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A Synopsis of Bolivian *Polyrhaphis* Audinet-Serville (Coleoptera,
Cerambycidae, Lamiinae) with description of a new species

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A Synopsis of Bolivian *Polyrhaphis* Audinet-Serville (Coleoptera, Cerambycidae, Lamiinae) with description of a new species

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Abstract. The Bolivian species of *Polyrhaphis* Audinet-Serville, 1835, (Coleoptera, Cerambycidae, Lamiinae) are reviewed and illustrated, with *P. skillmani* **new species** described. A key is presented to the six species recorded from Bolivia (*P. angustata* Buquet, 1853; *P. argentina* Lane, 1978; *P. gracilis* Bates, 1862; *P. pilosa* Lane, 1965; *P. spinosa* (Drury, 1773); and *P. skillmani* Wappes and Santos-Silva, new species). Their collection localities, based on recently identified specimens examined by the authors, are plotted to show the distribution of species, and displayed next to an ecoregion map of Bolivia to illustrate biogeographical information for *Polyrhaphis*.

Keywords. Ecoregions; new species; Polyrhaphidini; species distribution; taxonomy.

Resumen. Se revisan e ilustran las especies bolivianas de *Polyrhaphis* Audinet-Serville, 1835, (Coleoptera, Cerambycidae, Lamiinae) con la descripción de *P. skillmani* especie nueva. Se presenta una clave para las seis especies conocidas de Bolivia (*P. angustata* Buquet, 1853; *P. argentina* Lane, 1978; *P. gracilis* Bates, 1862; *P. pilosa* Lane, 1965; *P. spinosa* (Drury, 1773); y *P. skillmani* Wappes y Santos-Silva **especie nueva**). Se trazan sobre un mapa las localidades de colecta, basadas en especímenes identificados recientemente y examinados por los autores, y se muestran junto a un mapa de las ecorregiones de Bolivia para ilustrar la información biogeográfica de *Polyrhaphis*.

Palabras clave. Ecorregiones; especie nueva; Polyrhaphidini; distribución de especies; taxonomía.

Introduction

Recently, Santos-Silva et al. (2010), revised *Polyrhaphis* Audinet-Serville, 1835, (Coleoptera, Cerambycidae, Lamiinae) including 22 species in the genus. The following four were recorded from Bolivia: *P. pilosa* Lane, 1965; *P. argentina* Lane, 1978; *P. papulosa* (Olivier, 1795); and *P. gracilis*, Bates, 1862. Another, *P. spinosa* (Drury, 1773), recorded by Wappes et al. (2006), was inadvertently omitted by them and another, *P. angustata* Buquet, 1853, subsequently recorded by Wappes et al. (2011). *Polyrhaphis paraensis* Bates, 1872 a junior synonym of *P. papulosa*, was also removed from the Bolivian fauna by Wappes et al. (2011), leaving five known species. With the description of *Polyrhaphis skillmani* new species, six species are again known from Bolivia.

Materials and Methods

Specimens from the following museums and private collections were used in this study:

ACMT – American Coleoptera Museum (James Wappes), San Antonio, Texas, USA
FSCA – Florida State Collection of Arthropods, Gainesville, Florida, USA

- FWSC** – Frederick W. Skillman Jr., Pearce, Arizona, USA
MZSP – Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil
MNKM – Museo de Historia Natural, Noel Kempff Mercado, Universidad Autónoma Gabriel René Moreno, Santa Cruz de la Sierra, Bolivia
RFMC – Roy F. Morris, II, Lakeland, Florida, USA
SWLC – Steven W. Lingafelter, North Potomac, Maryland, USA
USNM – National Museum of Natural History, Washington, D.C., USA

Localities plotted on the distribution map (Figure 13) are from specimens examined by us or from the type locality given by the describer. Other records of Bolivian *Polyrhaphis* are simply citations in catalogs, without precise localities. In the case of *P. argentina*, it was not possible to plot the locality mentioned in the original description because it is not a single location but instead somewhere between the two localities: Buena Vista and Tacaurandi. Bolivian Departments as mentioned in the distribution discussion are abbreviated: Beni = BN, Cochabamba = CO, La Paz = LP, Santa Cruz = SC and Tarija = TR.

***Polyrhaphis skillmani* sp. nov.**

(Fig. 1-4)

Holotype male (Fig. 1-4). Body dorsoventrally depressed. Head 0.85 times length of prothorax; slightly elongate behind eyes. Area between lower ocular lobes flat; punctation fine, distinct only laterally in a line starting about middle of eyes and ending near clypeus; pubescence reddish-brown, short, laterally more abundant; area close to eyes with five long setae arranged in a line. Area between and on antennal tubercles with pubescence similar to that between lower ocular lobes. Area around upper ocular lobes and prothorax with pubescence brownish-yellow, denser than between ocular lobes and on antennal tubercles, forming a wide band; area between eyes with a small, glabrous, elongate oval area. Area behind upper ocular lobes with pubescence distinctly finer, brownish, intermixed with coarse, short, brownish-yellow setae. Area around lower ocular lobes with a narrow band of brownish-yellow pubescence, ending near genal apex; a wide band of brownish-yellow pubescence between genal base and prothorax, sparser close to the eyes. Distance between upper ocular lobes equal to 0.8 times pedicel length. Distance between lower ocular lobes equal to 1.7 times pedicel length. Genae about as long as 0.9 times width of lower ocular lobe; with short, sparse brownish-yellow setae, becoming rust-red towards apex. Dorsal surface of clypeus elevated, laterally with short, brownish-yellow setae, distinctly sparser medially, and with long setae present; frontal surface with long, moderately abundant setae (shorter than on dorsal surface). Anteclypeus translucent, shining, glabrous brown. Basal two-thirds of labrum darker, strongly emarginate centrally, pubescence sparser towards anteclypeus, with long setae towards apex; distal third as in anteclypeus, but with long, abundant setae on distal edge. Median groove narrow, distinct from clypeus to prothorax. Ventral surface of head shining, with fine, transverse, shallow sulcus; glabrous, except near mentum which is transversely covered with white setae. Mentum narrow, black, centrally glabrous, laterally with short, coarse, white setae with long, fine, brownish setae intermixed. Maxillary and labial palpi black, except a small reddish area at apex, with short setae and sparse longer setae intermixed. Mandibles about half as long as head at eye level; densely microsculptured, with moderately coarse, shallow punctures on dorsal and lateral surfaces, except on distal fourth, which is shining and glabrous; basal half with short, moderately dense brownish-red pubescence, distinctly sparser on distal half. Antennae about twice as long as elytral length, with short, fine, dense brownish-red pubescence; scape 0.6 times as long as antennomere III; pedicel 0.2 times as long as antennomere III; antennomere IV slightly shorter than III; V 0.8 times as long as IV; VI 0.9 times as long as V; VII and VIII slightly shorter than VI, and IX slightly shorter than VIII; X 0.9 times as long as IX; XI about twice as long as X.

Lateral spines of prothorax large, about 0.45 times as long as pronotal length; abundantly pubescent on dorsal surface, sparser and coarser on ventral surface; ventral surface with coarse, sparse punctures around base. Conical tubercles of pronotum protuberant, pubescent on basal half (mainly on inner surface), glabrous on distal half. Middle area between base and conical tubercles with a distinct, rounded

tubercle, glabrous centrally. Pronotum with dense brownish-red pubescence, yellower in some irregular areas, sparser around outer and posterior sides of conical tubercles; transverse basal sulcus with coarse, deep punctures, somewhat smaller on anterior third. Prosternum covered with white pubescence, not obscuring the surface. Prosternal process narrow, sulcate centrally between procoxae, distinctly enlarged and widened towards apex; narrow area with short, whitish pubescence on sides of sulcus; wider area towards apex with long, abundant, dark red setae. Mesosternum with pubescence as on prosternum, but denser and longer. Greatest width of mesosternal process 0.75 times width of mesocoxa; 0.45 times at its least width; laterally elevated and with a wide carina centrally; vestiture composed of long setae intermixed with white pubescence. Metasternum densely white pubescent centrally, except on glabrous sulcus, slightly sparser white pubescence laterally. Metepisterna similarly pubescent laterally as metasternum. Scutellum densely brownish-yellow pubescent, except for a small triangular area at base. Elytra with basal three-fourths subparallel; apex with a distinct spine at outer angle, and a short spine at sutural angle; basal gibbosities elevated, widely carinate laterally, forming a wide, moderately deep depression between carina. Elytral pubescence: reddish-brown on basal half (slightly longer and more abundant on basal one-sixth); forming a wide transverse lighter band on basal fourth of elytron; an oblique darker band along distal edge of the lighter band, that does not reach the suture, and is curved forward centrally after the distal elytral callosity; areas between the anterior dark band and the last lighter band with intermixed brown and white pubescence followed by irregular less pubescent areas with light brown to yellow pubescence. Elytra with glabrous shining tubercles: moderately large and abundant on gibbosities; distinctly smaller laterally; larger on the oblique carina starting at apex of gibbosities and ending on base of distal third, nearly all tubercles rounded at apex. Elytral punctation coarse, deep, and abundant on vertical lateral area, especially on basal half and around base of gibbosities; sparser on base of shining tubercles, on gibbosities and the discal area between them; slightly smaller on distal third. Humeral margin nearly forming a right angle. Ventrites whitish-yellow pubescent. Tibiae with a band of whitish-yellow pubescence near middle. Tarsomeres dorsally white pubescent, except distal two-fifths of tarsomere V; ventral pad bright rust-red.

Dimensions in mm. Total length (including mandibles), 23.1; prothoracic length, 3.7; anterior prothoracic width, 4.9; posterior prothoracic width, 4.9; between apex of prothoracic lateral spines, 7.3; width at humeri, 8.3; elytral length, 17.0.

Type material. Described from a single male holotype from BOLIVIA, *Santa Cruz*: Florida, 4 km N Bermejo, Refugio los Volcanes (18°06'S, 63°36'W; 1000-1200 meters); 12.XII.2012, Skillman & Wappes col. (MNKM).

Diagnosis. *Polyrhaphis skillmani* (Fig. 1-4) is one of three Bolivian species having sub parallel elytra laterally (the others are *P. angustata* and *P. gracilis*). It differs from the other two by having much larger elytral tubercles and punctures that are clearly evident from the base to the apices (although the size and number are reduced on apical one-fourth), by having a pair of large glabrous tubercles on the pronotal disc and by its dark legs and antennae which lack annulation. Both *P. angustata* and *P. gracilis* have smaller elytral tubercles and punctures, greatly reduced in number apically, almost disappearing in *P. angustata* and completely lacking on apical one-fourth in *P. gracilis*. Both also lack the glabrous pronotal tubercles, having more of a raised but flattened disk, and with *P. angustata* having rust-red annulations on the legs and antennae.

Among South American species, *Polyrhaphis skillmani* is most similar to *P. confusa* Lane, 1978, (recorded from SE Brazil). It differs by the low, only slightly elevated elytral gibbosities, with abundant tubercles on middle third, and apical fourth of elytra with distinct coarse punctures along the suture. In *P. confusa* (Fig. 10 and 11) the elytral gibbosities are strongly elevated, the elytral tubercles on middle third much less abundant, and the apical fourth with at most sparse punctures, and occasionally not sculptured at all.

Etymology. We name this species for Frederick W. Skillman, Jr., the collector of the holotype and an ardent participant in the "Bolivia Cerambycidae Project (BCP)" with whom the first author has shared many enjoyable days and nights collecting in Bolivia.

Species excluded from Bolivian fauna

Polyrhaphis papulosa was recorded for Bolivia by Monné and Giesbert (1994) based on a specimen Edmund Giesbert collected in Bolivia and determined as *Polyrhaphis paraensis* Bates (now a junior synonym of *P. papulosa*). This determination and subsequent recording of the species was followed by Wappes et al. (2006). Santos-Silva et al. (2010) commented (translation): “The record to Bolivia (Monné and Giesbert 1994; Wappes et al. (2006) is doubtful.” With the availability of the Santos-Silva et al. (2010) review the specimen was re-examined and determined to be *Polyrhaphis argentina* Lane. Wappes et al. (2011), in their section: “Previously recorded species to be removed from the Checklist of Bolivian Cerambycidae” listed “*Polyrhaphis paraensis* Bates (replaced by *P. argentina* Lane, 1978)” thus, formally removing it from the Bolivian fauna.

Key to the species of *Polyrhaphis* known to occur in Bolivia

1. Elytra at basal three-fourths subparallel laterally (Fig. 1, 6, 8, 10) **2**
— Elytra towards apex at basal three-fourths gradually convergent laterally (Fig. 5, 7, 9) **4**
- 2(1). Elytral tubercles large, distinct, abundant on basal three-fourths, with coarse punctures along sutural margin to apices (Fig. 1-4) ***P. skillmani* sp. nov.**
— Elytral tubercles small, moderately abundant basally, much less so apically, absent from apical one-third to one-fourth, lacking coarse punctures along sutural margin near apices **3**
- 3(2). Distance between upper ocular lobes less than width of one lobe; punctures on pronotum and basal two-thirds of elytra moderate in size, clearly distinct and abundant. (Fig. 6)
..... ***P. angustata* Buquet, 1853**
— Distance between upper ocular lobes about the width of one lobe; punctures on pronotum small, less abundant, sparse or absent in some areas, especially on pronotal disc and distal one-half of elytra (Fig. 8) ***P. gracilis* Bates, 1862**
- 4(1). Elytral surface with distinct, long setae (Fig. 5) ***P. pilosa* Lane, 1965**
— Elytral surface lacking long setae **5**
- 5(4). Lateral spines of prothorax notably long, distinctly curved, projected forward; elytral tubercles long, sharp and spine-like (Fig. 9) ***P. spinosa* (Drury, 1773)**
— Lateral spines of prothorax moderate in length, not curved, directed outward; elytral tubercles short, not sharp or spine-like (Fig. 7) ***P. argentina* Lane, 1978**

Distribution and biogeography of Bolivian *Polyrhaphis*

Based on available collection data for the six *Polyrhaphis* species known from Bolivia only two (*P. argentina* and *P. gracilis*) are commonly collected. Among examined material (229 total *Polyrhaphis* specimens), *Polyrhaphis argentina*, with 178 specimens, comprises 78 per cent of the total and *Polyrhaphis gracilis*, with 46 specimens, 20 per cent. The other four species with 5 specimens total only represent 2 per cent of the study material, with each known from one collection site. Species distribution is illustrated in Figure 13 with the numbers in black circles, representing a collection site as defined below.

Collection Sites

1. BN, Riberalta, and Santa Maria, 14 km SE of Riberalta.
2. BN, Guanay
3. LP, San Miguel del Bala (14°35'S - 67°37'W)

4. CO, Cristal Mayu (17°6.0'S - 65°47'W)
5. CO, Villa Tunari area, including El Puente hotel grounds (16° 59'S - 65°24'W)
6. SC, 20km N Camiri, Rd to Eyti, 6-8 km E Hwy 9 (19°52'S - 63°29'W)
7. SC, Las Trancas (Nuflo de Chavez Province)
8. SC, Javier Chaco, 8 km NW Terebinto (17°41'S - 63°24'W)
9. SC, Refugio los Volcanes, 4km N Bermejo (18°06'S - 63°36'W)
10. SC, Potrerillo del Guenda (17°40'S - 63°27'W)
11. SC, Buena Vista area (including Flora and Fauna hotel, 4km SSE Buena Vista)
12. TR, 2 km SW Villamontes
13. SC, Santa Cruz de la Sierra (17°48'S - 63°10'W)

Species / Sites where collected

P. angustata: 3

P. argentina: 1, 2, 4, 5, 6, 8, 9, 10, 11, and 12

P. gracilis: 6, 9, 10, 11, and 13

P. pilosa: 5

P. skillmani: 9

P. spinosa: 7

These data indicate *P. argentina* is, by far, the most widespread species followed by *P. gracilis* which is known from many of the same collection sites. All four of the remaining Bolivia species are rarely collected. This paucity of collections makes it speculative to comment on their distribution. Most records are from tropical broadleaf forests at altitudes of 100-1,500 meters and collected during the wet season from September to March. As much of Bolivia is yet to be explored entomologically, until it is, the distribution information must be considered preliminary.

Material examined

The numbers in brackets indicate the collection site for those specimens as detailed in the list of "Collection Sites" and as shown on Fig. 13.

Polyrhaphis argentina Lane, 1978

(Fig. 7)

Santa Cruz: Buena Vista [11], 5 males, 4 females, 18-25.X.1992, Giesbert col. (FSCA); 20 km S Buena Vista [11], 2 females, 18-25.X.1992, Giesbert col. (FSCA); 4-6 km SSE Buena Vista (Flora & Fauna Hotel, 420-450 m) [11], male, female, 2-12.II.2000, J. E. Wappes col. (ACMT); male, 2-13.II.2000, Thomas col. (FSCA); female, 14-16.X.2000, Wappes & Morris col. (ACMT); 1 male, 5 females, 14-19.X.2000, Thomas col. (FSCA); male, 17-19.X.2000, Wappes & Morris col. (ACMT); male, 23-26.X.2000, Wappes & Morris col. (ACMT); 2 females, 23-26.X.2000, Thomas col. (FSCA); 7 males, 9 females, 23-25.X.2000, Morris & Wappes col. (RFMC); 2 males, 27-29.X.2000, Wappes & Morris col. (ACMT); 2 males, 15-22.XI.2001, Dozier col. (FSCA); 3 males, 5 females, 5-15.XI.2001, Thomas & Dozier col. (FSCA); male, female, 23-31.X.2002, Wappes & Morris col. (ACMT); 1 male, 2 females, 27-31.X.2002, Morris & Wappes col. (RFMC); male, 1-8.XI.2002, Wappes col. (ACMT); 2 females, 1-10.XI.2002, Lingafelter col. (SWLC); 2 males, 2 females, 10-15.XI.2002, R. Clarke col. (ACMT); male, female, 16-31.XII.2002, R. Clarke col. (ACMT); 2 males, 1-18.III.2003, Dozier col. (FSCA); 5 males, 6 females, 3-14.XI.2003, Lingafelter col. (SWLC); 2 males, 1 female, 16-29.XI.2003, Dozier col. (FSCA); male, 21-24.XI.2003, Wappes, Morris & Nearn col. (ACMT); 2 males, 2 females, 21-25.XI.2003, Morris, Nearn & Wappes col. (RFMC); female, 19-22.X.2004, Wappes & Morris col. (ACMT); 2 males, 19-22.X.2004, Morris & Wappes col. (FSCA); 2 males, 1 female, 14-20.XI.2008, Galileo, Vanin & Martins col. (MNKM); male, female, 14-20.XI.2008, Galileo, Vanin & Martins col. (MZSP); male, 17.X.2011, Skillman & Wappes col. (FWSC); Santa Cruz

(500 m) [13], female, II.1967, Zischka col. (ACMT); Refugio Los Volcanes (4 km N Bermejo, 1045 m, 18°06'S - 63°36'W) [9], male, 18-22.I.2007, Wappes & Lingafelter col. (ACMT); male, 16-21.X.2007, Wappes & Cline col. (ACMT); 8 males, 7 females, Lingafelter col. (USNM); female, 6-10.III.2011, Wappes & Thomas col. (ACMT); female, 27.X.2011, Skillman & Wappes col. (FWSC); 2 males, 29.X.2011, Skillman & Wappes col. (FWSC); male, 11.XII.2011, Lingafelter col. (SWLC); Bermejo (4 km S Refugio Los Volcanes) [9], male, 5-6.II.2013, Anibal Limon col. (ACMT); 20 km N Camiri (Road to Eyti, 6-8 km E Hwy 9, 16°52'S - 63°29'W) [6], male, female, 5-10.XII.2012, Wappes, Bonaso & Skillman col. (ACMT); Javier Chaco (8 km NW Terebinto, 17°41'S - 63°24'W) [8], male, female, 1.XII.2012, Wappes, Bonaso, Romero & Skillman col. (ACMT); Potrerillo del Guenda (17°40'S - 63°27'W) [10], male, female, 5-20.XI.2004, B. K. Dozier col. (ACMT); 2 males, 9 females, 5-20.XI.2004, Dozier col. (FSCA); 5 males, 6 females; 22.XI-12.XII.2005, Dozier col. (FSCA); 1 male, 2 females, 9-29.XI.2006, Dozier col. (FSCA); male, 10-15.X.2007, Wappes & Cline col. (FSCA); 6 males, 3 females, 16-21.X.2007, F. & J. Romero col. (FSCA); 4 males, 2 females, 14-16.X.2011, Skillman & Wappes col. (FWSC); 2 males, 21-23.II.2013, Lingafelter col. (SWLC). *Cochabamba*: Villa Tunari (Hotel El Puente, 16°59'S - 65°24'W) [5], male, female, 1-12.IX.2012, Wappes, Skelley, Bonaso & Hamel col. (ACMT); 1 km E Villa Tunari [5], male, 8-12.X.1992, Giesbert col. (FSCA); Cristal Mayu [4], 2 males, Skillman & Wappes col. (FWSC); região de Chaparé [4], male, X.1950, Dirings (MZSP). *Tarija*: 2 km SW Villamontes [12], 2 females, 13-15.XII.2011, Morris, Wappes & Lingafelter col. (RFMC). *Beni*: Guanay [2], male, XI.1992, [no collector indicated] (MZSP); Santa Maria (14 km SE Riberalta, 11°05.5'S - 65°57.9'W, 181 m) [1], male, 10.II.2013, Lingafelter, Wappes & Garzón col. (SWLC).

***Polyrhaphis gracilis* Bates, 1862**

(Fig. 8)

Santa Cruz: Buena Vista [11], female, 18-25.X.1992, Giesbert col. (FSCA); 20 km S Buena Vista [11], female, 18-25.X.1992, Giesbert col. (FSCA); 4-6 km SSE Buena Vista (Flora & Fauna Hotel, 420-450 m) [11], 3 females, 14-19.X.2000, Thomas col. (FSCA); male, female, 14-16.X.2000, Wappes & Morris col. (ACMT); 3 females, 17-19.X.2000, Wappes & Morris col. (ACMT); male, female, 17-19.X.2000, Wappes & Morris col. (MZSP); 5 males, 2 females, 14-20.X.2000, Morris & Wappes col. (RFMC); female, 27-31.X.2002, Morris & Wappes col. (RFMC); 2 females, 3-8.X.2004, Wappes col. (ACMT); male, 7-10.X.2004, Morris & Wappes col. (RFMC); 20 km N Camiri (Road to Eyti, 6-8 km E Hwy 9, 16°52'S - 63°29'W) [6], female, 5.XII.2012, Skillman & Wappes col. (FWSC); male, female, 5-10.XII.2012, Wappes, Bonaso & Skillman col. (ACMT); Potrerillo del Guenda (17°40'S - 63°27'W) [10], 2 males, 2 females, 30.IX-03.X.2007, Wappes & Morris col. (ACMT); female, 10-15.X.2007, Wappes & Cline col. (ACMT); 2 females, 10-15.X.2007, Wappes & Cline col. (FSCA); female, 1-10.X.2008, Morris & Wappes col. (RFMC); male, female, 21-24.X.2011, Wappes & Skillman col. (ACMT); Refugio Los Volcanes (4 km N Bermejo, 1045 m, 18°06'S - 63°36'W) [9], male, XI.2007, Lingafelter col. (USNM); female, 20.X.2011, Skillman & Wappes col. (FWSC); female, 27.X.2011, Skillman & Wappes col. (FWSC); 2 males, 29.X.2011, Skillman & Wappes col. (FWSC); Santa Cruz (500 m) [13], 2 males, 4 females, 16.X.2011, Skillman & Wappes col. (FWSC).

***Polyrhaphis pilosa* Lane, 1965**

(Fig. 5)

Cochabamba: Villa Tunari (Hotel El Puente, 16°59'S - 65°24'W) [5], female, 18.X.2011, Skillman & Wappes col. (FWSC); male, 10-12.IX.2012, Wappes, Skelley, Bonaso & Hamel col. (ACMT).

***Polyrhaphis spinosa* (Drury, 1773)**

(Fig. 9)

Santa Cruz: Las Trancas (Province of Nuflo de Chavez) [7], male, 19.IV.1998, Placido Coro col. (ACMT).

***Polyrhaphis angustata* Buquet, 1853**

(Fig. 6)

La Paz: San Miguel del Bala (along Beni River, 14°34,875'S - 67°36,731'W) [3], male, 24-30, IX, 2007, Nearns, Swift & Miller col. (ACMT).

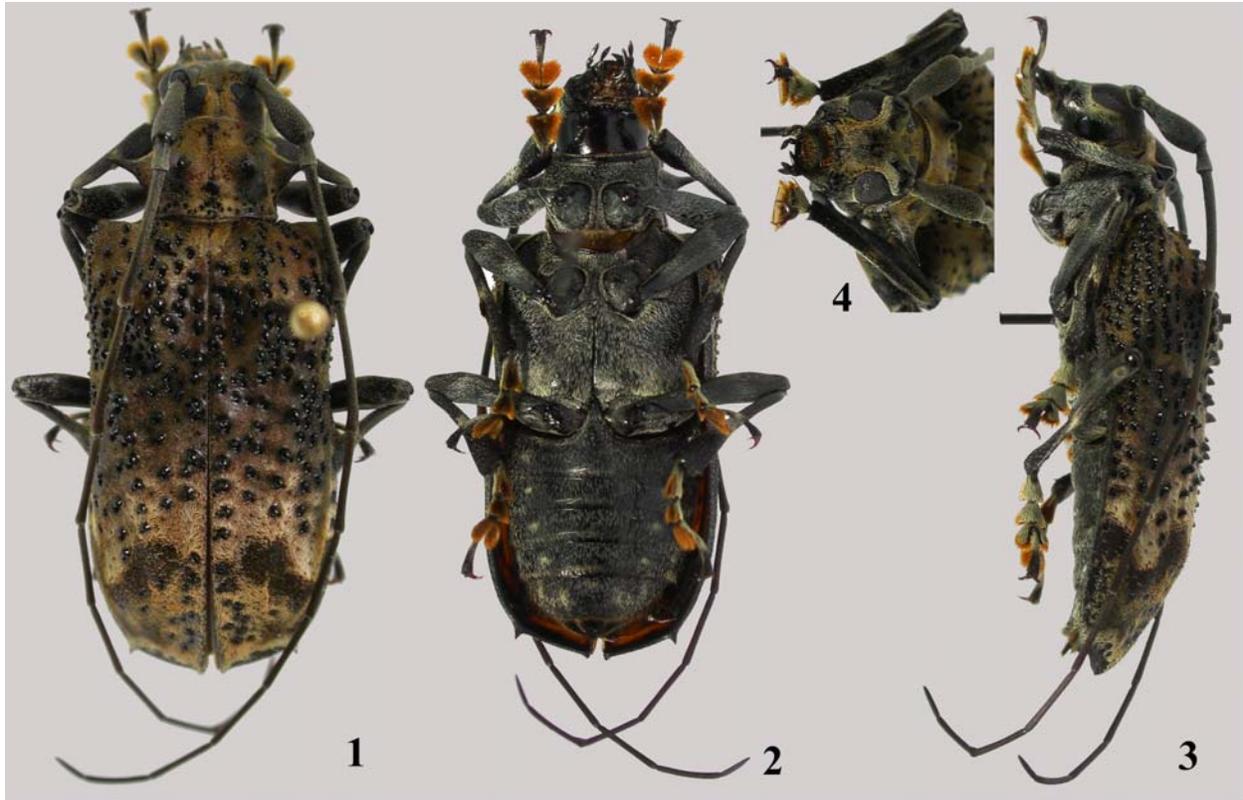
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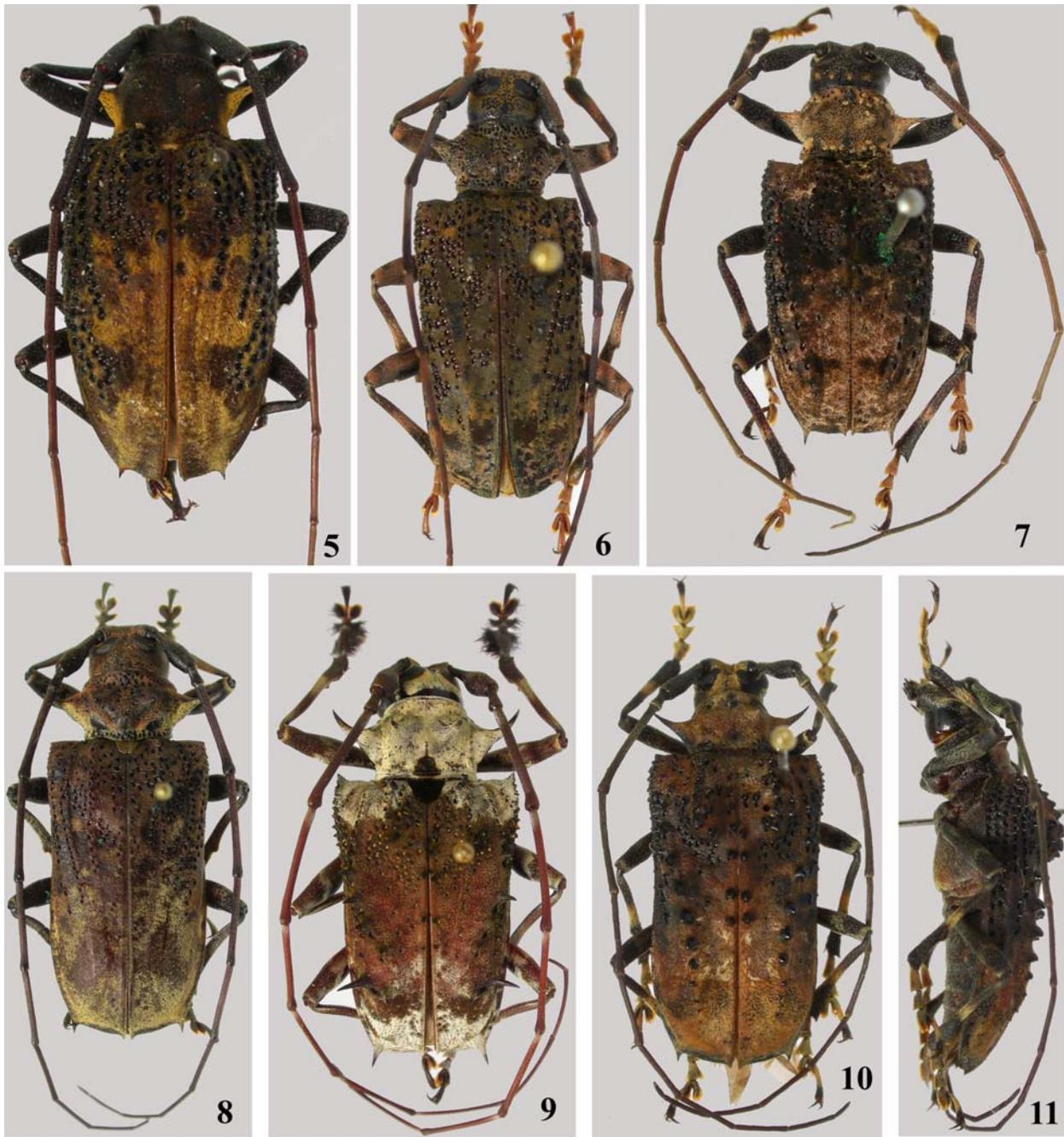
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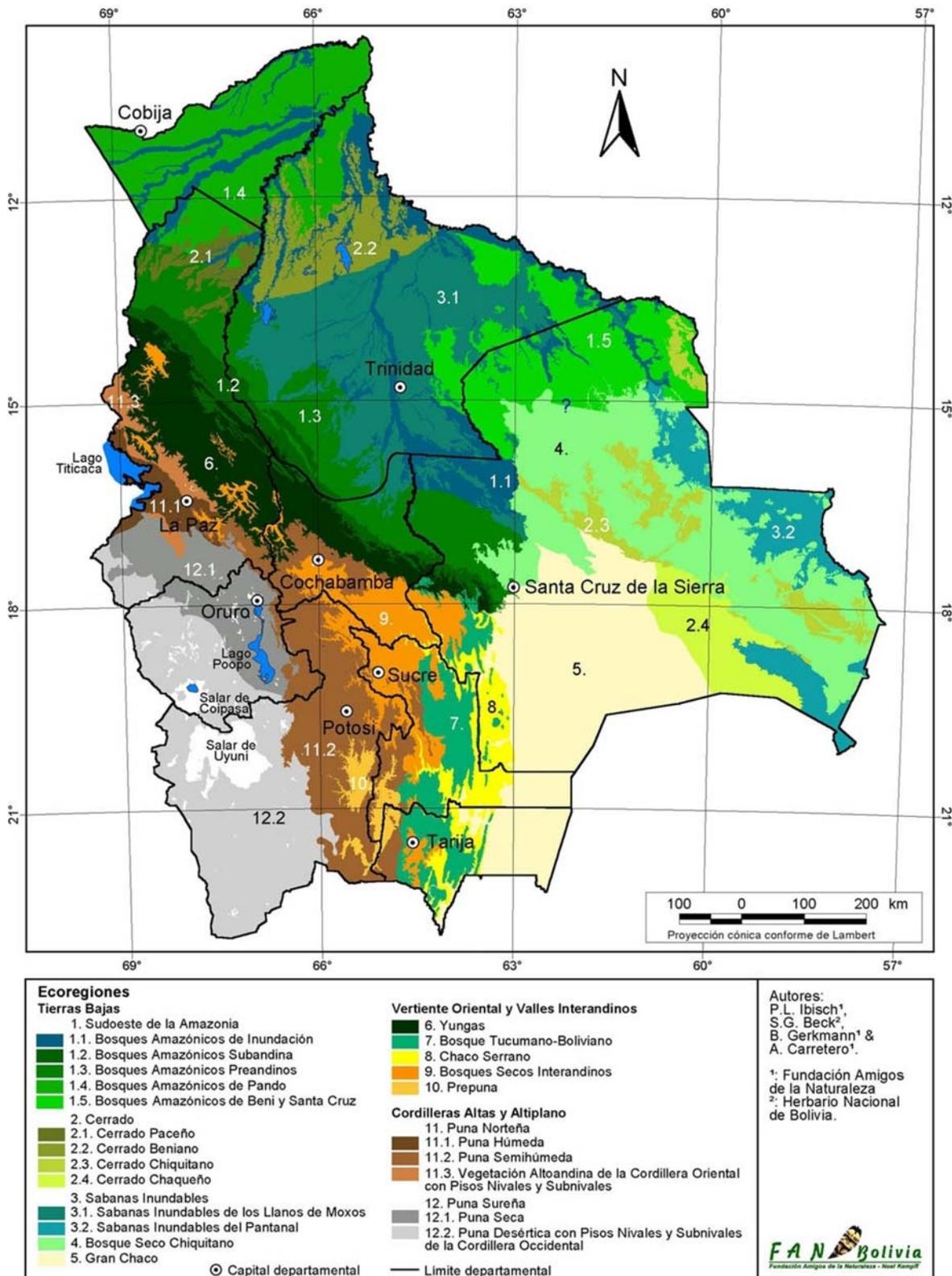
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Figures 1-4. *Polyrhaphis skillmani* sp. nov., holotype male. 1) Dorsal habitus. 2) Ventral habitus. 3) Lateral habitus. 4) Head, frontal.



Figures 5-11. *Polyrhaphis* sp. **5)** *Polyrhaphis pilosa*, paratype male, dorsal habitus. **6)** *P. angustata*, male, dorsal habitus. **7)** *P. argentina*, male, dorsal habitus. **8)** *P. gracilis*, male, dorsal habitus. **9)** *P. spinosa*, male, dorsal habitus. **10-11)** *P. confusa*, male: **10)** Dorsal habitus; **11)** Lateral habitus.



Mapa de las ecoregiones de Bolivia.

Figure 12. Ecoregions of Bolivia (map from Ibisch et al. 2003).



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Figure 13. Collection sites for *Polyrrhaphis* species in Bolivia.

