorly with a subapical and subbasal constriction, distinctly narrower than elytral base, sparsely pubescent with scattered, erect, black setae, distinctly, densely, shallowly punctate; without calli

or tubercles; weakly rugose posteriorly; length 3.1 mm, width 2.2 mm (length/width: 1.4), about one-fifth length of body. **Prosternum:** Mostly glabrous except for narrow strip of sparse, golden pubescence at middle; reticulate without punctures. **Elytron:** Uniformly microreticulate, without punctures; mostly glabrous with a few long, erect, black setae at basal third, short, appressed black setae at apical half and more dense along apical margin, and very distinct, narrow, slightly arcuate band of dense, golden pubescence at middle and extending to basal fourth; elytral apices produced into subacute point along suture; length 9.7 mm, width 1.6 mm (elytral length/width: 6.1). **Scutellum:** Broadly rounded posteriorly with dense, golden pubescence. **Legs:** With pedunculate and clavate femora and long tibiae; hind legs longest with femora extending nearly to elytral apex; mostly sparsely pubescent with exception of metatibia which has brush of black pubescence along outer apical half.



Fig. 12. Region above Achira near the entrance to the Amboró National Park at 1,940 m elevation, where *Meringodes solangeae* was collected. This area had recently been partially burned and converted to agriculture.

Venter: Sparsely pubescent with mixture of short, golden hairs and longer black setae; integument darker than dorsum; base of sternites near tergite margin at sides with patches of dense, golden pubescence; apex of fifth ventrite broadly rounded, without modification.

Etymology. The species epithet is a genitive patronym in honor of Dilma Solange Napp (Universidade Federal do Paraná, Curitiba, Brazil) for her extensive and important work with Cerambycidae, including the Rhopalophorini.

Discussion. The unique specimen of this species was taken beating fire scorched vegetation above Achira near the entrance to the Amboró National Park at 1,940 m elevation. This area had recently been partially burned and converted to agriculture (Fig. 12).

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REFERENCES CITED

- Audinet-Serville, J. G. 1833.** Nouvelle classification de la famille des longicornes. (Suite). Annales de la Société Entomologique de France (1)2: 528–573.
- Bezark, L. 2010.** A photographic catalog of the Cerambycidae of the New World. Available from: plant.cdfa.ca.gov/byciddb/default.asp (Accessed on 28 November 2010).
- Kirby, W. 1818.** A century of insects, including several new genera described from his cabinet. Transactions of the Linnean Society of London 12: 375–453.
- Marques, M. I., and D. S. Napp. 2003.** Análise cladística da tribo Rhopalophorini Blanchard, 1845 (Coleoptera, Cerambycidae). Revista Brasileira de Entomologia 47(4): 491–545.
- Martins, U. R., M. A. Monné, M. L. Monné, S. W. Lingafelter, C. J. Micheli, and E. H. Nearn. 2010.** Cerambycidae holotypes of the Museu de Zoologia Universidade de São Paulo (MZSP). Available from: www.cerambycids.com/brazil/mzsp/ (Accessed on 27 November 2010).
- Mermudes, J. R. M., and D. S. Napp. 2004.** Comparative morphological study of the Neotropical Cleomenini genera and their transference to the tribes Rhopalophorini Blanchard and Rhinotragini Thomson (Coleoptera, Cerambycidae, Cerambycinae). Revista Brasileira de Entomologia 48(2): 251–272.
- Monné, M. A., and L. G. Bezark. 2010.** Checklist of the Cerambycidae, or longhorned beetles (Coleoptera) of the Western Hemisphere. Available from: plant.cdfa.ca.gov/byciddb/documents.html (Accessed on 27 November 2010).
- Monné, M. A., M. L. Monné, S. W. Lingafelter, C. J. Micheli, and E. H. Nearn. 2010.** Cerambycidae holotypes of the Museu Nacional Rio de Janeiro (MNRJ). Available from: www.cerambycids.com/brazil/mnrj/ (Accessed on 27 November 2010).
- Napp, D. S., and M. A. Monné. 2009.** New Neotropical genera and species of Dryobiini and Rhopalophorini (Coleoptera: Cerambycidae: Cerambycinae). Zootaxa 2137: 29–34.
- Wappes, J. E., R. F. Morris II, E. H. Nearn, and M. C. Thomas. 2006.** Preliminary checklist of Bolivian Cerambycidae (Coleoptera). Insecta Mundi 20(1–2): 1–45.

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