

# Revision of *Trachodema* Blanchard with the description of an allied genus from central Chile (Insecta, Coleoptera, Curculionidae)

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*Trachodema* Blanchard includes the species *T. tuberculosa* Blanchard and *T. minuta* (Hustache). *Lamiarhinus* gen.n. is established for *L. aelficus* gen. et sp.n. and *L. horridus* (Germain) comb. n. Both genera are endemic to central Chile. They have tuberculate elytra, but are separated on the basis of the body vestiture, presence or absence of frontal fovea, depth of the scrobes, shape of the hind margin of the prothorax, and shape of the elytra. Diagnostic characters, descriptions and illustrations of the genera and species are given and keys to the species are presented. Lectotypes are designated for *T. minuta* and *L. horridus*.

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## Introduction

The weevil genus *Trachodema* was established by Blanchard (1851) to include the type species *T. tuberculosa*. In 1935, Marshall transferred *Rhytirrhinus minutus* Hustache to *Trachodema*. Subsequently, *Trachodema* was treated as a subgenus of *Listroderes* Schönherr (Kuschel 1950) and as its synonym (Kuschel in Wibmer & O'Brien 1986).

Since the original description of *Listroderes* by Schönherr (1826), its limits were unclearly expanded by the addition of many species. *Listroderes*, as recognized in the checklist of Wibmer & O'Brien (1986), is not satisfactorily distinguished from other genera of Listroderini and there is no combination of characters common to all the species included therein. Ongoing studies of the species currently assigned to *Listroderes* led to the revalidation of *Antarctobius* Fairmaire (previously considered a synonym of *Listroderes*) as a distinct genus (Morrone in press). The recognition and resurrection of *Trachodema* is another step in restricting the definition of *Listroderes*. In addition to this decision, *Lamiarhinus* gen.n. is erected to accommodate *Listroderes horridus* Germain and a newly described species. *Lamiarhinus* resembles *Trachodema* in the tuberculate elytra, but it is consistently distinguished by a unique combination of characters, discussed below.

The main objectives of this study are to provide descriptions and illustrations of *Trachodema* and *Lamiarhinus* and their included species, as a further step toward the goal of revising the genera of Listroderini from southern South America.

## Materials and methods

This study is based on specimens obtained on loan from the following institutions or individuals (codens identify collections in the text):

- CWOB Charles W. O'Brien, Private Collection, Tallahassee, Florida, U.S.A. (Charles W. O'Brien).
- DZUP Departamento de Zoología, Universidad Federal do Paraná, Curitiba, Brasil (Germano Rosado-Neto).
- FIML Fundación e Instituto Miguel Lillo, San Miguel de Tucumán, Argentina (Arturo L. Terán).
- MACN Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina (Axel O. Bachmann).
- MHNS Museo Nacional de Historia Natural, Santiago, Chile (Mario Elgueta).
- MLP Museo de La Plata, La Plata, Argentina (Ricardo A. Rondros).

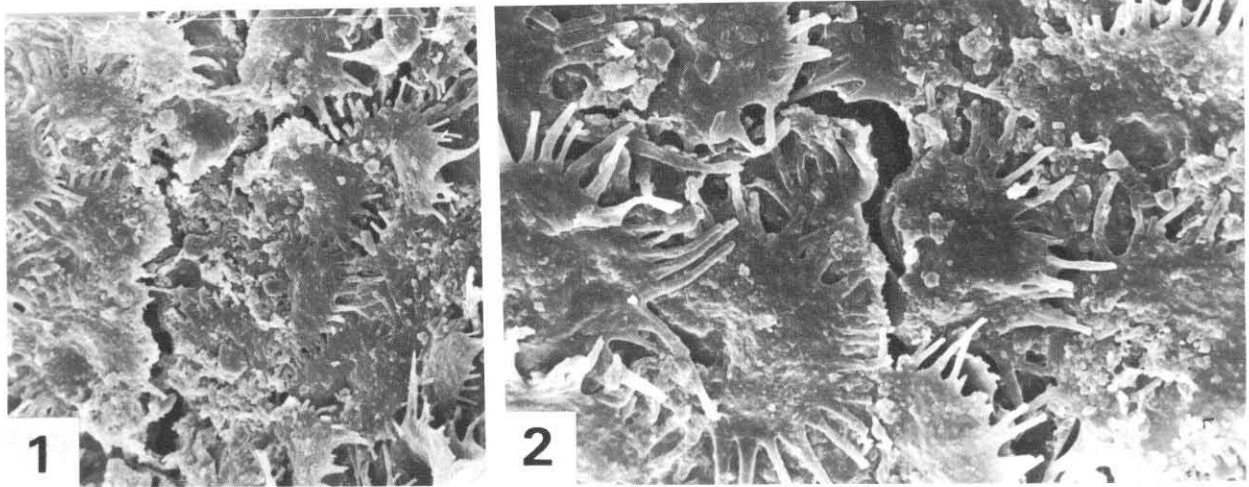
Methods of dissection and preparation of mouthparts and genitalia are the usual. Measurements were taken with the aid of an ocular micrometer in a stereoscopic microscope. Drawings were made with a camera lucida attached to a stereoscopic microscope. Observations with the Scanning Electron Microscope were made at the Museo de La Plata with a Jeol-JSM-T100 operating at 15 kV.

## *Trachodema* Blanchard

Type species *Trachodema tuberculosa* Blanchard 1851 (by indication, monotypy).

*Trachodema* Blanchard in Gay 1851: 374; Lacordaire 1863: 330; Gemminger & Harold 1871: 2357 (cat.); Germain 1896: 796; Schenkling & Marshall 1929: 23 (cat.); Blackwelder 1947: 814 (list); Kuschel 1950: 14 (subgenus of *Listroderes*); Kuschel in Wibmer & O'Brien 1986: 112 (= *Listroderes*).

**Diagnosis.** Very small to medium-sized (2.5–5.3 mm); body vestiture consisting of scales with dendritic processes; frons lacking fovea; eyes ovate; rostrum shorter than prothorax; scrobes deep, lateral, directed toward eyes, ventral carina lacking teeth; epistome protruding; mandibles with two setae; prementum without setae; funicular articles 3–6 subglobose; prothorax slightly transverse, hind margin straight, disc with two parallel keels, postocular lobes present; elytra ovate, wider than prothorax, slightly convex, humeri subquadrate, dorsal



Figs 1, 2. *Trachodema tuberculosa* Blanchard, elytral scales.—1. General view (500 ×).—2. Detail (1000 ×).

surface tuberculate, anteapical tubercle present; tibiae mucronate, with one spur; tarsomere 3 bilobate; female sternum 8 subcircular, apodeme shorter than plate; hemisternites with styli; spermatheca with nodulus and ramus developed, cornu long.

**Redescription.** Body length 2.5–5.3 mm. Integument dark brown. Body vestiture consisting of scales with dendritic processes (Figs 1, 2). Head convex, small. Frons lacking fovea. Eyes ovate, large, flat. Rostrum slightly curved, shorter than prothorax; dorsum with median sulcus and two strong lateral carinae. Scrobes deep, directed toward eyes, lateral; ventral carina lacking teeth. Pterygia developed. Epistome protruding. Mandibles robust, flat, external face with two setae, inner margin with two teeth, pharyngeal process short and wide. Maxillae with subquadrate mala bearing seven lacinial teeth; palpal articles 1 and 2 wider than long, 3 subconical. Labium with subtrapezoidal prementum, lacking setae; palpi apical, setae 2–1–0; ligula globose, well developed. Antennae subapically inserted; scape slightly exceeding hind margin of eye when resting in scrobe; funicular article 1 more than twice as long as 2, articles 3–6 subglobose, 7 transverse; club ovate. Prothorax slightly transverse, sides expanded in medial third, hind margin straight; disc with two parallel keels; postocular lobes present. Metepisternal suture present. Scutellum visible. Elytra ovate, wider than prothorax, slightly convex, striae conspicuous, intervals convex, epipleural carina prominent, humeri subquadrate, apical declivity horizontal, apex rounded. Dorsal surface tuberculate; anteapical tubercle present. Legs with robust femora and tibiae; tibiae mucronate, with one spur; tarsomere 3 bilobate.

**Male.** Aedeagus (Figs 4, 5) symmetrical, sclerotized, curved, robust in lateral view, sides convergent in apical third. Tegmen lacking parameres.

**Female.** Sternum 8 (Figs 6, 7) subcircular, with 2 sclerotized arms, apical margin with short setae; apodeme broad, shorter than plate, base broadened. Hemisternites (Fig. 8) short, styli apical, with few long setae. Spermatheca (Figs 9, 10) with nodulus and ramus developed, cornu long.

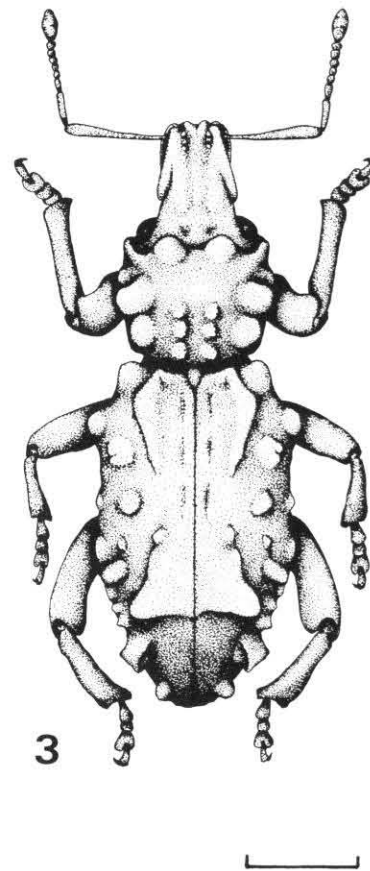


Fig. 3. *Trachodema tuberculosa* Blanchard, male habitus. Scale bar = 1 mm.

**Plant association.** *Trachodema tuberculosa* was collected on *Atriplex semibaccata* R. Br. (Chenopodiaceae).

**Geographical distribution.** *Trachodema* is endemic to central Chile, from Coquimbo to Concepción provinces. This distribution mainly coincides with the Santiagan and northern Valdivian entomofaunal regions of O'Brien (1971).

#### Key to species of *Trachodema*

1. Prothorax with two well-developed, parallel keels, two lateral tubercles on each side and two apical tubercles; postocular lobes well developed. Scutellum large, protruding. Elytra with interval 3 costate and tuberculate; dorsal and anteapical tubercles well developed ..... *T. tuberculosa* Blanchard

— Prothorax with two poorly developed, parallel keels, lacking tubercles; postocular lobes slightly developed. Scutellum small, flat. Elytra with interval 3 convex; dorsal and anteapical tubercles small ..... *T. minuta* (Hustache)

### *Trachodema tuberculosa* Blanchard (Figs 1–6, 8, 9)

*Trachodema tuberculosa* Blanchard in Gay 1851: 375; Gemminger & Harold 1871: 2357 (cat.); Germain 1896: 796; Schenkling & Marshall 1929: 23 (cat.); Blackwelder 1947: 814 (list).

*Listroderes tuberculatus*; Kuschel 1950: 14; Wibmer & O'Brien 1986: 115 (list); Elgueta & Jackson 1987: 75 (list).

**Material examined.** Chile. Coquimbo: 10 km W Canela Baja, 'under stones', 30-IX-1967, L. & C. W. O'Brien col., 11 (4 CWOB, 1 DZUP, 2 FIML, 2 MHNS, 2 MLP); 12 km N Huentelauquén, 14-XII-1967, L. & C. W. O'Brien col., 1 (CWOB), 23/25-X-1986, 2 (MHNS); Los Vilos, 'under stones', 13-XII-1967, C. W. & L. O'Brien col., 6 (CWOB), 1-1975, D. Jackson col., 4 (MHNS); P. N. Fray Jorge, 'on *Atriplex semibaccata*', 'at night', 21-VI-1968, L. & C. W. O'Brien col., 1 (CWOB); 28 km SW Ovalle, 14-XII-1967, L. & C. W. O'Brien col., 1 (CWOB); Totoralillo, 22-II-1953, 8 (MHNS). Valparaíso: C. Bucalán, 'tamizado', 22-XI-1957, Hofman col., 1 (CWOB); Con-Con, 10-IV-1970, 1 (MHNS); P. N. La Campana, Ocoa, 20-VII-1984, C. Viván col., 2 (MHNS); 13 km E Puchuncaví, 1600 m, 'berlese funnel', 8-VIII-1968, C. W. O'Brien col., 1 (CWOB). Santiago: 15 km W Padre Hurtado, 'at night', 6-IX-1967, C. W. O'Brien col., 1 (CWOB). Ñuble: Cobquecura, 21-II-1985, P. Ramírez col., 25 (MHNS); Las Lajuelas, 15-I-1976, G. Moreno col., 1 (MHNS). Concepción: Boca del Bío-Bío, 24-VIII-1968, 1 (MHNS). Without precise data: Chile, 3 (MHNS).

**Redescription. Male** (Fig. 3). Rostrum 1.2–2.0 as long as wide, 0.5–0.7 times as long as prothorax. Antennae with slender scape, gradually widening toward apex; article 1 of funicle 2.2–2.8 times as long as 2. Prothorax 0.8–0.9 times as long as wide, disc with two well-developed, parallel keels, two lateral tubercles on each side, and two apical tubercles; postocular lobes well developed. Scutellum large, protruding. Elytra 1.3–1.7 times as long as wide, interval 3 costate and tuberculate, humeri tuberculate; dorsal and anteapical tubercles well developed.

Aedeagus (Figs 4, 5) with rounded apex, slightly curved in apical third; apodemes as long as median lobe.

**Female.** Sternum 8 (Fig. 6). Hemisternites (Fig. 8). Spermatheca (Fig. 9).

Total length (pronotum + elytra) 3.0–5.3 mm.

### *Trachodema minuta* (Hustache) (Figs 7, 10)

*Rhytirhinus minutus* Hustache, 1930: 269.

*Trachodema minuta*; Marshall 1935: 516; Blackwelder 1947: 814 (list).

*Listroderes minutus*; Wibmer & O'Brien 1986: 114 (list), 1989: 30 (list).

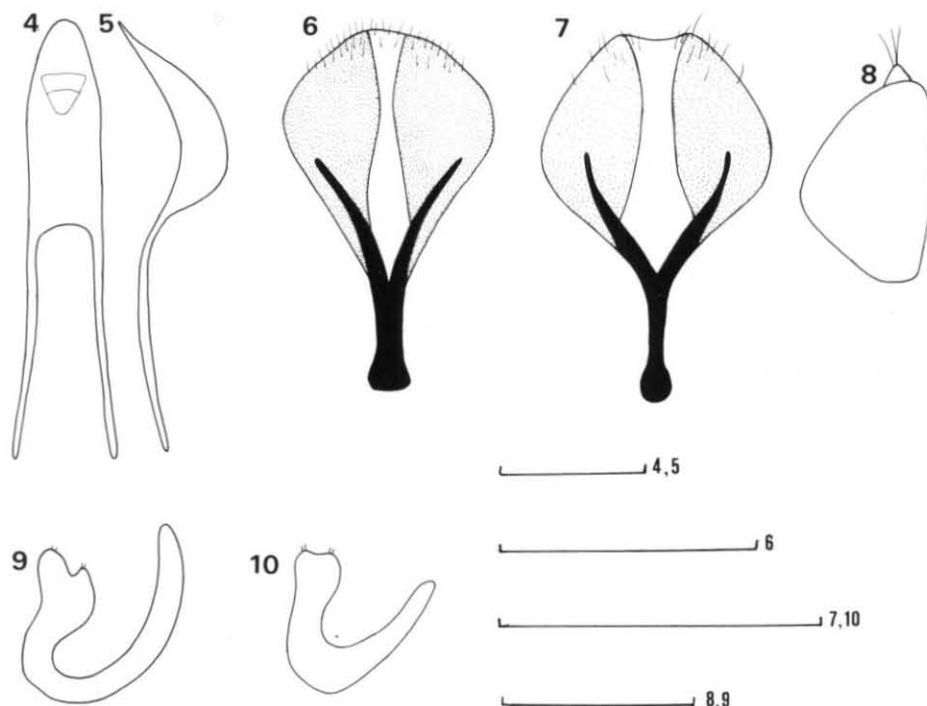
**Type material.** Lectotype female (labels separated by square brackets with a slash to separate each line): [*Rhytirhinus/minutus* m, cotypus/Hustache det.] [Chili] [Lectotipo hembra/*Rhytirhinus minutus* Hust./Morrone des. 1992] [*Trachodema minuta*/det. Morrone 1992] (MHNS).

**Redescription.** Lectotype female (here designated). Rostrum 1.2 as long as wide, 0.5 times as long as prothorax. Antennae with robust scape, abruptly widening toward apex; article 1 of funicle 2.6 times as long as 2. Prothorax 0.8 times as long as wide, disc with two poorly developed, parallel keels; postocular lobes slightly developed. Scutellum small, flat. Elytra 1.4 times as long as wide, humeri non-tuberculate; dorsal and anteapical tubercles small. Sternum 8 (Fig. 7). Hemisternites similar to *T. tuberculosa*. Spermatheca (Fig. 10). Total length (pronotum + elytra) 2.5 mm.

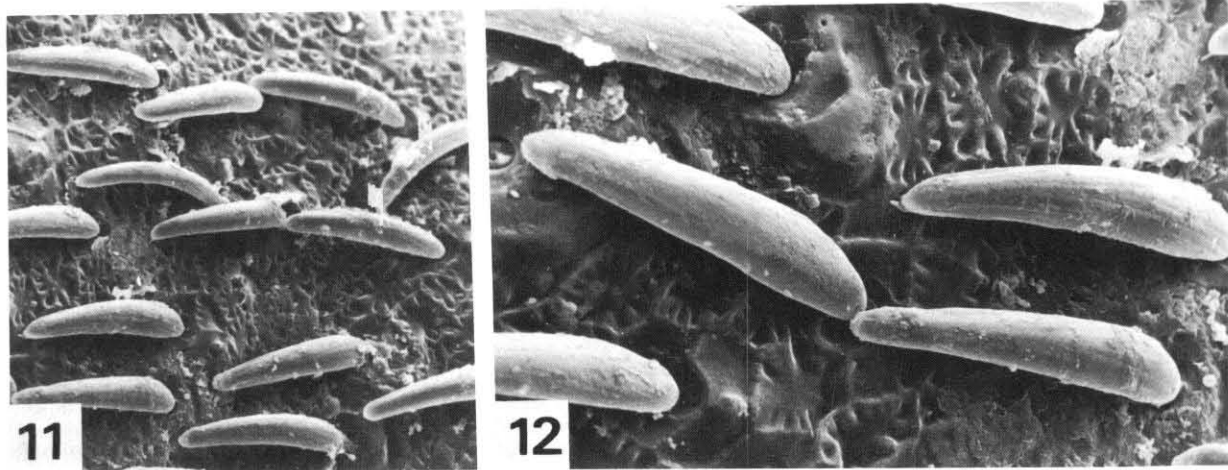
### *Lamiarhinus* gen.n.

Type species *Lamiarhinus aelficus* sp.n.

**Diagnosis.** Medium-sized (5.7–6.8 mm); body vestiture consisting of seta-like scales; frons with fovea; eyes ovate; rostrum shorter than prothorax; scrobes shallow, latero-



Figs 4–10. *Trachodema*, genitalia.—4. Aedeagus, dorsal.—5. Aedeagus, lateral.—6, 7. Female sternum 8, ventral.—8. Hemisternite, ventral.—9, 10. Spermatheca. Figs 4–6, 8, 9. *T. tuberculosa*. 7, 10. *T. minuta* (lectotype). Scale bar = 0.5 mm.



Figs 11, 12. *Lamiarhinus aelficus* gen. et sp.n., elytral seta-like scales.—11. General view (500 ×).—12. Detail (1000 ×).

dorsal, directed toward eyes, ventral carina lacking teeth; epistome protruding; mandibles with two setae; prementum lacking setae; funicular articles 3–6 elongate; prothorax transverse, hind margin sinuate, disc tuberculate, postocular lobes present; elytra subrectangular, wider than prothorax, convex, humeri subquadrate, dorsal surface tuberculate, anteapical tubercle present; tibiae mucronate, with one spur; tarsomere 3 bilobate; female

sternum 8 subpentagonal, apodeme shorter than plate; hemisternites with styli; spermatheca lacking nodulus and ramus.

*Etymology.* The masculine generic name *Lamiarhinus*, from the Greek *lamia* (mythological witch) refers to the bizarre habitus of this genus of weevils.

*Description.* Body length 5.7–6.8 mm. Integument black. Body vestiture consisting of seta-like scales (Figs 11, 12). Head convex, small. Frons with fovea. Eyes ovate, large, flat. Rostrum slightly curved, shorter than prothorax; with three dorsal carinae. Scrobes shallow, latero-dorsal, directed toward eyes; ventral carina lacking teeth. Pterygia developed. Epistome protruding. Mandibles robust, flat, external face with two setae, inner margin with two teeth, pharyngeal process short and wide. Maxillae with subquadrate mala bearing 5 lacinial teeth; palpal articles 1 and 2 longer than wide, 3 subconical. Labium with subtrapezoidal prementum, lacking setae; palpi apical, setae 1–1–0; ligula reduced. Antennae subapically inserted; scape slightly exceeding hind margin of eye when resting in scrobe; funicular article 1 1.1–1.4 times as long as 2, articles 3–6 elongate, 7 transverse; club ovate. Prothorax transverse, hind margin sinuate; disc strongly tuberculate; postocular lobes well developed. Metepisternal suture present. Scutellum small, flat. Elytra subrectangular, wider than prothorax, convex, striae conspicuous, intervals convex, epipleural carina prominent, humeri subquadrate, apical declivity vertical, apex tuberculate. Dorsal surface tuberculate, with 2 tubercles on the fore third; anteapical tubercle present. Legs with slender femora and tibiae; tibiae mucronate, with 1 spur; tarsomere 3 bilobate.

*Male.* Aedeagus (Figs 14, 15) symmetrical, sclerotized, curved, robust in lateral view, sides subparallel. Tegmen lacking parameres.

*Female.* Sternum 8 (Fig. 16) subpentagonal, with 2 sclerotized arms, apical margin with short setae; apodeme broad, slightly shorter than plate. Hemisternites (Fig. 17) long, styli apical, with few short setae. Spermatheca (Fig. 18) lacking nodulus and ramus.

*Remarks.* *Lamiarhinus* resembles *Trachodema* in the elytra tuberculate. It is distinguished from the latter by the

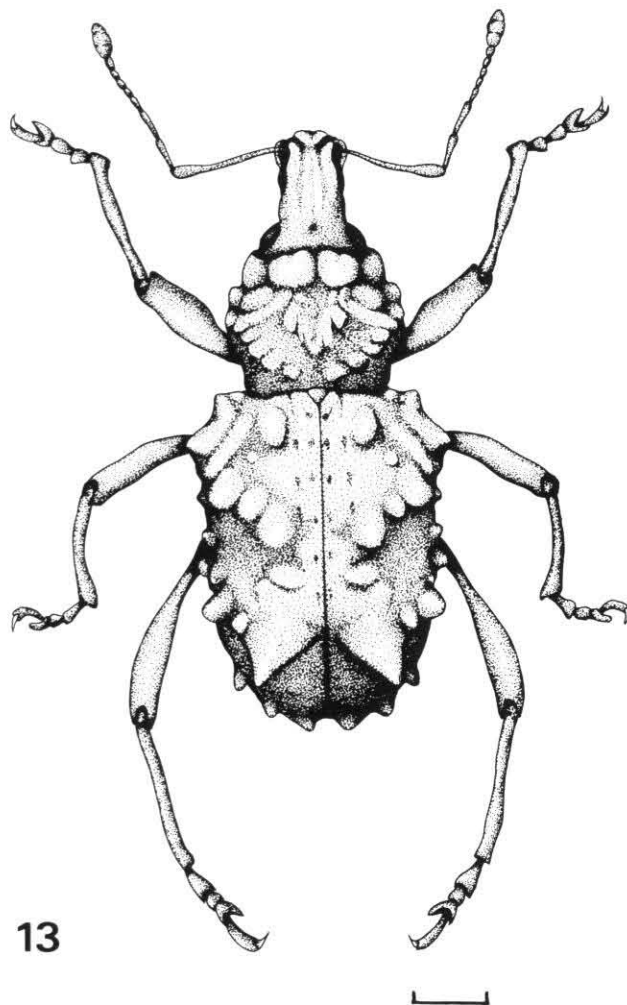
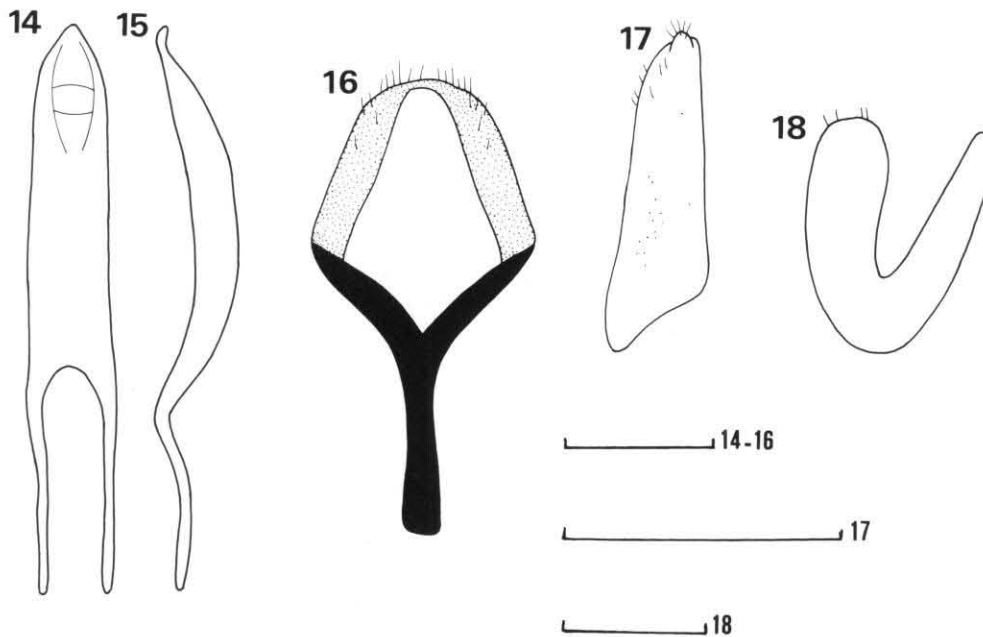


Fig. 13. *Lamiarhinus aelficus* gen. et sp.n., male habitus. Scale bar = 1 mm.





Figs 14–18. *Lamiarhinus aelficus* gen. et sp.n., genitalia.—14. Aedeagus, dorsal.—15. Aedeagus, lateral.—16. Female sternum 8, ventral.—17. Hemisternite, ventral.—18. Spermatheca. Scale bars 14, 15 = 1 mm; 16–18 = 0.5 mm.

seta-like scales, frons with fovea, scrobes shallow, hind margin of prothorax sinuate, and elytra subrectangular.

*Plant association.* *Lamiarhinus aelficus* was collected on *Podanthus ovatifolius* Lag. (Asteraceae).

*Geographical distribution.* *Lamiarhinus* is found in central Chile. Its distribution corresponds to the Santiaguan and northern Valdivian entomofaunal regions as discussed by O'Brien (1971). When Germain (1896) described *Listroderes horridus* (now *Lamiarhinus horridus*), he doubted its Chilean distribution. The finding of the related species *L. aelficus* in Concepción province corroborates its origin.

#### Key to species of *Lamiarhinus* gen.n.

1. Prothorax with apex strongly constricted, hind margin with pair of tubercles, disc with median longitudinal keel bifurcated toward apex. Elytra with humeri not prominent, dorsum with three larger tubercles on each elytron (two on interstria 3 and one on interstriae 5–6), and smaller tubercles; two conical tubercles subparallel ..... *L. aelficus* sp.n.
- Prothorax with apex not constricted, hind margin lacking tubercles, disc with median depression, lacking keels. Elytra with humeri strongly prominent, dorsum with many small tubercles, irregularly arranged on interstriae 2–7; two conical tubercles with convergent apices ..... *L. horridus* (Germain)

#### *Lamiarhinus aelficus* sp.n. (Figs 11–18)

*Type material.* Holotype male (labels separated by square brackets with a slash to separate each line): [Chile: P./Concepción/Boca Bío-Bío/8-24-1968] [*Podanthus/ovatifolius* L. &/C. W. O'Brien] [Holotipo macho/*Lamiarhinus aelficus* Morrone] (CWOB). Allotype (CWOB) and 11 paratypes (7 CWOB, 4 MLP) with the same collection data.

*Etymology.* The name *aelficus* is derived from the Anglo-Saxon *aelf*, a diminutive fairylike being.

*Description.* Holotype male (Fig. 13). Rostrum 1.3 times as long as wide, 0.6 times as long as prothorax. Antennae with article 1 of funicle 1.4 times as long as 2. Prothorax 0.8 times as long as wide, apex strongly constricted, hind margin with pair of tubercles, disc with median longitudi-

nal keel bifurcated toward apex into two lateral keels. Elytra 1.3 times as long as wide, humeri not prominent; dorsum with three larger tubercles on each elytron (two on interstria 3 and one on interstriae 5–6), and smaller tubercles; two conical tubercles subparallel. Aedeagus (Figs 14, 15) with pointed apex, strongly curved in apical third; apodemes shorter than median lobe. Total length (pronotum + elytra) 5.7 mm.

Allotype female. Sternum 8 (Fig. 16). Hemisternites (Fig. 17). Spermatheca (Fig. 18). Total length (pronotum + elytra) 6.8 mm.

#### *Lamiarhinus horridus* (Germain) comb.n.

*Listroderes horridus* Germain 1896: 741; Kolbe 1907: 104 (cat.); Germain 1911: 205 (list); Schenkling & Marshall 1931: 8 (cat.); Blackwelder 1947: 813 (list); Wibmer & O'Brien 1986: 114 (list).

*Type material.* Lectotype female (labels separated by square brackets with a slash to separate each line): [♀] [327] [Vald.] [Holotype ♀/*Listroderes/horridus*/Germain/det. G. Kuschel/1981] [Lectotipo hembra/*Listroderes horridus* Germain/Morrone des. 1992] [*Lamiarhinus horridus*/det. Morrone 1992] (MHNS).

*Redescription.* Lectotype female (here designated). Rostrum 1.4 times as long as wide, 0.7 times as long as prothorax. Antennae with article 1 of funicle 1.1 times as long as 2. Prothorax 0.7 times as long as wide, apex not constricted, hind margin lacking tubercles, disc with median depression, lacking keels. Elytra 1.2 times as long as wide, humeri strongly prominent; dorsum with many small tubercles, irregularly arranged on interstriae 2–7; two conical tubercles with convergent apices. Total length (pronotum + elytra) 6.8 mm.

*Remarks.* The genitalia were absent in the specimen.

### Acknowledgements

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