

New Fijian Callidiopini (Coleoptera: Cerambycidae)

HILDA WAQA

Institute of Applied Sciences, University of the South Pacific, Suva, Fiji;
email: waqa_h@yahoo.com

STEVEN W. LINGAFELTER

Systematic Entomology Laboratory, ARS, USDA, National Museum of Natural History,
MRC-168, Washington, DC 20560, USA; email: steve.lingafelter@ars.usda.gov

Abstract: Based on examination of material collected as part of the NSF – Fiji Terrestrial Arthropod Survey, two new species of Callidiopini (Coleoptera: Cerambycidae: Cerambycinae) are described from Fiji: *Ceresium tuberculatum* Waqa & Lingafelter, **n. sp.** (type locality: Fiji, Gau Island, 17.98°S, 179.27°E) and *Laniferus grandis* Waqa & Lingafelter, **n. sp.** (type locality: Fiji, Viti Levu Island, 17.58°S, 178.08°E).

INTRODUCTION

In this work we describe two species of Callidiopini from Fiji in the genera *Ceresium* and *Laniferus*. The tribe Callidiopini of the subfamily Cerambycinae contains more than ten genera. The largest of these is the genus *Ceresium*, containing 109 species and subspecies (Encyclopedia of Life, 2008). Most of the diversity of *Ceresium* is found in Asia and the Pacific Islands, but the genus is widespread with some species also occurring in Africa and Australia, and several dubious records from North America and the Caribbean. Including the species described herein, seventeen species are known from Fiji (Dillon & Dillon, 1952; Bigger & Schofield, 1983; Evenhuis, 2007). Contrasting from *Ceresium*, the genus *Laniferus* was known from only one species, *L. uniformis* Dillon & Dillon (1952), prior to this work.

MATERIALS AND METHODS

Much of the material in this work originates from the extensive Malaise trap collections from the NSF – Fiji Terrestrial Arthropod Survey (Evenhuis & Bickel, 2005). Material is deposited in the Smithsonian Institution, Washington, DC (USNM), Bishop Museum, Honolulu, Hawaii (BPBM), and the Fiji National Insect Collection, Suva, Fiji (FNIC), and these acronyms are used hereafter. Label data is verbatim, therefore some information is occasionally presented in inconsistent formats.

SYSTEMATICS

Ceresium tuberculatum Waqa & Lingafelter, new species

(Figs. 1–4)

Description. Medium size; 14–18 mm long; 3.5–4.5 mm wide at humeri; integument color dark reddish brown (occasionally piceous).

Head with shallow interantennal tubercle region, tubercles only slightly raised; punctate with very sparse ochraceous pubescence on tubercles and throughout frons; vertex and occiput with sparser ochraceous pubescence. Ochraceous pubescence denser around eye margins. Frons and frontal-clypeal margin densely, coarsely punctate with sparse, long, ochraceous hairs.

Antennae long, extending beyond elytra by 2–3 antennomeres (longer in males than females). Antennae with vestiture of short, dense, ochraceous setae (longer at apices of antennomeres). Antennomeres unspined and not expanded at apices; last antennomere about 1.4 times length of penultimate in males (about 1.2 times length of penultimate in females). Antennomeres 3 & 4 each shorter than scape; 5–9 longest except for 11 and subequal in length. Scape long, clavate, extending to apical fifth of pronotum.

Pronotum quadrate, slightly widest anteriorly, and slightly wider than long. Raised tubercles present at middle of sides and anterolaterally. Three poorly-defined calli on disk: 1 medial and 2 anteromedial between middle callus and anterolateral tubercle. Pronotum with patchy ochraceous pubescence, denser at sides and posterior margin, slightly less dense anteriorly; center of disk mostly glabrous. Pronotum with sparse, poorly-defined punctures in males (except on smooth calli), only sparse depressions present in females.

Elytron glabrous except for scattered sparse patches of white (occasionally ochraceous) pubescence. Punctuation shallow, sparse, gradually becoming shallower and indistinct towards apex. Elytral apex rounded to suture. Scutellum broadly rounded, covered with dense, ochraceous pubescence.

Legs moderate in length, femora distinctly but gradually clavate, hind femur extending beyond base of fourth ventrite.

Venter of abdomen and thorax with moderately dense, ochraceous pubescence at sides, but mostly glabrous along middle, except for prosternum which is densely pubescent. Prosternal process broad, vertical and acutely declivous, about 1/3 width of procoxae, weakly notched and expanded at apex. Proxocal cavities open posteriorly. Mesocoxae closed laterally to mesepimeron. Mesosternum rather acutely declivous, with small anterior tubercle, and sulcate anteriorly. Apex of terminal ventrite in males with median notch; in females truncate to unevenly rounded, without notch. *Aedeagus* as in Fig. 4b–d. Median lobe parallel sided for most of length, then abruptly narrowing to nipple-like apex. Parameres long, not converging at apices, with long apical setae that converge with those of opposite paramere.

Types. HOLOTYPE (male): FIJI: **Gau**, 4 km SE Navukailagi Village, 29 Jun–11 Jul 2005 Malaise trap, U. Racule, 17.98°S, 179.275°E, 496 m, FBA 510997 (BPBM, pending transfer to FNIC). PARATYPES (13 specimens deposited in BPBM, USNM, & FNIC): FIJI: **Gau**, 4 km SE Navukailagi Village, Malaise trap, U. Racule, 17.98°S, 179.275°E, 496 m (2 females: 19 Apr–2 May 2005 - FBA 510794; 15–29 Jun 2005 - FBA 512497); 4.0 km SE Navukailagi Village, 17.98°S, 179.275°E, 496 m, 27 May–16 Jun 2005, Malaise trap M01, U. Racule, (1 male - FBA 512516); 4 km SE Navukailagi Village, Mt. Delaco, 496 m, 19 Apr–2 May 2005, Malaise 2, U. Racule, 17.98°S,

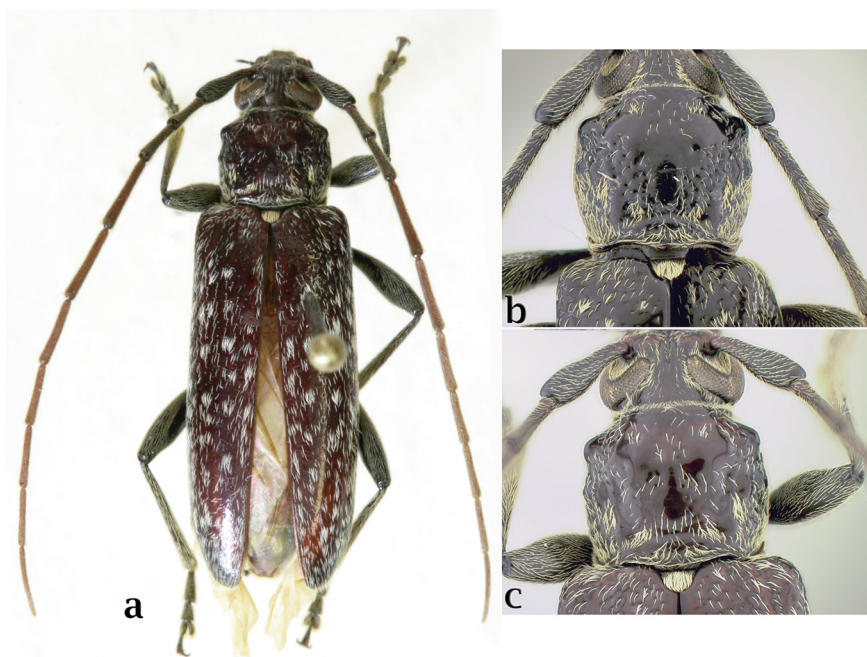


Figure 1. *Ceresium tuberculatum* Waga & Lingafelter, new species: **a.** dorsal habitus, male paratype; **b.** pronotal detail, male; **c.** pronotal detail, female.

179.275°E, (1 male – FBA 512158); 4 km SE Navukailagi Village, 2–24 May 2005, Malaise trap, U. Racule, 17.98°S, 179.275°E, 496 m a.s.l. FBA 511009, 511007, 511006 (3 [sex indet.]). **Viti Levu**, 0.75 km E. Navai Village, old trail to Mt. Tomaniivi (Victoria), gymnosperm dominated rainforest, -17.621, 177.989, 700 m, 23 Sep–18 Oct 2004, Malaise trap M05, E. Namatalau (1 female - SWL1; 1 male - SWL2); Navai Village. 13 Feb–18 Feb 2004. Malaise trap. M. Irwin, E. Slinger, M. Tokota'a. 17.37°S, 177.57°E, 700 m a.s.l. FBA 039518 & FBA 013681 (2 [sex indet.]); 4 km WSW of Colo-i-Suva Village, Mt. Nakobalevu, lowland wet forest, -18.056, 178.422, 325 m, 12 Nov–12 Dec 2004, Malaise trap, M02, Timoci (1 male - SWL3); 3 km SW of Colo-i-suva Village, 23 Sep 1988, hand collection, G. Paulay Coll., BM, 18.03°S, 178.27°E, 200 m a.s.l. (1 [sex indet.]).

Diagnosis and Discussion. This species of *Ceresium* is easily recognized by the prominent anterolateral pronotal tubercles making the pronotum wider anteriorly than posteriorly (almost all species of *Ceresium* have the pronotum broader posteriorly or subequal in width at posterior and anterior margins); the prominent, broad, ventrally projecting, acutely declivous prosternal process (nearly all *Ceresium* have a very narrow, gradually declivous prosternal processes); prominent, anteriorly right-angled mesosternal process; sparsely pubescent, shiny elytra with sparse, widely separated punctures and scattered pubescent aggregations (most *Ceresium* have elytral pubescence denser and more uniform). With regards to the pronotal proportions, *C. tuberculatum* is most similar to *C. guttaticolle*, but in that species the pronotum has dense patches of pubescence anteriorly and posteriorly.

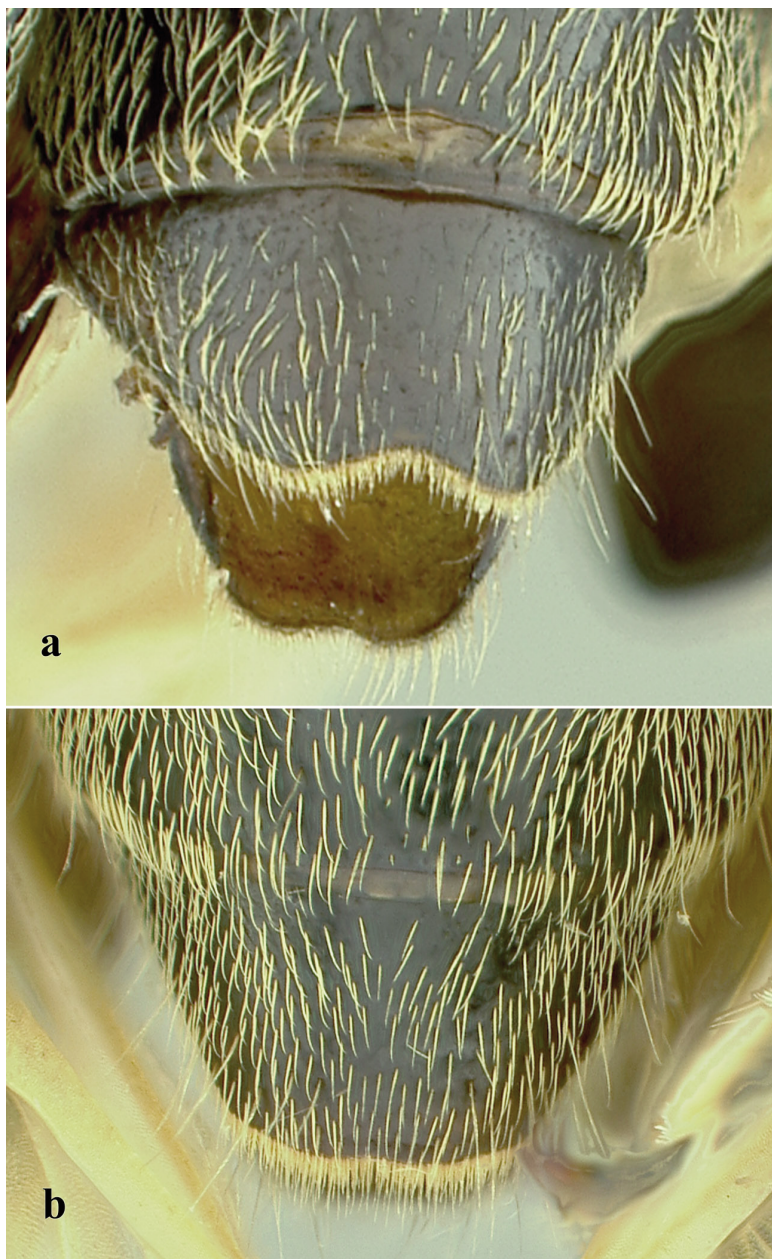


Figure 2. Sexual dimorphism of terminal abdominal ventrite of *Ceresium tuberculatum* Waqa & Lingafelter: **a.** male; **b.** female.



Figure 3. Thorax of *Ceresium tuberculatum* Waga & Lingafelter: **a.** lateral view showing acutely declivous prosternal process, weakly tuberculate, acutely declivous mesosternal process, and laterally closed mesocoxa; **b.** ventral view showing width of prosternal and mesosternal intercoxal processes, along with pubescence distribution.

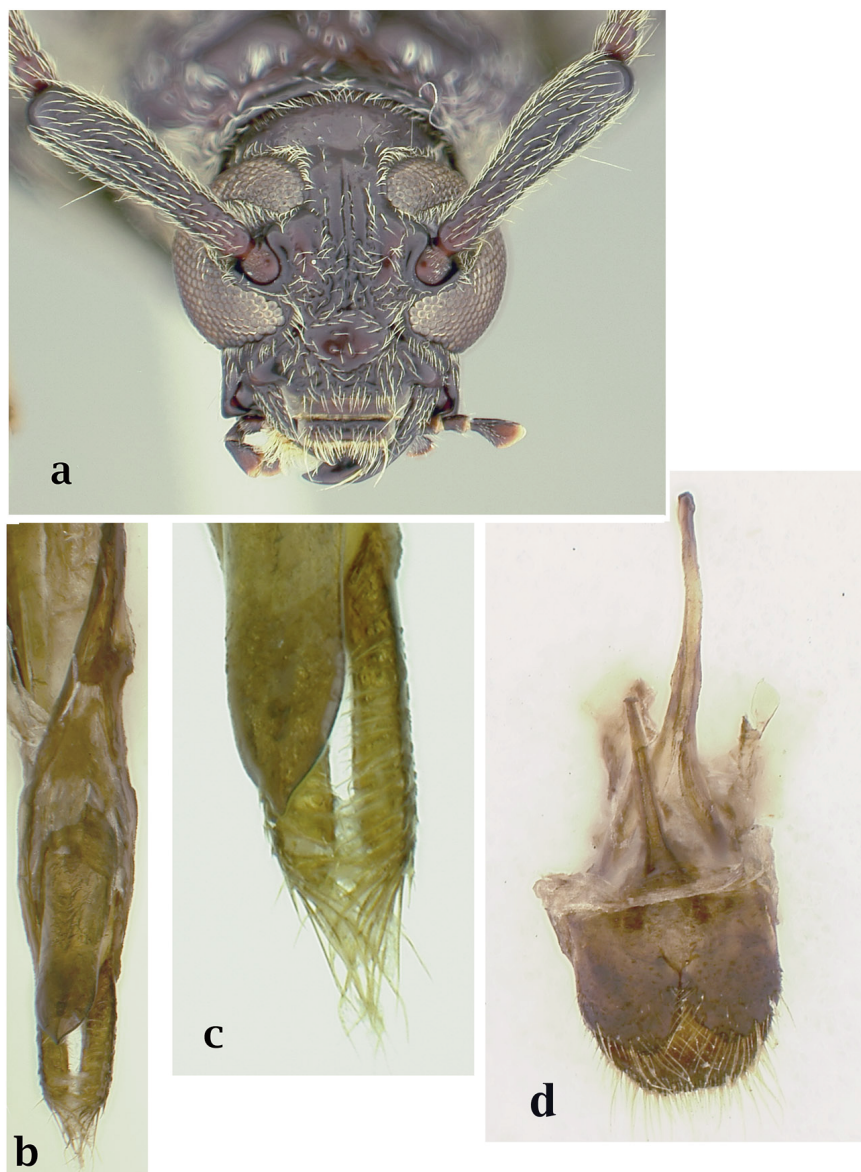


Figure 4. *Ceresium tuberculatum* Waqa & Lingafelter: **a.** anterior view of head; **b.** median lobe and parameres of aedeagus; **c.** closeup of apex of median lobe and parameres of holotype showing apical setae; **d.** sternite 8 and apodeme of aedeagus of holotype.

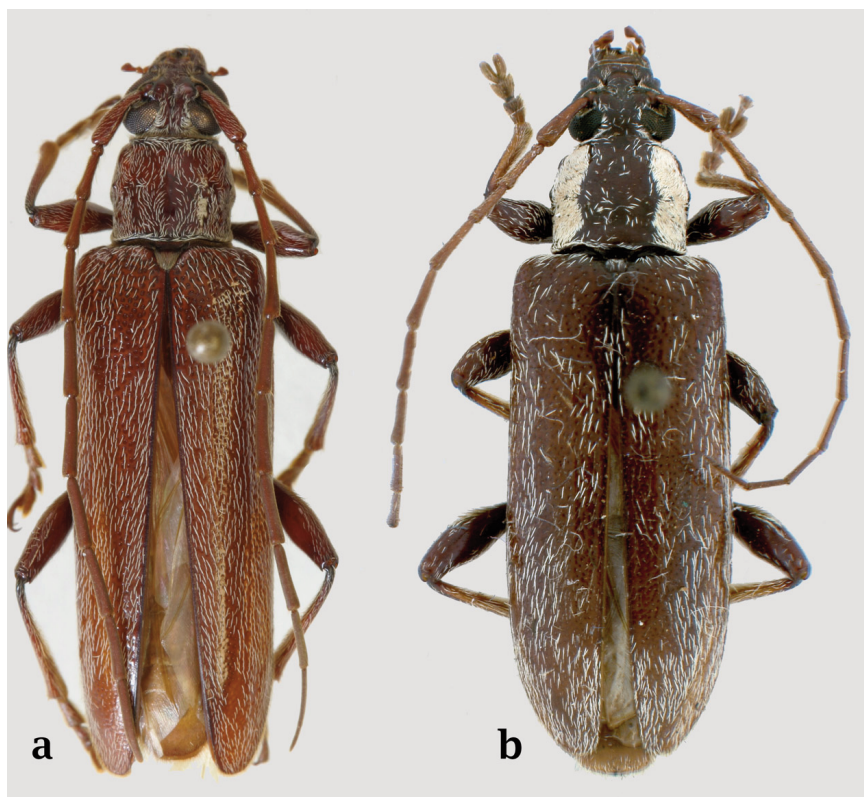


Figure 5. Dorsal habitus of *Laniferus* species: **a.** *Laniferus grandis* Waga & Lingafelter, male paratype; **b.** *Laniferus uniformis* Dillon & Dillon, male holotype.

Etymology. The specific epithet, *tuberculatum*, is a Latin adjective referring to the tuberculate pronotum that is characteristic of this species.

***Laniferus grandis* Waga & Lingafelter, new species**

(Figs. 5–9)

Description. Medium to large size; 20–27 mm long; 5.0–7.5 mm wide at humeri; integument color orange-brown with elytral suture, base and apical margin of pronotum and scutellum dark reddish-brown to piceous.

Head with shallow interantennal tubercle region, tubercles barely raised above level of eye. White or ochraceous pubescence sparsely distributed on head, denser around margins of eye and base of head. Frons and frontal-clypeal margin sparsely punctate.

Antennae slightly longer than body in males, not attaining elytral apex in females;

covered with vestiture of short, dense, ochraceous setae with longer setae towards apex of most antennomeres and ventrally. Antennomeres unspined and weakly expanded at apices on 7-9. Last antennomere slightly longer than penultimate, with a small constriction at apical third. Antennomeres 3 & 4 each shorter than scape; scape and 5-11 subequal in length. Scape moderate in length, clavate, extending almost to apical fifth of pronotum.

Pronotum subquadrate, widest across middle, narrower anteriorly than posteriorly; wider than long; without subbasal and apical constrictions. Pronotum with small acute tubercle just before middle at sides and a larger, broader tubercle anterolaterally. Disk of pronotum aside from these tubercles mostly flat. Pronotum with sparse white or ochraceous pubescence, more abundant at sides and posterior margin; mostly glabrous and impunctate or indistinctly punctate on disk.

Elytron with sparse but regularly distributed white or ochraceous pubescence throughout. Moderately dense but separate and shallow punctures throughout, gradually becoming shallower and smaller in size towards apex. Elytral apex rounded to suture. Scutellum narrowly rounded, covered with moderately dense, ochraceous pubescence.

Legs moderate in length, femora distinctly but gradually clavate, hind femora extending to third ventrite.

Venter of abdomen and thorax with sparse white or ochraceous pubescence at sides, but mostly glabrous along middle. Prosternum with denser pubescence throughout and on sides. Prosternal process broad, vertical and acutely declivous, about 1/3 width of procoxa, weakly notched and slightly expanded at apex. Proxocal cavities open posteriorly. Mesocoxae closed laterally to mesepimeron. Mesosternum acutely declivous, with small anterior tubercle projecting anteriorly, and sulcate anteriorly. Apex of terminal ventrite in males variable: some with distinct middle notch or indentation, others nearly truncate. *Aedeagus* as in Fig. 9a-b. Median lobe gradually, evenly narrowed to apex. Parameres moderate in length, converging at apices, with long apical setae that converge with those of opposite paramere. Females unknown.

Types. HOLOTYPE (male): FIJI: **Viti Levu**. PABITRA Wabu Baseline Survey, 1034 m, 17 Nov–20 Nov 2003, Malaise samples collected from Delena Vekovi -17.5833, 178.0833, FBA 053324 (BPBM, pending transfer to FNIC). PARATYPES (3 specimens, all males, deposited in BPBM & USNM): FIJI: **Viti Levu**. PABITRA Wabu Baseline Survey, 1034 m, 17 Nov–20 Nov 2003, Malaise samples collected from Delena Vekovi - 17.5833, 178.0833 (2 specimens: FBA 053317 & 053318); Koro-basabasaga Rng. 5.4 km NE Namosi Vlg., 21 Jun 2005, 17°59'31", 178°08'43"E, 600 m, CF, Hilda Waqa (1 specimen: HW1).

Diagnosis and Discussion. The only other species of *Laniferus*, *L. uniformis* Dillon & Dillon (Fig. 5b), is easily distinguished by the prominent, broad, lateral pubescent fasciae on the pronotum and the overall darker color and smaller size. In *L. grandis*, the pronotum has only sparse pubescence, not forming dense lateral fasciae. Further, *L. grandis* has very large eyes, particularly evident from lateral view. *Laniferus uniformis* is known only from Ovalau Island while *L. grandis* is known only from Viti Levu Island.

Etymology. The specific epithet, *grandis*, is a Latin adjective referring to the large size of this species.

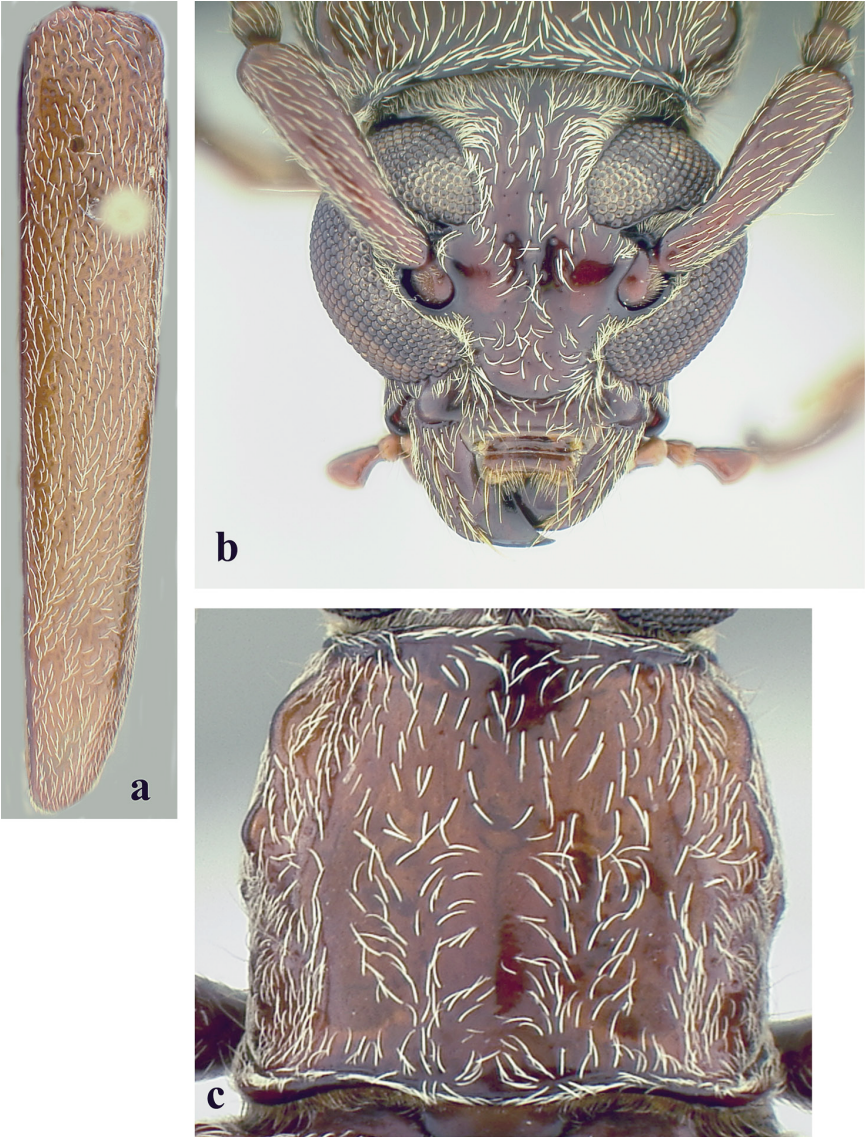


Figure 6. *Laniferus grandis* Waga & Lingafelter: **a.** elytron; **b.** anterodorsal view of head; **c.** pronotum.

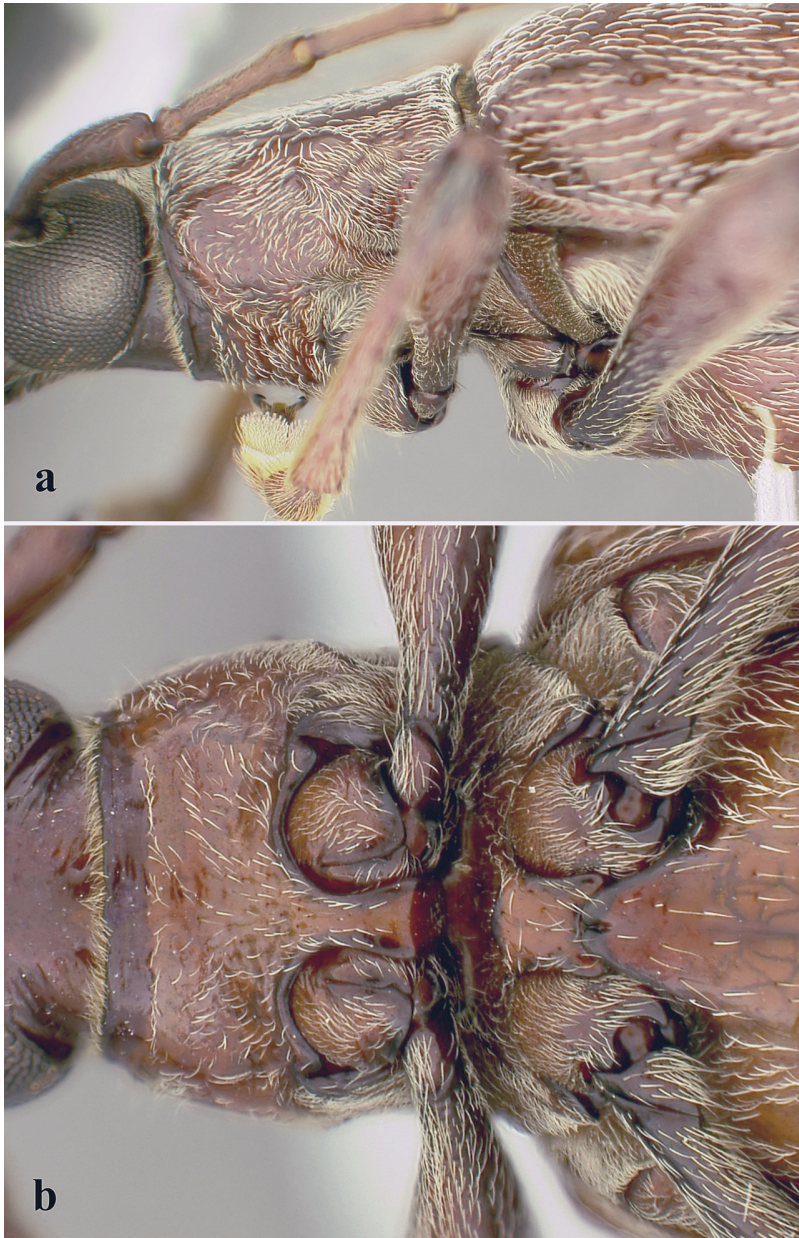


Figure 7. Thorax of *Laniferus grandis* Waqa & Lingafelter: **a.** lateral view showing acutely declivous prosternal process, weakly tuberculate, acutely declivous mesosternal process, and laterally closed mesocoxa; **b.** ventral view showing width of prosternal and mesosternal intercoxal processes, along with pubescence distribution.



Figure 8. *Laniferus grandis* Waga & Lingafelter: **a.** terminal abdominal ventrite of male, showing notched form; **b.** lateral view of head.



Figure 9. *Laniferus grandis* Waqa & Lingafelter: aedeagus of holotype: **a.** ventral view of apex showing parameres and middle lobe; **b.** slightly rotated view of apex showing less-obstructed apical setae.

ACKNOWLEDGMENTS

Funds from this study came in part from USDA, the Schlinger Foundation, Bishop Museum, National Science Foundation (DEB 0425790), and the Darwin Initiative. The Fiji Ministries of Environment and Forestry are thanked for their support of the project. David Olson, Al Samuelson, Moala Tokota'a, and Akinisi (Cagi) Caginitoba handled the Fiji travel and collecting logistics. Tokasaya Cakacaka and Alivereti Naikatini (USP, Fiji) helped with fieldwork. Thanks to Alistair Ramsdale and Terry Lopez (BPBM, Honolulu, Hawaii) and Leah Brorstrom and Chris Grinter (The World Spider-Endoparasitoid Lab, Santa Ynez, California) for their work in sorting and distributing specimens on which this study and others are based. Thanks to Gail Kampmeier (Illinois Natural History Survey) for assisting with locality information for many records in the Fiji Bioinventory of Arthropods Database. Elisabeth Roberts (USDA) prepared automontage photos of the anatomical details. Gérard Tavakilian (Muséum National d'Histoire Naturelle, Paris, France) and Alain Drumont (Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium) prepared photos and a loan of type material, respectively, from their institutions. Thanks to Eduard Vives (Museu de Zoologia, Barcelona, Spain), Norman Woodley (USDA – SEL), and Allen Norrbom (USDA – SEL) for their reviews of the manuscript.

LITERATURE CITED

- Bigger, M. & P. Schofield.** 1983. Checklist of Cerambycidae, Curculionidae, Attelabidae, Scolytidae and Platypodidae of Melanesia. *Centre for Overseas Pest Research, Miscellaneous Report* **60**: 1–28.
- Dillon, L.S. & E.S. Dillon.** 1952. Cerambycidae of the Fiji Islands. *Bernice P. Bishop Museum Bulletin* **206**: 1–114.
- Encyclopedia of Life.** 2008. The Genus *Ceresium* (Coleoptera: Cerambycidae). Available at: <http://www.eol.org/pages/9641>. Accessed on 24.iv.2009.
- Evenhuis, N. L.** 2007. Checklist of the Coleoptera of Fiji. *Bishop Museum Technical Report* **38**(5): 1–59.
- . & **D.J. Bickel.** 2005. The NSF-Fiji Terrestrial Arthropod Survey: Overview. Fiji Arthropods I. *Bishop Museum Occasional Papers* **82**: 3–25.

