

The Neotropical species of the genus *Lithocharodes* SHARP, 1876 (Coleoptera: Staphylinidae: Staphylininae: Xantholinini)

With 53 figures and 2 keys

ULRICH IRMLER¹

¹ Institute for Ecosystem Research, Dept. Applied Ecology, University of Kiel, Olshausenstrasse 40, 24098 Kiel, Germany. –
uirmler@ecology.uni-kiel.de

Published on 2021-06-30

DOI: 10.21248/contrib.entomol.71.1.029-085

Abstract

The Neotropical species of the genus *Lithocharodes* were studied. A total of 26 new species were found. These are: *L. aculeata* spec. nov., *L. ashei* spec. nov., *L. bierigi* spec. nov., *L. bicornis* spec. nov., *L. boliviana* spec. nov., *L. brooksi* spec. nov., *L. compacta* spec. nov., *L. curtipennis* spec. nov., *L. denticulata* spec. nov., *L. dubiosa* spec. nov., *L. ecuadoriensis* spec. nov., *L. elongata* spec. nov., *L. hanagarthi* spec. nov., *L. karinae* spec. nov., *L. katharinae* spec. nov., *L. lescheni* spec. nov., *L. nigerrima* spec. nov., *L. nigrita* spec. nov., *L. obscura* spec. nov., *L. pampana* spec. nov., *L. peruana* spec. nov., *L. silvicola* spec. nov., *L. somoleptoides* spec. nov., *L. surinamensis* spec. nov., *L. triangula* spec. nov., and *L. verhaaghi* spec. nov. The following species described under *Lithocharodes* were transferred to the genus *Somoleptus* SHARP, 1885: *S. cavicola* (BLACKWELDER, 1943) (comb. nov.) and *S. strigulata* (BLACKWELDER 1943) (comb. nov.). The following four species described under the genus *Somoleptus* were transferred to *Lithocharodes*: *L. bicolor* (SHARP, 1885) (new combination) and *S. gracilis* SHARP, 1885 (new synonymy), which is conspecific with *L. bicolor*; *L. clavicornis* (ERICHSON, 1839) described as *Leptacinus clavicornis* and transferred to *Somoleptus* by SHARP (1885) (new combination); *L. elegans* (SHARP, 1885) (new combination); *L. gracilis*, *L. ramboseki*, *L. cameroni* (new synonymies) are conspecific with *L. fusciventris* SHARP, 1885. New records from the West Indies and Central America were given for *L. floridanus* (LECONTE, 1880) and *L. nigripennis* (LECONTE, 1863). Lectotypes were designated for *L. fusciventris*, *L. gracilis*, *L. fuscula*, and *L. spinigera*.

Nomenclatural acts

Lithocharodes aculeata spec. nov. – urn:lsid:zoobank.org:act:A18023B2-0E8E-4094-A5ED-3DCF051C0185

Lithocharodes ashei spec. nov. – urn:lsid:zoobank.org:act:3464349F-B225-4FFB-A2DA-A9F5F286E872

Lithocharodes bierigi spec. nov. – urn:lsid:zoobank.org:act:40819238-8854-4AA3-8080-FEA8778C77CE

Lithocharodes boliviana spec. nov. – urn:lsid:zoobank.org:act:352DDE6B-383B-45B8-90B1-1D1689422F37

Lithocharodes brooksi spec. nov. – urn:lsid:zoobank.org:act:3903CAF2-1B67-4B6A-9979-72E6336CA165

Lithocharodes compacta spec. nov. – urn:lsid:zoobank.org:act:3253E356-C82F-425A-B034-8AD4AFFB91F7

Lithocharodes curtipennis spec. nov. – urn:lsid:zoobank.org:act:49C417E3-A17C-4A28-9D32-950C09CDBD1D

Lithocharodes denticulata spec. nov. – urn:lsid:zoobank.org:act:9B194FB8-EFFE-4301-9681-174E24B19557

Lithocharodes dubiosa spec. nov. – urn:lsid:zoobank.org:act:A9BFC64A-5AEA-499E-ABB9-94BE1F8F05B6

Lithocharodes ecuadoriensis spec. nov. – urn:lsid:zoobank.org:act:D5751DC8-DA8F-4F7E-A57E-3FCB3BE8A990

Lithocharodes elongata spec. nov. – urn:lsid:zoobank.org:act:E056AF32-00F8-4072-97F7-7FA40129C9BA
Lithocharodes hanagarthi spec. nov. – urn:lsid:zoobank.org:act:CB47DB88-4D42-4FC9-AF39-A5ED1D1758A3
Lithocharodes karinae spec. nov. – urn:lsid:zoobank.org:act:067347B8-B4E1-4B17-96D3-9ADBA83D340F
Lithocharodes katharinae spec. nov. – urn:lsid:zoobank.org:act:B16D6F77-971F-4D61-9934-BAB22A68A1A9
Lithocharodes lescheni spec. nov. – urn:lsid:zoobank.org:act:56C738F3-B7E8-48CD-8D89-549249716A46
Lithocharodes nigerrima spec. nov. – urn:lsid:zoobank.org:act:AC1C7A9C-0F22-4211-B88E-F95ACF767B38
Lithocharodes nigrita spec. nov. – urn:lsid:zoobank.org:act:51DB16D4-FB55-4338-B12D-AFD4290322C0
Lithocharodes obscura spec. nov. – urn:lsid:zoobank.org:act:F520ED25-EB0D-4CFB-AD03-F8322592C96C
Lithocharodes pampana spec. nov. – urn:lsid:zoobank.org:act:5EFD07C-A8EE-42CB-B1E8-901599251C83
Lithocharodes peruana spec. nov. – urn:lsid:zoobank.org:act:44E3E16F-6262-4A6B-8BF1-CE656372382A
Lithocharodes silvicola spec. nov. – urn:lsid:zoobank.org:act:307A352E-8017-4653-AB6C-530BB6694978
Lithocharodes somoleptoides spec. nov. – urn:lsid:zoobank.org:act:0FBFC297-E285-4637-853C-2DC467FE2E1C
Lithocharodes surinamensis spec. nov. – urn:lsid:zoobank.org:act:AF3EE982-3573-4991-9AEF-A34345F2BA88
Lithocharodes triangula spec. nov. – urn:lsid:zoobank.org:act:8BCFB5FF-F6A3-4F93-A1CE-033F3898DE6B
Lithocharodes verhaaghi spec. nov. – urn:lsid:zoobank.org:act:37168761-B2E0-4845-94ED-83B48C45CF71

Key words

New species, Neotropics, Xantholinini, *Lithocharodes*, geographic distribution, species diversity

Zusammenfassung

Die neotropischen Arten der Gattung *Lithocharodes* wurden bearbeitet. Insgesamt wurden 26 neue Arten gefunden. Diese sind: *L. aculeata* spec. nov., *L. ashei* spec. nov., *L. bierigi* spec. nov., *L. bicornis* spec. nov., *L. boliviana* spec. nov., *L. brooksi* spec. nov., *L. compacta* spec. nov., *L. curtipennis* spec. nov., *L. denticulata* spec. nov., *L. dubiosa* spec. nov., *L. ecuadoriensis* spec. nov., *L. elongata* spec. nov., *L. hanagarthi* spec. nov., *L. karinae* spec. nov., *L. katharinae* spec. nov., *L. lescheni* spec. nov., *L. nigerrima* spec. nov., *L. nigrita* spec. nov., *L. obscura* spec. nov., *L. pampana* spec. nov., *L. peruana* spec. nov., *L. silvicola* spec. nov., *L. somoleptoides* spec. nov., *L. surinamensis* spec. nov., *L. triangula* spec. nov., und *L. verhaaghi* spec. nov. Die folgenden Arten, die unter der Gattung *Lithocharodes* beschrieben wurden, wurden zur Gattung *Somoleptus* SHARP, 1885 gestellt: *S. cavicola* (BLACKWELDER, 1943) (neue Kombination) und *S. strigulata* (BLACKWELDER 1943) (neue Kombination). Folgende vier Arten, die unter der Gattung *Somoleptus* beschrieben wurden, gehören in die Gattung *Lithocharodes*: *L. bicolor* (SHARP, 1885) (neue Kombination); *S. gracilis* SHARP, 1885 ist konspezifisch mit *L. bicolor* (SHARP, 1885) (neues Synonym); *L. clavicornis* (ERICHSON, 1839) beschrieben als *Leptacinus clavicornis* und von SHARP (1885) zu *Somoleptus* gestellt, gehört ebenfalls in die Gattung *Lithocharodes* (neue Kombination); *L. elegans* (SHARP, 1885) (neue Kombination); *L. gracilis*, *L. rambouseki* und *L. cameroni* (neue Synonyme) sind konspezifisch mit *L. fusciventris* SHARP, 1885. Neue Funde von den Westindischen Inseln und Zentralamerika werden für *L. floridanus* (LECONTE, 1880) und *L. nigripennis* (LECONTE, 1863) aufgeführt.

Schlüsselwörter

Neue Arten, Neotropis, Xantholinini, geographische Verbreitung, Artenvielfalt

Introduction

The last taxonomic overview of the genus *Lithocharodes* was given by BUSANELLO & CARON (2019). They described the generic situation of the genus and gave a detailed description of the generic characters. The genus is part of the tribe Xantholinini that was recently found to be a separate subfamily of the Staphylinidae family. ZYLA & SOLODOVNIKOV (2019) assigned Xantholinini to subfamily status Xantholininae, but in the most recent study TIHELKA et al. (2020) remained in the previous assignation of the tribe status, which is followed here. In his catalogue of the Staphylinidae, HERMAN (2001) listed 32 species. The major part of 19 species were described from the Neotropics, the remaining species originate from

the Nearctic, Oriental and Oceanic region. The present study describes 26 new species from Central and South America. One species, *L. nigripennis* (LECONTE, 1863), known so far only from the Nearctic was also found in northern Mexico. Two species, *L. cavicola* BLACKWELDER, 1943 and *L. strigulata* BLACKWELDER, 1943, described under the genus by BLACKWELDER (1943) are transferred to the genus *Somoleptus*. Thus, only one species described by BLACKWELDER (1943) remains in the genus because *L. rambouseki* BLACKWELDER, 1943 and *L. cameroni* BLACKWELDER, 1943 were found to be conspecific with *L. fusciventris* SHARP, 1885. SHARP (1885) transferred three species described by ERICHSON (1839) under the

genus *Leptacinus* to the genus *Somoleptus* SHARP, 1885. A study of the three type specimens found that *L. clavicornis* (ERICHSON, 1839) belongs to *Lithocharodes* and only *S. subtilis* (ERICHSON, 1839) remains in the genus *Somoleptus*, whereas *S. debilis* (ERICHSON, 1839) neither belongs to *Lithocharodes* nor to *Somoleptus* and should remain in the genus *Leptacinus* ERICHSON, 1839 until a detailed revision of this genus is carried out. Among the species described by SHARP (1885) under the genus *Somoleptus*, two species, *L. bicolor* (SHARP, 1885) and *L. elegans* (SHARP, 1885), are transferred to *Lithocharodes*. Two species were found to be synonyms: *S. gracilis* SHARP, 1885 is synonym to *L. bicolor* (SHARP, 1885) and *L. gracilis* SHARP, 1885 is synonym to *L. fusciventris* SHARP, 1885. Two species, *L. claviscapa* (CAMERON, 1922) and *L. unicolor* (CAMERON, 1922) could not be studied and are not considered here.

Overall, a total of 43 species remain for the Neotropical region. This paper will describe the new species, re-describe those species which were insufficiently described so far, try to arrange species in species groups, and provide a key to species. Furthermore, the zoogeographical distribution of the species and ecological remarks will be discussed. The study on the two genera *Lithocharodes* and *Somoleptus* showed that species were wrongly identified for one of the genera in the past. As BUSANELLO & CARON (2019) focus mainly on the separation from other genera, the present study will, therefore, discuss the differences between these two genera and will give new separating characters.

Material, methods, and morphological aspects

The material studied in this investigation is presently deposited in the following public museums and private collections:

- BMNH The Natural History Museum, London, United Kingdom
- FMNH Field Museum of Natural History, Chicago, U.S.A.
- KNHM University of Kansas, Museum of Natural History, Lawrence, Kansas, U.S.A.
- MCZ Museum of Comparative Zoology, Boston, U.S.A.
- NMNH U.S. National Museum of Natural History, Washington, U.S.A.
- SDEI Senckenberg, Deutsches Entomologisches Institut, Müncheberg, Germany
- ZMHU Zoologisches Museum der Humboldt-Universität, Berlin, Germany
- TSC private collection of Tim Struyve, Mechelen, Belgium
- UIC collection of author, Plön, Germany, is part of SDEI
- VAC collection of Volker Assing, Hannover, Germany

The photographs were taken using a Makroskop M 420 (Wild, Herbrugg) in combination with a digital camera Leica EC3. Additionally, photographs were also made using a Stereomicroscope Olympus SZX7 with the digital camera LC 30. CombineZ5 (HADLEY 2006) was used to optimise depth of focus. Length was measured along the middle of tagmata: head from clypeus to posterior edge, pronotum from anterior to posterior edge along midline, elytra from anterior edge at humeral angles to posterior edge; width at the widest part of tagmata (head width includes eyes). In the measurement of total length, the abdominal inter-segmental space is subtracted.

The statistical analysis to estimate the species richness in the Neotropical region was performed using the rarefaction analysis and the Chao-1 analysis in the program PAST (HAMMER et al. 2012).

Characterisation of the genus *Lithocharodes* SHARP, 1876 and differences to the genus *Somoleptus* SHARP, 1885

BUSANELLO & CARON (2019) described the taxonomic history of the genus *Lithocharodes* which was described on the basis of a female specimen of *L. fuscipennis* (SHARP, 1876) from the Amazon valley. Later, SHARP (1885) separated the genus *Somoleptus*. BLACKWELDER (1952) fixed *S. aenescens* SHARP, 1885 as genotype. The following differentiating characters were listed by SHARP (1885) (Fig. 1): obsolete antennal furrows (Fig. 1A), large pronotal pleura, slender shape of the pronotum (Fig. 1B) and large scape of the antennae. In the guide to the genera of Staphylinidae of Mexico, NAVARRETE-HEREDIA et al. (2002) differentiated both *Lithocharodes* and *Somoleptus* from *Leptacinus* ERICHSON, 1839a and allied by the punctuation of the elytra being irregular in *Lithocharodes* and *Somoleptus* but at least partly in rows in *Leptacinus* and allied genera. The two genera *Lithocharodes* and *Somoleptus* were differentiated by the subapical ctenidia fully developed in *Lithocharodes* but only partly in *Somoleptus*. Additionally, the following characters are given as differentiating characters: the shape of the pronotum being slenderer and widest behind anterior third in *Somoleptus* but less parallel and widest in anterior third in *Lithocharodes*.

The study of the South American specimens of both genera, however, found that many species are hard to identify using the characters of the pronotal shape (Fig. 1C, D). The major number of species in both genera fit into the above-mentioned pronotal characters but there are also species which are overlapping or nearly overlapping. This is true for the slender shape of the pronotum which was measured as relation between widest width (WW) and width at posterior angles (PW) (Fig. 1C). The relation between the length from widest width to anterior edge and widest width was selected to evaluate the location of widest width in relation to the

pronotal shape (Fig. 1D). The last character seems to be more valid than the first one because a higher separation was found between the two genera. Nevertheless, a clear identification of the genera is nearly impossible. Moreover, species which slender pronotum exist that have several well developed subapical ctenidia on the mesotibia. Unfortunately, neither SHARP (1885) nor NAVARRETE-HEREDIA et al. (2002) used the structure of the aedeagus, which provides the best separating character. In *Somoleptus*, a pair of cone-like structures are always close to the central orifice (Fig. 1 E-I) which is absent in *Lithocharodes* (Fig. 1J). These cone-like structure seems to be unique within Xantholininae and even within the Staphylinidae family. Therefore, it can be evaluated as an apomorphic character and can be used as separating character of *Somoleptus* from all other Staphylinidae genera. Furthermore, tergite and sternite VII of males show a higher variability of the structure in *Lithocharodes* than in the more uniformly structured *Somoleptus* (either without any process or only with a short acute process). Eventually, the following characters have proven useful to separate the two genera:

- 1) the structure of the aedeagus (cones in *Somoleptus*, no cones in *Lithocharodes*);
- 2) obsolete or absent antennal furrows in *Somoleptus*, comparably distinct antennal furrows in *Lithocharodes*; less distinct characters;
- 3) the shape of pronotum and
- 4) the number of subapical ctenidia on the mesotibia.

Acknowledgements

I thank the curators of the museums, institutions and private collectors for the steady support, help and relinquishment of several specimens for my collection: Julia Snyder (FMNH), Max Barclay, M. Geiser (BMNH), Zack Falin (KNHM), Stephan Blank, Mandy Schröter (SDEI), Johannes Frisch, J. Willers (ZMHU), Crystal Maier (MCZ), Terry Erwin (USNM), Tim Struyve (Mechelen, Belgium), Manfred Verhaagh (Karlsruhe, Germany).

Species groups

The species of the genus may be identified with certainty only in the male sex. The structure of the aedeagus, in particular, the structure of the endophallus and the paramere are the main characters to identify the species. Unfortunately, several species, described by SHARP (1885) are only known from females and thus cannot be grouped. Another important character exists in the density and distinctness of the head's setiferous punctation, which helps in cases, where only females are known. The following species groups can be differentiated:

1. Dorsal plate of aedeagus small, restricted to posterior half (Fig. 10) L. obscura group
 - Dorsal plate of aedeagus only slightly smaller than total aedeagus; divided by sclerotised lamella into two halves; either totally or only in anterior half 2
2. Aedeagus long oval with sub-rectangular apical half 3
 - Aedeagus round-oval with short transparent endophallus (Fig. 8, 9) L. hanagarthi group
3. Endophallus with spiral torsions (Fig. 2–7, 42) L. verhaaghi group
 - Endophallus elongate with or without minute teeth or lobes 4
4. Endophallus with large teeth or lobes 5
 - Endophallus with minute teeth (Fig. 31–36) L. fusciventris group
 - Endophallus different L. div. species
5. Endophallus with large teeth (Fig. 11, 12) L. sordida group
 - Endophallus with lobes (Fig. 13–18) L. simillima group

Description of species

Lithocharodes aculeata spec. nov.

urn:lsid:zoobank.org:act:A18023B2-0E8E-4094-A5ED-3DCF051C0185

Figs 26 a-d, 43 K, 47 B

Type material: male, holotype: Ecuador, Pichincha, Quito, 27 km NW Campamento Pichan (above Nono) (78°33'56"W, 0°7'31"S), cloud forest litter, 3350 m elev., 22.10.1999, leg. R. Anderson, #ECU1A99 202E (KNHM). Paratype: Ecuador: Napo, Lago Papallacta (78°10'23"W, 0°20'29"S), elfin forest litter, 3400 m elev., male, 6.11.1999, leg. R. Anderson, #ECU1A99 230B (KNHM).

Diagnosis: This species can be easily identified by several characters. It is actually the largest species of the genus and, additionally, the extremely short eyes are unique within the genus. Males can be distinguished from other species of the genus by the bidentate sternite in combination with the nearly circular emarginate posterior margin of tergite VII.

Description: Length: 7.2 mm. Colouration: Totally black, legs and antennae slightly lighter.

Head: 1.33 mm long, 1.01 mm wide; eyes extremely reduced; postocular sides more than ten times as long as eyes; approximately parallel; posterior angles shortly rounded; posterior margin straight; interantennal furrows short; reaching anterior edge of eyes; setiferous punctation deep and moderately dense; on average,

interstices between punctures twice as wide as diameter of punctures; microsculpture distinct; isodiametric; surface matt. Antennae with first antennomere as long as half-length of head; second antennomere slightly longer than wide and nearly conical; third conical and nearly quadrate; antennomeres 4-10 wider than long and increasing in width; fifth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; all antennomeres with dense pubescence. Pronotum: 1.37 mm long, 0.92 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly distinctly narrowed in middle third and nearly parallel in posterior third; setiferous punctation deep and moderately dense; on average, as dense as on head; with wide impunctate midline; microsculpture as dense and deep as on head; isodiametric; surface matt. Elytra: 0.88 mm long, 0.91 mm wide; humeral angles nearly absent; posteriorly, sides slightly divergent; posterior angles shortly rounded; nearly rectangular; posterior margin straight; setiferous punctation deep and dense; partly coriaceous; microsculpture still denser and deeper than on pronotum; partly isodiametric, partly irregularly striate; surface matt. Abdomen with dense setiferous punctation; punctures finer than on fore-body; deep microsculpture at base of segments transversely striate, at apex of segments more isodiametric; sternite VII of male with pair of triangular prominences at apical margin separated by semi-circular emargination; posterior margin of tergite VII of male semi-circular and with medial oval emargination. Mesotibia with three, metatibia with two subapical ctenidia. Aedeagus oval with rectangular apical half; endophallus with large lobes; in retracted endophallus, apical lobes much smaller than basal lobes; paramere with two lobes; one large plate and one long slender appendage; long appendage slightly wider at apex than at middle and with wide base; inner face of appendage with long setae; setae at base denser than at apex.

Etymology: The species name is derived from the same Latin word meaning “spiked” and refers to the shape of tergite VII of male.

Lithocharodes armata SHARP, 1885

Figs 29 a-c, 43 C, 46 C

Lithocharodes armata SHARP, 1885: 491

Type material examined: male, holotype: Nicaragua, Granada, leg. Sallé (BMNH).

Additional material examined: Mexico, Veracruz, Sontecomapan, (7 mi NNW), Jicacal (18°35'N, 95°03'W), at beach near rainforest, black light, female, 30.7.-7.8.1970, leg. A. Newton (FMNH).

Diagnosis: *Lithocharodes armata* most closely resembles *L. spinigera* in the light colouration of the pronotum, the dense punctation on the anterior part of vertex. As SHARP (1885) already noted, *L. armata* can be distinguished from *L. spinigera* by the less dense, not coriaceous setiferous punctation of the anterior vertex. The spine of sternite VII of male is broader and the adjacent emargination is less deep. Furthermore, the endophallus has large lobes in its anterior half, whereas the endophallus of *L. spinigera* has only minute teeth or minute lobes.

Description: Length: 5.3 mm. Colouration: Brown, pronotum, legs and antennae lighter brown.

Head: 0.66 mm long, 0.49 mm wide; postocular sides slightly divergent; more than 2.5 times as long as eyes; eyes not prominent; interantennal furrows weak; not reaching mid of eyes; setiferous punctation deep and irregular; denser on anterior than on posterior vertex; punctation on anterior vertex partly coriaceous; midline impunctate; on anterior vertex, interstices between punctures as wide as diameter of punctures; on posterior vertex, nearly twice as wide as diameter of punctures; surface without microsculpture; shiny. Antennae with first antennomere reaching posterior edge of eye; second and third antennomere conical; longer than wide; subsequent antennomeres wider than long; second antennomere slightly wider than long; tenth antennomere twice as wide as long; fourth to eleven antennomeres pubescent; fourth to tenth antennomeres with apical crown of short setae. Pronotum: 0.74 mm long, 0.44 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; slightly narrowed in middle third and approximately parallel in posterior third; at posterior margin 0.8 times as wide as at widest part; posterior angles shortly rounded; setiferous punctation moderately dense, with wide impunctate midline; adjacent to impunctate midline with irregular line of 13-14 punctures; surface without microsculpture; shiny. Elytra: 0.74 mm long, 0.56 mm wide; sides approximately parallel; humeral angles subrectangular; posterior angles rectangular; posterior margin nearly straight; setiferous punctation deep and dense; denser than on pronotum; on average, interstices between punctures 1.5 times as wide as diameter of punctures; surface without microsculpture; shiny. Abdomen densely covered by setiferous punctation; with weak microsculpture; less shiny than pronotum; sternite VII of male with broad and short central tooth; on both sides of tooth with short emargination. Meso and metatibia with 2 subapical ctenidia each. Aedeagus oval with anterior angles more distinct than posterior angles; endophallus with longitudinal torsions; anteriorly with row of thick teeth; posteriorly with broader sack covered by small teeth; paramere widened to anterior third; slightly curved in anterior third to rounded apex; covered with setae, in particular at inner edge.

Lithocharodes ashei spec. nov.

urn:lsid:zoobank.org:act:3464349F-B225-4FFB-A2DA-A9F5F286E872

Figs 30 a, b, d, 44 B, 47 I

Type material: male, holotype: Panama, Cerro Campana (Capira) (8°44'N, 79°57'W), flight intercept trap, 790 m elev., 1.6.1995, leg. J.S. Ashe, R. Brooks, #091 (KNHM). Paratypes: Costa Rica, Puntarenas, Wilson Botanical Garden (Las Cruces Biol. Stn.), flight intercept trap, 1200 m elev., 8 males, 7 females, 27.5.1993, J.S. & K.A. Ashe, #64 (13 KNHM, 2 UIC); Corcovado National Park, Sirena Stn., Corcovado Trail (83°34'39"W, 8°29'7"N), 150 m elev., flight intercept trap, 3 male, 7 females, 28.6.-1.7.2000, leg. Z.H. Falin, #CR1ABF00 059 (8 KNHM, 2 UIC)); same location and collector but Upper Ollas Trail (83°34'39"W, 8°29'7"N), 140 m elev., flight intercept trap, female, 24.-28.6.2000, #CR1ABF00 036 (KNHM); Rincon de Osa (83°31'1.17"W, 8°41'1.41"N); 150 m elev., flight intercept trap, female, 23.-26.6.2001, leg. S&J. Peck, #CR1P01 006 (KNHM); Las Cruces Bio. Stn. (82°57'58"W, 8°47'14"N), 1330 m elev. flight intercept trap, 4 males, 8 females, 28.-30.2004, leg. J.S. Ashe, Z. Falin, I. Hinojosa, #CR1AFH04059 (10 KNHM, 2 UIC); Alajuela, Peña Blancas, 880 m elev, flight intercept trap, female, 19.5.1989, leg. J. Ashe, R. Brooks, R. Leschen, #270 (KNHM); Alajuela, San Ramon, 5 km W., 1200 m elev. 2 females, 1.-31.12.1997, 1.-28.2.1997, leg. P. Hanson, #CR1HAN92-97 12 and 14 (KNHM); 27 km N & 8 km W San Ramon (84°35'46"W, 10°13'4"N), 810 m elev., flight intercept trap, 1 male, 5 females, 8.7.2000, leg. J. Ashe, R. Brooks, Z. Falin, #CR1ABF00 084 (KNHM); Peñas Blancas, 800 m elev., flight intercept trap, 3 females, 19.5.1989, leg. J. Ashe, R. Brooks, R. Leschen, #265 (KNHM); Guanacaste, Maritza Biol. Stn., 550 m elev., flight intercept trap, female, 22.5.1993, leg. J. & A. Ashe, #036 (KNHM); same location and collectors but streamside litter, male, 22.5.1993, #041 (KNHM); Patilla Biological Station (85°25'33"W, 10°59'22"N), 610 m elev., flight intercept trap, female, 13.-15.7.2000, leg. J. Ashe, R. Brooks, Z. Falin #CR1ABF00 135 (KNHM); Panama, San Blas, Nusagandi Reserve (9°21'N, 78°59'W), Atta nest, 350 m elev., female, 28.5.1995, leg. A. Gillogly (KNHM); Cerro Campana (Capira) (79°57'W, 8°44'N), 790 m elev. flight intercept trap, 5.6.1995, leg. J. Ashe, R. Brooks, #129 (KNHM).

Diagnosis: *Lithocharodes ashei* is one of the larger species with more than 6.0 mm size and, in combination with its dark colouration, similar to *L. triangula*. Females of both species can hardly be identified. However, males are clearly separated by the shape of the central incision of tergite VII, which is broadly triangular in *L. triangula* and small and narrow in *L. ashei*. In addition, males of *L. ashei* may be easily identified by the specific shape of the paramere, which is totally different from all other *Lithocharodes* species.

Description: Length: 6.3 mm. Colouration: black, legs and antennae dark brown.

Head: 1.12 mm long, 0.95 mm wide; eyes moderately large; postocular space 2.5 times as long as eyes; sides slightly divergent posteriad; posterior angles widely rounded; posterior margin straight only in short middle part; interantennal furrows deep; nearly reaching posterior edge of eyes; setiferous punctation dense and deep except for moderately wide impunctate midline; space between interantennal furrows impunctate; anterior punctation slightly denser than close to neck; on anterior vertex, half as wide as diameter of punctures; on posterior vertex slightly shorter than diameter of punctures; surface without microsculpture; shiny. Antennae with first antennomere approximately half as long as head; second and third antennomere each longer than wide; conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long. Pronotum: 1.18 mm long, 1.03 mm wide; widest in anterior third; convergently narrowed toward neck; slightly narrowed toward posterior margin in concave curve; in front of posterior angles nearly parallel; posterior margin slightly convex; setiferous punctation moderately dense and deep; less dense than on anterior vertex; with wide impunctate midline; adjacent to midline with irregular line of 19-20 punctures; surface without microsculpture; shiny. Elytra: 0.88 mm long, 0.77 mm wide; sides nearly parallel; humeral angles sub-rectangular; posterior angles nearly rectangular; posterior margin approximately straight; setiferous punctation dense and deep; on average, interstices less than half as wide as diameter of punctures; interstices without microsculpture; surface due to dense punctation less shiny than pronotum. Abdomen with dense setiferous punctation; surface without microsculpture except at base of anterior segments with dense isodiametric microsculpture; posterior margin of tergite VII of male with weak triangular emargination and deep medial incision. Meso- and metatibia with 3 subapical ctenidia each. Aedeagus oval with parallel anterior half; anterior angles widely rounded but nearly rectangular; endophallus with two strings covered by large teeth at anterior and posterior end; paramere thick; at apex bilobed with thick outer lobe and hook-like inner lobe; at apical margin with few setae; at inner face with row of apical setae and two patches with dense setation.

Etymology: The species name honours J.S. Ashe who collected and worked on Neotropical species extensively.

Lithocharodes bierigi spec. nov.

urn:lsid:zoobank.org:act:40819238-8854-4AA3-8080-FEA8778C77CE

Figs 20 a-d, 45 E, 49 H

Type material examined: male, holotype: Costa Rica, Puntarenas, 11.8.1939, leg. A. Bierig (FMNH). Paratypes: 5 males with same data as holotype (4 FMNH, 1 UIC).

Diagnosis: The species most closely resembles *L. fuscipennis* (SHARP, 1876) and *L. fusciventris* SHARP, 1885 in size, colouration and punctuation of the head. Females cannot be certainly separated from both species because the main separating characters are found in the shape of sternite VII of male. In *L. bierigi*, sternite VII of male has a large process, whereas it is simply rounded in *L. fuscipennis* and *L. fusciventris*.

Description: Length: 5.2 mm. Colouration: Yellow-brown; base of elytra dark, nearly black; only narrow posterior margin yellow; legs and antennae dark yellow.

Head: 0.88 mm long, 0.71 mm wide; eyes large; slightly prominent; postocular sides slightly divergent posteriorly; nearly 3 times as long as eyes; posterior angles rounded; posterior margin slightly emarginate in front of neck; interantennal furrows weak; setiferous punctuation moderately dense and deep; on average, interstices between punctures twice as wide as diameter of punctures; on clypeus denser; on posterior vertex sparser; moderately narrow midline impunctate; surface without microsculpture; polished. Antennae with first antennomere as long as half-length of head; second and third antennomere triangular; slightly longer than apical width; subsequent antennomeres wider than long and increasing in width; both fourth and tenth antennomere approximately twice as wide as long; antennomeres four to eleven pubescent; all antennomeres with setae. Pronotum: 0.95 mm long, 0.64 mm wide; widest in anterior third; shortly narrowed toward neck; slightly narrowed in middle third; nearly parallel in posterior third; posterior angles shortly rounded; posterior margin 0.8 times as wide as widest width; Elytra: 0.98 mm long, 0.77 mm wide; humeral angles sub-rectangular; sides parallel; posterior angles nearly rectangular; posterior margin widely reflexed to suture; setiferous punctuation irregularly dense and moderately deep; on average, interstices between punctures as wide as diameter of punctures but partly coriaceous; surface with weak irregular ground sculpture; moderately matt. Abdomen with weaker and sparser setiferous punctuation than pronotum and elytra; without microsculpture; surface shiny; sternite VII of male with long and wide central process at posterior margin; on each side of central process with deep emargination; tergite VII of male straight at posterior margin. Aedeagus long oval; anteriorly sub-rectangular; endophallus with stripe covered by large lobes on one side and minute teeth on other side; paramere slender; slightly curved at apex; on all faces with numerous setae; setae at apex shorter than at base.

Etymology: The species name honours the collector A. Bierig, who collected and described many Staphylinidae from the Neotropical region.

Lithocharodes bicolor (SHARP, 1885) new combination

Figs 36 a-c, 45 G, 50 E

Somoleptus bicolor SHARP, 1885: 495

Somoleptus gracilis SHARP, 1885: 496 new synonymy

Type material examined: female, syntype: Guatemala, Quetzaltenango, 7800 ft., leg. Champion (BMNH); male, holotype of *S. gracilis*, Mexico, Cordoba, leg. Sallé (BMNH).

Diagnosis: SHARP (1885) already noted the similarity between *Somoleptus bicolor* and *S. gracilis*. The differences in size are still less than given by SHARP (1885). The minute differences in size may be within the variability of the species or in the different sexes of the two specimens studied. The absence of the cone-like structure at the central orifice of the aedeagus indicates the species as a member of the genus *Lithocharodes*. As SHARP (1885) already described another species as *Lithocharodes gracilis*, *Lithocharodes bicolor* is the valid name for the species, although only the female type could be examined.

Description: Length: 5.0–5.2 mm. Colouration: Reddish-brown; pronotum and posterior margin of elytra light red to orange; legs and antennae light red.

Head: 0.82 mm long, 0.63 mm wide; eyes small; postocular space nearly 3.5 times as long as eyes; postocular sides slightly divergent; posterior angles rounded; interantennal furrows weak; setiferous punctuation moderately deep; sparse; on average, interstices between punctures as wide as diameter of punctures; on posterior vertex interstices wider; nearly twice as wide as diameter of punctures; surface without microsculpture; polished. Antennae with second and third antennomere each longer than wide; second antennomere longer than third; subsequent antennomeres much wider than long and increasing in width; fourth antennomere twice as wide as long; tenth antennomere nearly three times as wide as long; all antennomeres pubescent. Pronotum: 0.94 mm long, 0.54 mm wide; widest in anterior third, anteriorly smoothly narrowed toward neck in wide curve; posterior third nearly parallel; posterior angles widely rounded; setiferous punctuation as deep and sparse as on posterior head; wide midline impunctate; adjacent to midline with irregular line of about 22–25 punctures; surface without microsculpture; polished. Elytra: 0.89 mm long, 0.78 mm wide; sides slightly divergent to posterior angles; posterior and humeral angles sub-rectangular; setiferous punctuation slightly deeper and denser than on head and pronotum; without microsculpture; less shiny than pronotum. Abdomen with similar setiferous punctuation as on elytra; surface without microsculpture; polished; sternite VII of male with short central incision; tergite VII of male with straight posterior margin. Aedeagus long-oval; thick endophallus with one torsion in anterior half; endophallus covered by minute teeth; paramere straight with wide base; conically narrowed toward apex; inner face with long setae; setae at base much longer than at apex.

Lithocharodes bicornis spec. nov.

Figs 11a-d, 44 O, 49 C

Type material: male, holotype: Peru, Huanuco, Lullapichis, Panguana Station (74°56'W, 9°37'S), floodplain forest, sifted litter, male, 25.3.1975, leg. W. Hanagarth (UIC).

Diagnosis: *Lithocharodes bicornis* closely resembles *L. sordida* in size, colouration, punctuation of the head and even in the structure of the aedeagus and the shape of the paramere. Males are easily to separate by the structure of sternite and tergite VII. The pair of spines at the posterior margin of sternite VII of *L. bicornis* is unique in the genus, although many *Lithocharodes* species have paired processes at sternite VII but these are broader and more teeth-like.

Description: Length: 4.5 mm. Colouration: Brown; head and elytra darker brown than pronotum.

Head: 0.77 mm long, 0.67 mm wide; eyes moderately large; not prominent; postocular sides divergent; 2.5 times as long as eyes; posterior angles widely rounded to neck; posterior margin slightly emarginate in front of neck; interantennal furrows extremely weak; setiferous punctuation deep and dense; on average, interstices half as wide as diameter of punctures; on anterior vertex denser than on posterior vertex; surface without microsculpture; glossy. Antennae with first antennomere reaching half-length of head; second and third antennomere each conical and approximately twice as long as wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; all antennomeres pubescent. Pronotum: 0.87 mm long, 0.60 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly, slightly narrowed in middle third; nearly parallel in posterior third; posterior angles shortly rounded; posterior margin nearly straight; setiferous punctuation deep and dense; on average, interstices between punctures half as wide as diameter of punctures; wide midline impunctate; midline wider in anterior half than in posterior half; irregular row of punctures adjacent to impunctate midline with approximately 20 punctures; surface without microsculpture; glossy. Elytra: 0.83 mm long, 0.69 mm wide; humeral angles sub-rectangular; sides slightly divergent posteriorly; posterior angles sub-rectangular; posterior margin nearly straight; setiferous punctuation as dense and deep as on pronotum but partly coriaceous; surface with weak irregular microsculpture; less shiny than pronotum. Abdomen with dense setiferous punctuation; punctures distinctly finer than on fore-body; sternite VII of male with concavely emarginate posterior margin; posterior margin with two fine spines and several thick setae; tergite VII of male with straight posterior margin; short rectangular process with pair of teeth at each angle in middle of posterior margin. Meso- and metatibia with one subapical ctenidium each. Aede-

gus oval; in anterior half sub-rectangular; endophallus apically with three long and thick teeth; posterior part sack-like; covered by minute teeth; paramere broad; spoon-like; at apex with transparent inner lobe; several long, fine setae and several short and curved setae.

Etymology: The species epithet is a combination of the Latin words *bi* (meaning two) and *cornis* (meaning horn) and refers to the spectacular spines at the posterior margin of sternite VII of male.

Lithocharodes boliviana spec. nov.

urn:lsid:zoobank.org:act:352DDE6B-383B-45B8-90B1-1D1689422F37

Figs 8 a-d, 44 I, 48 D

Type material: male, holotype: Bolivia, Cochabamba Prov., Cochabamba, 109 km E Yungas (Cochabamba – Villa Tunari Rd.) (65°42'29"W, 17°8'50"S), 1480 m elev., flight intercept trap, 1.-6.2.1999, leg. Génier #BOL1G99027 (KNHM). Paratypes: Bolivia, female with same data as holotype (KNHM); 1 male with same data as holotype, but 8.-12.2.1999, #BOL1G99060 (UIC); same region, but 105 km E Yungas, nr. Rio Carmen Mayu (Cochabamba – Villa Tunari Rd.) (65°43'50", 17°8'51"S), 1750 m elev., flight intercept trap, 5 females, 1.-6.2.1999, 6.-8.2.1999, 8.-12.2.1999, leg. R. Hanley, # BOL1H99071 (KNHM).

Diagnosis: *Lithocharodes boliviana* is one of the medium sized (between 5 mm and 6 mm), dark coloured species with dense punctuation on the head. Females can be hardly differentiated from the similar *L. ecuadoriensis* and *L. katharinae*. The aedeagus of *L. boliviana* is more oval than those of the other two species and, in particular, the paramere is extremely slender and elongate, whereas parameres of *L. ecuadoriensis* and *L. katharinae* are more curved or broader and straight. In addition, males can be separated from *L. ecuadoriensis* by the straight posterior margin of sternite VII.

Description: Length: 5.2 mm. Colouration: Black; pronotum slightly lighter; dark brown; posterior angles of elytra with light yellow spot; legs and antennae brown.

Head: 0.88 mm long, 0.71 mm wide; eyes large, slightly prominent; postocular sides twice as long as eyes; slightly divergent; posterior angles widely rounded to neck; posterior margin convex; interantennal furrows deep; reaching mid-length of eyes; setiferous punctuation deep and dense; anteriorly nearly coriaceous; at neck, interstices between punctures half as wide as diameter of punctures; narrow midline impunctate; space between interantennal furrows impunctate; forming oval shiny spot; surface without microsculpture; shiny. Antennae with first antennomere slightly longer than half-length of head; second and third antennomere longer than wide, conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as

wide as long; tenth antennomere twice as wide as long; antennomeres four to eleven densely pubescent. Pronotum: 0.97 mm long, 0.63 mm wide; widest in anterior third; anteriorly, distinctly convergent toward neck; posteriorly, slightly convergent toward middle; posterior half approximately parallel; posterior angles shortly rounded; posterior margin slightly convex; setiferous punctation as deep, but less dense than on head; on average, interstices between punctures half as wide to as wide as diameter of punctures; wide midline impunctate; impunctate midline distinctly wider than on head; adjacent to midline with row of 17–18 punctures; surface without microsculpture; shiny. Elytra: 1.00 mm long, 0.81 mm wide; humeral angles sub-rectangular; sides distinctly divergent to posterior angles; posterior angles nearly rectangular; posterior margin nearly straight with short incision at suture; setiferous punctation distinctly weaker than on head and pronotum, but as dense as on pronotum; surface with weak isodiametric microsculpture; less shiny than pronotum. Abdomen with weaker but as dense setiferous punctation as on elytra; isodiametric microsculpture distinctly deeper than on elytra; surface less shiny than elytra; posterior margin of sternite VII of male straight; posterior margin of tergite VII of male with central pair of short triangular prominences. Meso- and metatibia with 3 subapical ctenidia each. Aedeagus small; oval; sack-like endophallus short; covered by small teeth; with one torsion; at apex triangularly narrowed; paramere slender; elongate; slightly curved; with two to three irregular rows of setae in longitudinal direction.

Etymology: The species is named after the country where it was found.

Lithocharodes brooksi spec. nov.

urn:lsid:zoobank.org:act:3903CAF2-1B67-4B6A-9979-72E6336CA165

Figs 16 a-d, 43 O, 47 F

Type material: male, holotype: Peru: Madre de Dios, Cocha Salvador, Reserved Zone, Manu National Park (12°0.13'S, 71°31.36'W), flight intercept trap, 310 m elev., 20.-21.10.2000, leg. R. Brooks, #PERU1B00070 (KNHM). Paratypes: Peru, 3 males, 2 females, same location and collector as holotype (4 KNHM, 1 UIC); 2 females, same location and collector as holotype, (11°53.45'S, 71°24.24'W), 350 m elev., 17.-19.10.2000, #PERU1B00042 (KNHM); Tambopata Prov., Madre de Dios Dptd., 15 km N Puerto Maldonado Reserva, Cuzco Amazonica (12°33'S, 69°03'W), 200 m elev., trail 26, Plot #Z1, #Z2E8, #Z2E15, #Z2E16, #Z2U19, flight intercept trap, 15 males, 23 females, 15.6., 20.6., 22.6., 24.6., 26.6., 28.6., 15.7. and 16.7.1989 leg. J.S. Ashe, R. Leschen (34 KNHM, 4 UIC); Madre de Dios, Cocha Cashu Biol. Stn., Manu National Park (71°24'24"W, 11°53'45"S), 350 m elev., flight intercept trap, 1 male, 1 female, 17.-19.10.2000, leg. R. Brooks, #PERU1B00042 (KNHM); Madre de Dios, Pantiacolla Lodge, Alto Madre de Dios R. (71°13.9'W, 12°39.3'S),

460 m elev., female, 14.-19.11.2007, leg. D. Brzoska #PER1B07004 (KNHM); Madre de Dios, Amazonas Lodge, N Atalaya (71°22.6'W, 12°52.2'S), 480 m elev., flight intercept trap, 1 female, 10.-13.11.2007, leg. D. Brzoska #PER1B07002 (KNHM); Cusco, Cock of the Rock Lodge, NE Paucartambo (71°32.7'W, 13°03.3'S), 1120 m elev., flight intercept trap, 2 females, 4.-9.11.2007, leg. D. Brzoska #PER1B07001 (KNHM); Loreto, Lullapichis, Panguana Biol. Stn. (74°5.68'W, 9°37'S), pitfall trap, #PWa 4, 1 male, 15.-29.10.1984, leg. M. Verhaagh (UIC).

Diagnosis: Males of the species can be easily identified by the specific shape of the aedeagus with the short parallel anterior part and teeth-like anterior angles. Additionally, the specific shape of the parameres are unique in the genus. The species resembles *L. boliviana* in colouration but is slightly lighter and smaller. The head is less densely punctate than in *L. boliviana*. Females of both species can hardly be separated.

Description: Length: 4.3 mm. Colouration: Black; pronotum slightly lighter, dark brown; abdomen, legs and antennae brown.

Head: 0.79 mm long, 0.65 mm wide; eyes large, slightly prominent; postocular space twice as long as eyes; nearly parallel; posterior angles widely rounded; posterior margin slightly emarginate; interantennal furrows short; reaching anterior third of eyes; setiferous punctation deep and moderately dense; on clypeus slightly denser than close to neck; wide midline impunctate; space between interantennal furrows impunctate; on average, interstices between punctures slightly shorter than diameter of punctures; surface without microsculpture; shiny. Antennae with first antennomere half as long as head; second and third antennomere conical, longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; four to eleventh antennomeres pubescent. Pronotum: 0.87 mm long; 0.57 mm wide; widest in anterior third; shortly convergent to neck; behind widest part convergent to middle; posterior half approximately parallel; posterior angles combined with posterior margin convexly rounded; setiferous punctation deep and approximately as dense as on posterior head; on average, interstices between punctures as wide as diameter of punctures; wide midline impunctate; adjacent to impunctate midline with irregular row of 19 to 20 punctures; surface without microsculpture; shiny. Elytra: 0.77 mm long; 0.73 mm wide; humeral angles sub-rectangular; sides slightly divergent to posterior angles; posterior angles sub-rectangular; posterior margin slightly convexly prominent with incision at suture; setiferous punctation as dense as on pronotum, but slightly weaker; surface with irregular microsculpture; less shiny than head and pronotum. Abdomen with dense setiferous punctation; punctures distinctly weaker than on fore-body; surface with isodiametric microsculpture; less

shiny than head and pronotum; tergite VII of male with three teeth-like prominences at posterior margin, one in central and two in intermediate position between central tooth and outer angles; posterior margin of sternite VII of male slightly elevated and with short central triangular prominence. Meso- and metatibia each with 3 subapical ctenidia. Aedeagus oval with distinctly narrower and parallel anterior part; outer angles tooth-like; endophallus thick; anterior part divided into two strings with thick lobes; middle part with intermediate large plates; posterior part forming large sack covered by shorter lobes; paramere thick; slightly sinuate with widened apex; at inner side with numerous long setae.

Etymology: The species name honours R. Brooks from the Kansas Natural History Museum, who extensively collected staphylinids in the Neotropics.

Lithocharodes clavicornis (ERICHSON, 1839)

Figs 22 a-d, 45 F, 49 I

Leptacinus clavicornis ERICHSON, 1839: 337

Somoleptus clavicornis (ERICHSON, 1839) transferred to *Somoleptus* by SHARP 1885

Type material examined: female, holotype: Colombia, coll. Moritz (MNHB).

Additional material examined: Bolivia, Santa Cruz Dept., San Antonio de Parapati, Rio Parapati, wet river shore, 1 male, 1 female, 19.7.1964, leg. B. Malkin (FMNH).

Diagnosis: The species closely resembles *L. fuscipennis* (SHARP, 1876) due to the sparse punctation of the head, the colouration and the structure of the aedeagus. However, it is slightly larger and the punctation of the head is denser than in *L. fuscipennis*. Colouration is variable as in *L. fuscipennis* and in dark specimens the pronotum is only indistinctly lighter than head and base of elytra. The staphylinid collection of Scriba seems to be lost. Thus, the specimen of *L. clavicornis* mentioned by SCRIBA (1855) could not be examined. But the sampling location Venezuela fits into the other locations from Colombia to Bolivia.

Description: Length: 5.4 mm. Colouration: Brown; pronotum light red; elytra indistinctly blackish with wide posterior margin yellowish; legs and antennae light brown.

Head: 0.93 mm long, 0.77 mm wide; eyes short; postocular sides 3.9 times as long as eyes; slightly divergent to posterior angles; posterior angles shortly rounded; posterior margin straight; interantennal furrows weak; reaching anterior third of eyes; setiferous punctation moderately weak and sparse; on average, interstices between punctures 1.5 to 2 times wider than diameter of punctures; on posterior vertex slightly wider than

on anterior vertex; wide midline impunctate; surface without microsculpture; polished. Antennae with first antennomere as long as half-length of head; second and third antennomere conical, longer than wide; third antennomere approximately twice as long as apical width; subsequent antennomeres wider than long and increasing in width; both, fourth and tenth antennomere twice as wide as long; antennomeres four to eleven pubescent; all antennomeres with setae. Pronotum: 1.05 mm long, 0.71 mm wide; widest in anterior fourth; sides shortly convergent to neck; posteriorly, slightly convergent in central third; approximately parallel in posterior third; setiferous punctation moderately weak and as sparse as on head; wide midline impunctate; irregular line adjacent to midline with approximately 15 punctures; surface without microsculpture; polished. Elytra: 0.91 mm long, 0.85 mm wide; humeral angles sub-rectangular; sides nearly parallel; posterior angles sub-rectangular; posterior margin rounded with incision at suture; setiferous punctation as weak and sparse as on head and pronotum; partly in irregular lines; surface without microsculpture, slightly less polished than head and pronotum. Abdomen with setiferous punctation denser than on elytra; with weak transversely reticulate microsculpture; sternite VII and tergite VII without prominences or teeth; simply rounded at posterior margin. Aedeagus oval with sub-rectangular anterior part; endophallus broad; densely covered by dark lobes in anterior and posterior part; with one torsion; at contorted part with transparent stripe covered by minute teeth; paramere broad at base; sharply narrowed toward shortly rounded apex; slightly contorted at apex; sparsely covered with short setae.

Lithocharodes collaris SHARP, 1885

Figs 43 G, 46 D

Lithocharodes collaris SHARP, 1885: 494

Type material examined: female, holotype: Guatemala, Cubilguitz in Ver Paz, 1000 f. leg. Champion (BMNH).

Diagnosis: Unfortunately, only the female holotype of *L. collaris* is known. Among the group of species with light colouration, *L. collaris* can be identified by the dense punctation of the head in combination with large eyes.

Description: Length: 5.3 mm. Colouration: Dark brown to blackish; abdomen brown; pronotum, legs and antennae light brown.

Head: 0.80 mm long, 0.63 mm wide; eyes slightly prominent; postocular sides twice as long as eyes; posterior angles widely rounded; posterior margin shortly straight in front of neck; setiferous punctation deep and irregularly dense; on anterior vertex extremely dense; partly coriaceous; on posterior vertex interstices between punctures half as wide as to as wide as diameter of punctures; narrow midline impunctate; interantennal furrows weak; reach-

ing mid-length of eyes; surface without microsculpture; shiny. Antennae with first antennomere slightly shorter than half length of head; second and third antennomere conical and longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere twice as wide as long; tenth antennomere slightly more than twice as wide as long; all antennomeres pubescent. Pronotum: 0.76 mm long, 0.67 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly, distinctly narrowed in middle third and nearly parallel in posterior third; setiferous punctation sparser than on posterior vertex; on average, interstices between punctures as wide as to twice as wide as diameter of punctures; wide midline impunctate; surface without microsculpture; glossy. Elytra: 0.76 mm long, 0.64 mm wide; humeral angles sub-rectangular; sides posteriorly slightly divergent; posterior angles sub-rectangular; posterior margin nearly straight; setiferous punctation deep and moderately dense; on average, interstices as wide as diameter of punctures; surface with extremely weak ground sculpture; shiny. Abdomen with moderately fine setiferous punctation; distinctly finer than on fore-body: surface with dense transversely striate microsculpture at base of segments; in apical half of segments without microsculpture; glossy.

Lithocharodes compacta spec. nov.

urn:lsid:zoobank.org:act:3253E356-C82F-425A-B034-8AD4AFFB91F7

Figs 37 a-d, 45 H, 49 J

Type material: male, holotype: Mexico, Mor., 7mi E Cuernavaca, 6.7.1975, leg. Q.D. Wheeler (FMNH).

Diagnosis: The species resembles *L. verhaaghi* in the small size, the unicoloured colouration, and the parallel shape of the head. It is slightly larger, the elytra are distinctly shorter than the pronotum, whereas they are longer than the pronotum in *L. verhaaghi*. Moreover, the shape and structure of the paramere is unique among the species of the genus.

Description: Length: 3.7 mm. Colouration: Black; legs and antennae brown with femora darker brown to blackish.

Head: 0.67 mm long, 0.52 mm wide; eyes small; postocular sides four times as long as eyes; postocular sides nearly parallel; posterior angles widely rounded; interantennal furrows extremely weak, nearly absent; setiferous punctation deep, large and dense; on average, interstices between punctures half as wide as diameter of punctures; wide midline impunctate; surface without microsculpture; shiny. Antennae with second and third antennomere slightly longer than wide; second slightly longer than third; subsequent antennomeres wider than long and increasing in width; fourth antennomere approximately 1.5 times as wide as long; tenth antennomere 2.5 times as wide as long; all antennomeres pubescent. Pronotum: 0.71 mm long, 0.46 mm wide; widest at anterior third;

slightly narrowed toward posterior margin; at posterior margin 0.75 times as wide as at widest width; in posterior half sides nearly parallel; setiferous punctation as deep and large as on head but slightly sparser; on average, interstices between punctures as wide as diameter of punctures or partly slightly less wide; wide midline without punctures; line of punctures adjacent to impunctate midline with 18 to 20 punctures; surface without microsculpture; shiny. Elytra: 0.57 mm long, 0.53 mm wide; humeral angles sub-rectangular; sides nearly parallel; posterior angles sub-rectangular; posterior margin nearly straight; only weakly restricted to suture; setiferous punctation as dense as on pronotum; surface with extremely weak microsculpture; shiny. Abdomen with still weaker setiferous punctation than on elytra; setae pointing posteriorly; surface with extremely weak microsculpture; shiny; tergite VII of male smoothly rounded at posterior margin; sternite VII of male rounded at posterior margin but with short central incision. Aedeagus small and approximately oval; bag-like endophallus densely covered by differently large teeth; teeth in anterior half denser and larger than in posterior half; paramere stout and short; at inner apical half with area covered by parallel lamellae.

Etymology: The name of the species is derived from the Latin word *compactus* (meaning stout) and refers to the short and stout shape of the paramere, which seems to be unique among the species of the genus.

Lithocharodes curtipennis spec. nov.

urn:lsid:zoobank.org:act:49C417E3-A17C-4A28-9D32-950C09CDBD1D

Figs 32 a-c, 45 A, 50 A

Type material: male, holotype: Mexico, Chiapas, Mpio., Angel Albino Corzo Reserva El Triunfo, Pico El Triunfo (92°48.70'W, 15°40.16'N), 2400 m elev., cloud forest litter, 16.-21.11.2001, leg. R. Anderson, #MEX1A01 204 (KNHM). Paratypes: 16 females, 8 males with same data as holotype (20 KNHM, 4 UIC); Chiapas, Mpio., San Cristóbal de las Casas, Reserva Huitepec (92°40.70'W, 16°45.84'N), 9 females, 1 male, 2200 m elev., oak forest, 13.11.2001, leg. R. Anderson, #MEX1A01 201 (9 KNHM, 1 UIC); same region but cloud forest litter, female, 2800 m elev. 22.11.2001, leg. R. Anderson (KNHM); same region but Cerro Huitepec (Pico), ca. 5 km W San Christobal, cloud forest litter, 2750 m elev., 2 females, 18.9.1991, leg. R. Anderson, #91-107 (KNHM); Chiapas, 8.9 km E Rayon, 1500 m elev., cloud forest litter, female, 19.9.1991, leg. R. Anderson, #91-109 (KNHM); Nueva Leon, 23 km N Linares, Hwy. 85 at Rio Conchus, washing moss on rocks beside river, 420 m elev., female, 5.7.1992, leg. J.S. Ashe (KNHM); Veracruz, 3.2 km SW Las Vigas, Hwy. 140 pine treefall litter, 2830 m elev., female, 11.7.1992, leg. J.S. Ashe (KNHM); Guatemala: Zacapa, San Lorenzo, Cerro de los Monos (89°40.685'W, 15°06.806'N), 2284 m elev., sifted mixed oak-cloud forest litter, 1 female, 6.7.2007, leg. R. Anderson, #LLAMA07 RSA003 (KNHM).

Diagnosis: *Lithocharodes curtipennis* can be easily identified by the short elytra in combination with the short eyes. These characters are frequently found in the genus *Somoleptus*. Thus, *L. curtipennis* closely resembles species of *Somoleptus*. However, the two specific cones at the orifice of the aedeagus are absent and the interantennal furrows are present. Therefore, *L. curtipennis* was placed in the genus *Lithocharodes*.

Description: Length: 4.2 mm. Colouration: Brown; legs and antennae lighter brown.

Head: 0.72 mm long, 0.56 mm wide; eyes small; postocular space 5 times as long as eyes; sides slightly divergent posteriad; posterior angles widely rounded; shape approximately oval; interantennal furrows deep, reaching mid-length of eyes; slightly divergent posteriad; setiferous punctation deep and moderately dense; on average, interstices between punctures as wide as diameter of punctures; on posterior vertex interstices between punctures wider than on anterior vertex; space between interantennal furrows impunctate; vertex with irregular midline impunctate; surface without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere each longer than wide; conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; four to eleventh antennomeres densely pubescent. Pronotum: 0.83 mm long; 0.52 mm wide; widest in anterior third; conically narrowed toward neck; slightly narrowed posteriad; at posterior margin 0.82 times as wide as at widest width; posterior margin smoothly rounded; posterior angles obtuse but distinct; setiferous punctation evenly covering surface except impunctate midline; adjacent to wide midline with irregular line of approximate 17 punctures; surface without microsculpture; shiny. Elytra: 0.56 mm long, 0.61 mm wide; sides distinctly divergent posteriad; humeral angles absent; posterior angles sub-rectangular; posterior margin deeply triangularly emarginate; setiferous punctation weaker and sparser than on pronotum; on average interstices between punctures twice as wide as diameter of punctures; surface without microsculpture; shiny. Abdomen with dense setiferous punctation; weak isodiametric microsculpture; surface less shiny than fore-body; posterior margin of male abdominal sternite VII triangularly projecting; male abdominal tergite VII without peculiarities. Meso- and metatibia with one subapical ctenidium. Aedeagus oval; convergent anteriorly; endophallus with single string recurved anteriorly; anterior part covered by medium-sized teeth; posterior sack covered by shorter teeth; paramere slender; slightly sinuate; with long setae at inner side.

Etymology: The species epithet is a combination of the Latin words *curta* (meaning short) and *pennis* (meaning elytra) and refers to the short elytra of the species.

Lithocharodes denticulata spec. nov.

urn:lsid:zoobank.org:act:9B194FB8-EFFE-4301-9681-174E24B19557

Figs 18 a-d, 44 M, 49 A

Type material: male, holotype: Bolivia, Cochabamba, Cochabamba, 67.5 km NE Est. Biol. Valle de Sajita, Univ. de San Simon (64°47'52"W, 17°6'33"S), 300 m elev., flight intercept trap, 9.-13.2.1999, leg. F. Genier, #BOL1G99 069 (KNHM). Paratypes: Bolivia: 3 males, 3 females with same data as holotype (KNHM); same location, date, and collecting method as holotype but 2 males, 2 females, leg. R. Hanley, #BOL1H99 078 (3 KNHM, 1 UIC); Peru: Madre de Dios, Cocha Salvador, Reserved Zone Manu National Park (71°31'36"W, 12°0'13"S), flight intercept trap, 4 males, 20.-21.10.2000, leg. R. Brooks, #PERU1B00 070 (KNHM); Madre de Dios, Pentiacolla Lodge, Alto Madre de Dios River (71°13'55"W, 12°39'22"S), 400 m elev., flight intercept trap, 1 male, 1 female, 23.-26.10.2000, leg. R. Brooks, #PERU1B00 099 (KNHM); same region, CICRA field station, ~2 km NW of cafeteria, research plot (70.1098°W, 12.5523°S), 295 m elev., flight intercept trap, pit fall trap, 5 males, 23 females, 7.-9.6., 9.-11.6., 11.-13.6., 12.-13.6.2011, leg. Chaboo team, #PER-11-FIT-019 (25 KNHM, 3 UIC); Cusco Dept., Villa Carmen field station, ~1.7 km west cafeteria research transect (71.4191°W, 12.8925°S), 555 m elev., flight intercept trap, 1 male, 3 females, 22.-24.5.2001, leg. D.J. Bennett & E Razuri, #PER-11-FIT-009 (KNHM); French Guiana: Saül, 7 km N, Les Eaux Claires (53°13'19"W, 3°39'46"N), 220 m elev., flight intercept trap, male, 31.5.-3.6.1997, leg. J. Ashe, R. Brooks (KNHM); Mt Galbao summit (53°16'42"W, 3°37'18"N), 740 m elev., flight intercept trap, 2 females, 5.-7.6.1997, leg. J. Ashe, R. Brooks (KNHM).

Diagnosis: The species is characterised by the apical row of large teeth of the endophallus. In addition, males can be identified by the specific shape of sternite VII with large lateral prominences and a wide medial prominence. Females are much more difficult to separate from similar species such as *L. nigerrima*. They are separated from similarly large species by the black colouration in combination with the sparse punctation of the posterior vertex, and the large eyes.

Description: Length: 4.4 mm. Colouration: Blackish; legs and antennae brown.

Head: 0.53 mm long, 0.52 mm wide; eyes large; slightly prominent; postocular sides slightly divergent; 1.8 times as long as eyes; interantennal furrows reaching anterior third of eyes; setiferous punctation moderately deep and dense; on average, interstices as wide as diameter of punctures; on anterior vertex interstices slightly shorter, on posterior vertex slightly wider; surface without microsculpture; shiny. Antennae with first antennomere slightly longer than half length of head; second and third antennomere conical; longer than wide; subsequent antennomeres wider than long and increasing in width; fourth anten-

nomere 1.5 times as wide as long; tenth antennomere 2.2 times as wide as long; all antennomeres densely pubescent. Pronotum: 0.67 mm long, 0.44 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly, slightly narrowed in middle third and nearly parallel in posterior third; posterior angles widely rounded; posterior margin convex; setiferous punctation as dense and deep as on posterior vertex; wide midline impunctate; surface without microsculpture; shiny. Elytra: 0.62 mm long, 0.56 mm wide; humeral angles obtuse; sides posteriorly nearly parallel; posterior angles sub-rectangular; posterior margin slightly convex with wide incision at suture; setiferous punctation finer than on pronotum but slightly denser; surface with extremely fine isodiametric microsculpture; shiny. Abdomen with denser and finer setiferous punctation than on fore-body; microsculpture denser and deeper than on elytra; surface less shiny; sternite VII of male with long curved lateral teeth; posterior margin deeply emarginate on each side of middle; central prominence convex; tergite VII of male with straight posterior margin. Meso- and metatibia with three subapical ctenidia. Aedeagus long-oval with sub-rectangular anterior angles; posterior part of endophallus covered by minute teeth; in anterior part with row of conspicuously large teeth; paramere short and broad; bilobed; outer lobe broad; triangular and half as long as inner lobe; inner lobe with straight inner face and slightly curved outer face; sparsely covered by fine setae; setae on inner face denser; basal setae slightly thicker and longer than apical setae.

Etymology: The species name is derived from the same Latin word (meaning toothed) and refers to the shape of the male sternite VII.

Lithocharodes dubiosa spec. nov.

urn:lsid:zoobank.org:act:A9BFC64A-5AEA-499E-ABB9-94BE1F8F05B6

Figs 6 a-d, 45 C, 49 F

Type material: male, holotype: Peru, Tambopata Prov., Madre de Dios Dpto., 15 km NE Puerto Maldonado, Cuzco Amazónico (12°33'S, 69°03'W), 200 m elev., Plot #Z1 trail 26, flight intercept trap, 26.6.1989, leg. R. Leschen, #280 (KNHM).

Diagnosis: *Lithocharodes dubiosa* can hardly be separated from species with similar size. It can be separated from *L. pampana* and *L. lescheni* by sparser punctation of the head. The main separating character is the twisted band of the endophallus with larger teeth and lobes anteriorly and minute teeth posteriorly. The endophallus in *L. pampana* has a spiral form and the endophallus of *L. lescheni* forms a thick bulb at base.

Description: Length: 4.5 mm. Colouration: Brown; head darker brown than remaining body; legs and posterior abdominal segments light brown.

Head: 0.79 mm long, 0.65 mm wide; eyes moderately large, postocular sides twice as long as eyes; interantennal furrows convergent; reaching mid of eyes; setiferous punctation on anterior vertex denser than on posterior vertex; on average, interstices at least as wide as diameter of punctures; narrow midline impunctate; surface with extremely weak microsculpture; moderately shiny. Antennae with first antennomere half as long as length of head; second and third antennomere conical; approximately as long as apical width; subsequent antennomeres distinctly wider than long and increasing in width; fourth antennomere 2.5 times as wide as long; tenth antennomere three times as long as wide; all antennomeres with long setae; fourth to eleventh antennomeres pubescent. Pronotum: 0.89 mm long, 0.58 mm wide; widest in anterior fourth; shortly narrowed toward neck in convex curve; posteriorly more strongly narrowed in middle third; nearly parallel in posterior third; posterior margin slightly convex; setiferous punctation moderately dense; on average, interstices as wide as diameter of punctures; close to posterior margin interstices slightly wider; moderately wide midline impunctate; surface with extremely weak microsculpture; moderately shiny. Elytra: 0.87 mm long, 0.73 mm wide; humeral angles sub-rectangular; sides posteriorly slightly divergent; posterior angles shortly rounded; posterior margin with wide triangular emargination; setiferous punctation dense; punctures larger than on head and pronotum; on average, interstices between punctures half as wide as diameter of punctures; surface with weak isodiametric microsculpture; less shiny than head and pronotum. Abdomen with setiferous punctation finer and sparser than on fore-body; surface with weak isodiametric microsculpture; posterior margin of sternite VII of male sinuate with short emargination on each side of central process; tergite VII of male straight; both sternite and tergite with longitudinal striae close to posterior margin; meso and metatibia with one subapical ctenidium. Aedeagus oval with sub-rectangular anterior part; endophallus forming one wide band with three torsions; lobes and teeth in anterior part large; tooth size decreasing posteriorly; at posterior end of endophallus with minute teeth; paramere slender; curved in anterior third; at inner face with pairs of setae; setae at base longer than at apex.

Etymology: The species name is derived from the same Latin word (meaning doubtful) and refers to the extreme similarity with *L. lescheni* from the same region.

Lithocharodes ecuadoriensis spec. nov.

urn:lsid:zoobank.org:act:D5751DC8-DA8F-4F7E-A57E-3FCB3BE8A990

Figs 27 a-d, 44 H, 48 F

Type material: male, holotype: Ecuador, Sucumbios, Sacha Lodge (76.5 W, 0.5 S), 270 m elev., malaise trap, 14.-24.5.1994, leg. Hibbs (KNHM). Paratypes: 4 females with same data as holotype (KNHM); same loca-

tion, collector but 1 male, 3 females, 4.-14.3., 14.-24.3., 24.5.-3.6.1994 (3 KNHM, 1 UIC); same location and collector, 2 females, 13.-23.4.1994 (2 KNHM); Sucumbios, Sacha Lodge (76.5°W, 0.9°S.); 270 m elev., malaise trap, 1 male, 4 females, 24.5.-3.6.1994, 22.2.-4.3.1994 leg. Hibbs (4 KNHM, 1 UIC); 2 females from same region but flight intercept trap, 21.-24.3.1999, leg. R. Anderson #ECU1B99047 (KNHM); Napo, Yuturi Lodge, Rio Napo (76°2.18'W, 0°32.54'S), 270 m elev., flight intercept trap, 2 males, 20.-21.3.1999, leg. R. Brooks, D. Brzoska, #ECU1B99 010 (1 KNHM, 1 UIC); Jatun Sacha Biol. Station (21 km E Puerto Napo, virgin rain forest, flight intercept trap, female, 8.8.1994, leg. F. Génier (KNHM); Zamora-Chinchi, Rio Bombuscaro (78°59'W, 4°7'S), flight intercept trap, male, 26.6.-4.7.1996, leg. P. Hibbs, #ECU1H96 001 (KNHM); Manabi, swamp between S. Antonio and Bachillero (80°10'W, 0°43'S), female, July 2008, leg. W. Rossi (VAC).

Diagnosis: Males of *L. ecuadoriensis* can be easily recognized by the specific shape of sternite VII with its nearly semi-circular emargination in combination with the nearly straight posterior margin of tergite VII. Females are similar to the black coloured and densely punctate species *L. nigrita* and *L. katharinae*. They differ from *L. nigrita* by the shorter elytra. Separation from *L. katharinae* is nearly impossible in females. The head is slightly less densely punctate than in *L. katharinae*.

Description: Length: 5.0 mm. Colouration: Dark brown; pronotum, legs and antennae slightly lighter brown. Head: 0.75 mm long, 0.61 mm wide; eyes large; slightly prominent; postocular sides twice as long as eyes; interantennal furrows deep; reaching anterior third of eyes; setiferous punctation deep and dense; anteriorly slightly denser than close to neck; on vertex, average of interstices between punctures as wide as diameter of punctures; small midline impunctate; space between interantennal lines impunctate except close to lines; surface without microsculpture; glossy. Antennae with first antennomere half as long as head; second and third antennomere longer than wide, conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere nearly twice as wide as long; tenth antennomere nearly 2.5 times as wide as long; all antennomeres pubescent. Pronotum: 0.85 mm long, 0.58 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; in middle third distinctly narrowed, in posterior third slightly narrowed posteriorly; posterior angles rounded; setiferous punctation as deep as on head but sparser; on average, interstices between punctures at least as wide as diameter of punctures; wide midline impunctate; irregular line adjacent to midline with 17 to 18 punctures; close to posterior margin impunctate; surface without microsculpture; glossy. Elytra: 0.80 mm long, 0.78 mm wide; humeral angles obtuse but distinct; sides nearly parallel; posterior angles shortly rounded; posterior margin slightly convex with incision at suture; setiferous punctation deep and dense; on average, interstices between punctures half as wide as diameter of punctures; surface with weak isodiametric microsculpture; less shiny than head and pronotum. Abdomen with setiferous punctation as dense as on elytra but much finer; microsculpture transversely striate; deeper than on elytra; surface less shiny than elytra; sternite VII of male with deep semi-circular emargination; tergite VII of male with sinuate posterior margin; nearly semi-circular central projection with adjacent emargination. Meso- and metatibiae with two subapical ctenidia each. Aedeagus long-oval with approximately rectangular anterior part; endophallus with two strings with posterior torsion; one string with large lobes in anterior part; second string densely covered by minute teeth; paramere slender and bilobed; inner lobe, straight in basal half; curved in apical half; with numerous setae at inner face; apical setae shorter and finer than basal setae; outer lobe much shorter than inner lobe; sinuate.

Etymology: The species is named after the country where the holotype was collected.

Lithocharodes elegans (SHARP, 1885)

Figs 38 a-d, 45 I, 50 B

Somoleptus elegans SHARP, 1885: 498 new combination

Type material examined: female, holotype: Guatemala: Vera Paz, Balheu, leg. Champion (BMNH).

Additional material examined: Guatemala: female, near Guatemala City, leg. Champion (BMNH); Mexico: 2 males, Oaxaca, 14.0 mi S Suchixtepec, Hwy 175 (16°05'N, 96°28'W), 1700 m elev., montane tropical litter along stream, sifting, 30.4.1977, leg. J.S. Ashe (FMNH).

Diagnosis: The species resembles several unicoloured species with a size ranging between 4.5 mm and 5.0 mm length, dense punctation of the head and sparser punctation of the pronotum. According to the structure of the aedeagus, *L. elegans* resembles *L. densus* SMETANA, 1982 from southern U.S.A. However, the shape of the endophallus is straight and not curved as in *L. densus* and the posterior margin of sternite and tergite VII is different.

Description: Length: 4.5 mm. Colouration: Black; legs and antennae brown, femora blackish. Head: 0.77 mm long, 0.57 mm wide; eyes moderately large; postocular sides 2.5 times as long as eyes; nearly parallel with posterior angles widely rounded; posterior margin nearly semi-circular; interantennal furrows weak; setiferous punctation deep, large, and dense; on average, interstices half as wide as diameter of punctures; on posterior half slightly wider; narrow midline impunctate; surface without microsculpture; shiny. Antennae with second and third antennomere equal in

length and slightly longer than wide; subsequent antennomeres much wider than long and increasing in width; fourth antennomere approximately 1.5 times as wide as long; tenth antennomere nearly three times as wide as long; all antennomeres pubescent. Pronotum: 0.81 mm long, 0.51 mm wide; widest in anterior third; slightly narrowed posteriorly in middle third; sides in posterior third nearly parallel; posterior angles shortly rounded; setiferous punctation distinctly finer and sparser than on head; on average, interstices between punctures as wide as diameter of punctures; wide midline impunctate; irregular line of punctures adjacent to midline with at least 20 punctures; surface without microsculpture; polished. Elytra: 0.86 mm long, 0.68 mm wide; humeral and posterior angles sub-rectangular; sides nearly parallel; posterior margin rounded with incision toward suture; setiferous punctation dense and partly coriaceous; on average, interstices less than one fourth as wide as diameter of punctures; surface partly with isodiametric microsculpture; matt. Abdomen with similar dense and large punctures as on pronotum; setae pointing posteriorly; surface without microsculpture, shiny; tergite VII of male widely prominent; posterior margin rounded; sternite VII of male approximately straight. Aedeagus oval; string of endophallus anteriorly recurved; covered partly by small teeth and partly by spines; paramere with large sclerotized central plate, with straight inner edge and widely rounded outer edge; several setae placed at outer edge; outer plate transparent and more acute; between inner and outer plate with long elongate appendix.

Lithocharodes elongata spec. nov.

urn:lsid:zoobank.org:act:E056AF32-00F8-4072-97F7-7FA40129C9BA

Figs 39 a-d, 44 C, 47 J

Type material: male, holotype: Venezuela, Lara Sanaré, 17.4 km SE Yacambú N.P. (69°34'34"W, 10°42'26"N), 1510 m elev., flight intercept trap, 18.5.-1.6.1998, leg. J. Ashe, R. Brooks, R. Hanley, #VEN1ABH98 170 (KNHM). Paratypes: Venezuela, 4 males, 5 females with same data as holotype, same data as holotype but (69°36'48"W, 9°41'45"N), 1650 m elev., #VEN1ABH98; 2 males, 2 females, 16.-18.5.1998, #VEN1ABH98 082 (10 KNHM, 3 UIC); same location but 14.2 km SE, (69°34'42"W, 9°42'22"N), 1500 m elev. 1 male, 1 female, cloud forest litter, 16.5.1998, leg. R. Anderson, #VEN1A98 012B (KNHM); Aragua, Rancho Grande Biol. Stn., Pico Periquitos (67°41'46"W, 10°21'32"N), 1250 m elev., flight intercept trap, 5 females, 12.-14.5.1998, leg. J. Ashe, R. Brooks, R. Hanley, #VEN1ABH98 030 (4 KNHM, 1 UIC); same location but (67°41'0"W, 10°21'0"N), flight intercept trap, 1115 m elev., 3 females, 3.-19.7.1998 leg. J. Philips, #VEN1P94 001 (KNHM); same location but (67°41'0"W, 10°22'0"N), flight intercept trap, 1100 m elev., female, 6.-17.7.1998 leg. J. Philips, #VEN1P94 023 (KNHM); same location but (67°40'38"W, 10°21'38"N), flight intercept trap, 1450 m elev., female, 14.5.-1.6.1998,

leg. J. Ashe, R. Brooks, R. Hanley, #VEN1ABH98 185 (KNHM); same location but (67°41'W, 10°21'N), flight intercept trap, 1450 m elev., female, 1.-8.3.1995, R.W. Brooks, #047 (KNHM); Merida, Laguna Negra, Páramo de Mucubaji, Sierra Nevada Nati. Park (70°48'31"W, 8°47'14"N), 3350 m elev., under rocks, female, 23.5.1998, leg. J. Ashe, R. Brooks, R. Hanley, #VEN1ABH98 103 (KNHM).

Diagnosis: The species resembles *L. ashei* from Costa Rica/Panama in size, colouration and aedeagal structure, in particular, in the paramere. It may be the sister species of it in Venezuela. *Lithocharodes elongata* is slightly smaller than *L. ashei*, the head is more divergent and the punctation denser. Moreover, males can be separated by the shape of tergite VII, which is narrowed and without incision in *L. elongata* but broader and with incision in *L. ashei*.

Description: Length: 6.0 mm. Colouration: Black to dark brown; legs and antennae slightly lighter brown.

Head: 1.01 mm long, 0.79 mm wide; eyes small; postocular space nearly 3 times as long as eyes; postocular sides distinctly divergent to widely rounded posterior angles; posterior margin nearly semi-circular; interantennal furrows reaching mid-length of eyes; setiferous punctation deep and evenly dense; on average, interstices half as wide as diameter of punctures; narrow midline impunctate including space between interantennal furrows; surface without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical and longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; antennomeres four to eleven densely pubescent. Pronotum: 1.12 mm long, 0.74 mm wide; widest in anterior third; anteriorly, conically convergent to neck; posteriorly slightly convergent to sub-rectangular posterior angles; posterior margin slightly convex; in central part straight; setiferous punctation as dense and deep as on head; impunctate midline slightly wider than on head; surface without microsculpture; shiny. Elytra: 1.14 mm long, 0.95 mm wide; humeral angles sub-rectangular; sides nearly parallel; posterior angles sub-rectangular; posterior margin slightly convex with incision toward suture; setiferous punctation evenly distributed; on average, interstices between punctures as wide as diameter of punctures; surface with extremely weak isodiametric microsculpture; less shiny than on pronotum. Abdomen with setiferous punctation much finer than on fore-body; with weak isodiametric microsculpture; posterior margin of sternite VII of male straight; weakly elevated; tergite VII of male posteriorly distinctly convergent; posterior margin weakly rounded. Mesotibia with three, metatibia with two subapical ctenidia. Aedeagus oval with short triangular prominence at anterior orifice; endophallus forming oval sack covered by minute teeth; paramere thick with large bulb-like prominence in

anterior third; inner face slightly sinuate; covered with numerous setae; setae in central and basal part longer than along inner side.

Etymology: The species name is derived from the Latin word *elongatus* (meaning long) and refers to the large size of the species.

Lithocharodes flohri SHARP, 1885

Figs 45 J, 50 C

Lithocharodes flohri SHARP, 1885: 492

Type material examined: 2 female syntypes: Mexico, Uruapan, leg. E. Flohr (BMNH).

Diagnosis: Unfortunately, both specimens in the BMNH are females as already noted by SHARP (1885). Moreover, no more specimens were found in the other collections studied. Therefore, a detailed comparison with other *Lithocharodes* species cannot be given. The species is characterised by the light brown colouration in combination with a deep punctation of the head, being sparser on the posterior vertex than in front. The shape of the head is divergent posteriad and the posterior angles are sub-rectangular, whereas in similarly coloured and large species the posterior angles of the head are more rounded and not as pronounced as in *L. flohri*.

Description: Length: 5.4 mm. Colouration: Unicoloured brown.

Head: 0.87 mm long, 0.70 mm wide; sides slightly divergent posteriad; eyes small, postocular space 2.7 times as long as eyes; setiferous punctation deep and moderately dense; anteriorly denser than on posterior vertex; interocular furrows reaching mid-length of eyes; between eyes, interstices between punctures shorter than diameter of punctures; on posterior vertex, interstices between punctures as wide as diameter of punctures; space between interocular line impunctate; midline on vertex impunctate; irregularly wide; surface without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical; longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere nearly twice as wide as long; all antennomeres pubescent. Pronotum: 0.93 mm long, 0.65 mm wide; widest in anterior third; conically narrowed toward neck; slightly narrowed in middle third; nearly parallel in posterior third; at apical margin approximately 0.8 times as wide as at greatest width; posterior angles rounded; setiferous punctation as deep as on head and as dense as on posterior vertex except wide impunctate midline; adjacent to midline with irregular line of 14 punctures; surface without microsculpture; shiny. Elytra: 0.89 mm long, 0.80 mm wide; distinctly divergent posteriad; humeral angles distinct; posterior

angles sub-rectangular; posterior margin slightly emarginate toward suture; setiferous punctation weaker than on pronotum, but as dense; surface with weak microsculpture; less shiny than pronotum. Abdomen densely covered by setiferous punctation; surface with weak transversely reticulate microsculpture; as shiny as elytra. Meso- and metatibia with 2 subapical ctenidia each.

Lithocharodes floridanus (LECONTE, 1880)

Figs 45 B, 49 E

Metaponcus floridanus LECONTE, 1880: 170

Lithocharodes floridanus (LECONTE, 1880) in SMETANA (1982)

Material examined: Bahamas: Andros Island, N Blanket Sound, Forfar F. Stn., litter costal coppice, Berlese method, 4 females, 25.4.1994, leg. R. Anderson, BAH94001 (3 KNHM, 1 UIC); same location but Church's Blue hole, 1.7 mi E Love Hill, high interior coppice litter, female, 26.4.1994, leg. R. Anderson, BAH1A94008 (KNHM).

Remarks: The species is sufficiently described in SMETANA's (1982) work on the Xantholininae north of Mexico. SMETANA (1982) only mentioned the occurrence in Florida (USA) but the species also occurs in the north-eastern region of the Neotropics such as the Bahamas and Cuba (PECK 2005). SMETANA (1982) described the species as uniformly testaceous to testaceo-brunneous. Within the material from the Bahamas a nearly blackish specimen was present. Among the neotropical species, *L. floridanus* can be distinguished by the small size and the long second antennomere, which is longer than the third.

Lithocharodes fuscipennis SHARP, 1876

Figs 19 a-d, 45 A, 46 A

Lithocharodes fuscipennis SHARP, 1876: 205

Type material examined: female, holotype: Brazil: Tapajós (BMNH).

Additional material examined: Columbia: Honda, R. Magdalena, *Leptacinus rufotestaceus* type Bernhauer in litt., male #12719 (SDEI); French Guyana: Coralie (52.21 W, 4.3 E) male, 14.11.2011, leg. T. Struyve (TSC); Caussade (52.3529 W, 5.0357 N), 7.11.2011, leg. T. Struyve (TSC); Brazil: male, without more information (BMNH); Bahia, Salvador de Bahia, det. Bernhauer, female, #12708 (SDEI); Mato Grosso, Santa Carmen, Dona Dozolina farm (55°1.13'W, 11°5.97'S), field, in 0-10 cm depth of soil, male, female, 2.5.2014, leg. K. Peña; São Vicente farm (55°2.15'W, 12°0.37'S), pasture, in 0-10 cm depth of soil, female, 4.5.2014, 2 males on pasture, 3 males, 1 female on field, 3.5.2014, leg. K. Peña; Campo Verde, Santa Luzia farm (55°2.09'W, 15°433'S),

pasture, in 0-10 cm depth of soil, 2 females, 25.3.2014, leg. K. Peña; Rio Engano farm (54°5.07'W, 15°23.26'S), field, in 0-10 cm depth of soil, 1 female, 1 male, 12.3.2014, leg. K. Peña; Primavera do Leste, Ilha Grande farm (54°1.46'W, 15°2.66'S), field, in 20-30 cm depth of soil, female, 9.4.2014, leg. K. Peña (UIC); 40 km S Poconé, Rio Clarinho (51°43.47'W, 16°36.38'S), fruit decay, female, 15.3.2013, leg. U. Irmiler (UIC); Cuiabá, Várzea Grande, Parque de Exposição, black light, male, 12.5.1972, leg. R. Williams (FMNH); Paraguay: leg. Drake, without more information, *L. gracilis* det. Bernhauer, 2 females, #12710, 12711, 1 male. #12712 (SDEI); Dept. Central Lambaré, 10 females, 22.1.1991, 30.1.1991, leg. U. Drechsel (9 KNHM, 1 UIC); San Lorenzo, female, 9.2.1991, leg. U. Drechsel (KNHM); Canindeyu, Maracana, light, primary forest, female, 24.-30.1.1995, leg. Drechsel (KNHM); Guairá, Melgarejo, Tacuara Creek, flood detritus, 1 male, 1 female, 20.10.1994, leg. U. Drechsel (1 KNHM, 1 UIC); Canindeyu, Maracana, primary forest, at light, female, 24.-30.1.1995, leg. U. Drechsel (KNHM); Central Asunción, 2 females, 8.9.1991, 5.10.1991, leg. U. Drechsel (KNHM); Boquerón, M. Estigarriba, female, 8.-9.5.1992, leg. U. Drechsel (KNHM); Boquerón, Tranchaco Hwy km 430, at light, female, 19.-28.4.1995, leg. U. Drechsel (KNHM); Argentina: Buenos Aires, 1 male, 3 females, leg. Arribalzaga, 1905, coll. Sharp (BMNH); Salta, Tartagal, at black light, 2 females, 12.-19.12.1990, leg. M. Archangelsky (FMNH).

Diagnosis: Among the Neotropical *Lithocharodes* species, *L. fuscipennis* can be identified by the extremely sparse and fine punctation of the head in combination with the light colouration. However, the light colouration can vary according to the large series of specimens from South America. Head can be totally yellow, anterior half dark or totally dark. The pronotum may be slightly infuscate in anterior half. Dark specimens of *L. fuscipennis* may resemble *L. hanagarthi*. However, the posterior margin of elytra in *L. hanagarthi* is never as broadly lighter than it is in *L. fuscipennis*. A more detailed description with figures is given by BUSANELLO & CARON (2019). Here only a reduced description shall complete the review of species.

Description: Length: 5.1 mm. Colouration: Head orange; in some specimens darkened anteriorly to yellow-brown; pronotum orange; anteriorly darker than posteriorly; scutellum yellow; elytra black with large spot at posterior angles yellow; abdomen yellow-brown; darkened posteriorly; legs light brown; antennae darker brown with apex of antennomere 11 yellow.

Head: 0.83 mm long, 0.66 mm wide; postocular sides more than three times as long as small eyes; sides slightly divergent posteriorly; interantennal furrows short; half as long as first antennomere; setiferous punctation irregular; laterad denser than on vertex; space between interantennal furrows and on vertex impunctate; surface without microsculpture; shiny. Antennae with first antennomere

as long as antennomeres 2-7 combined; antennomeres 2-11 increasing in width; antennomeres 2 and 3 conical; slightly longer than wide; antennomeres 4-11 much wider; at least twice as wide as long. Pronotum: 0.84 mm long, 0.61 mm wide; widest in anterior third; anterior third, strongly convergent to neck; intermediately convergent posteriorly in medial third and nearly parallel in posterior third; posterior margin at posterior angles approximately 0.75 times as wide as at widest part; posterior angles smoothly rounded; wide midline impunctate; adjacent to midline with irregular line of approximately 11 punctures; surface without microsculpture; shiny. Elytra: 0.83 mm long, 0.77 mm wide; humeral angles sub-rectangular; sides slightly divergent posteriorly; setiferous punctation moderately dense and deep; on average, interstices between punctures as wide as diameter of punctures; surface without microsculpture; shiny. Abdomen densely covered by setiferous punctation; shiny; males abdominal sternite VII without distinct peculiarities; posterior margin approximately straight with extremely weak medial emargination. Aedeagus oval with anterior angles sub-rectangular; endophallus elongate; paramere triangular; very wide at base; abruptly narrowed anteriorly toward slenderer apical part; apical part curved; covered by several setae; at base one area with short setae and one with longer setae.

Lithocharodes fusciventris SHARP, 1885

Figs 33 a-c, 44 N, 49 B

Lithocharodes fusciventris SHARP, 1885: 492

Lithocharodes gracilis SHARP, 1885: 493, **new synonymy**

Lithocharodes rambouseki BLACKWELDER 1943: 500, **new synonymy**

Lithocharodes cameroni BLACKWELDER 1943: 497, **new synonymy**

Type material examined: male, holotype, Guatemala, San Geronimo, leg. Champion (BMNH); 1 male lectotype, 1 female syntype of *L. gracilis*, Panama, Peña Blanca, 3000-4000 ft., leg. Champion; 2 female syntypes: Panama, Tolé, leg. Champion (BMNH); I saw 4 syntypes of *L. gracilis*; among these, 1 male was found and labelled as lectotype; 1 female paratype of *L. rambouseki* BLACKWELDER, 1943, Cuba, Soledad, 24.1.1927, leg. Darlington (MCZ); 1 male of *L. rambouseki*: Cuba: Habana, Sept. 1933 leg. A. Bierig (BMNH; the specimen was not included as paratype by Blackwelder in his description but labelled as paratype by BMNH and as cotype by Bierig. Thus, it must be from the type series of Bierig which was used by Blackwelder for his description); 1 female holotype of *L. cameroni* Blackwelder, 1943 (USNM), Cuba, Cayamas, 10.6., leg. E.H. Schwarz; BLACKWELDER (1943) separated *L. cameroni* from *L. rambouseki* by the lighter colouration. Indeed, the specimen of *L. cameroni* is lighter than the *L. rambouseki* specimen but it seems that this can be explained by the teneral state of the specimen. Thus, I also decided to synonymise *L. cameroni* with *L. fusciventris*.

Additional material: Cuba: Prov. Habana, male, Febr. 1929, leg. A. Bierig (BMNH, also labelled as cotype by Bierig but not as paratype by BMNH); Rio Arignabo, female, 10.3.1929, leg. A. Bierig (BMNH) (the latter two specimens were also labelled M. Cameron bequest, which certainly means that they were transferred to BMNH by Cameron's collection); male, Habana, Rio Cristal, Mar. 1938, leg. A. Bierig (FMNH); female, Natanzas Prov. Buenavides, leg. A. Bierig (FMNH); female, Rio Almen-dares, 28.12.1929, leg. A. Bierig (FMNH); Mexico: without more information, female, #12718 (SDEI); Chiapas, Palenque, 2 females, 10.9.1974, leg. G. Bohart, W. Hanson (KNHM); Guatemala: Petén, Parque Natu-ral Ixpanpajul (89.8151 W, 16.8734 N), 160 m elev., metal halid/UV fluorescent lights, 15 females, 24.22. & 23.11.2016, leg. Z.H. Falin & J. Monzón, #GUAT1F16 067 (14 KNHM, 1 UIC); Parque National El Rosario, station (90.1603 W, 16.5241 N), metal halide/UV fluorescent lights female, 22.11.2016, leg. Z.H. Falin & J. Monzon, #GUAT1F16 058 (KNHM); El Salvador: female, San Salvador, Rio Vicente, 24.3.1943, leg. A. Bierig (FMNH); Nicaragua, Grenada Dept., Volcan Mombacho Res. Nat. (85°58.8'W, 11°50.0'N), elfin cloud forest litter, 150 m elev., female, 2.-5.6.2002, leg. R. Anderson, #RSA2002-033 (KNHM); same location but 1150 m elev., flight intercept trap, 2.-5.2002, leg. S. Peck, #NIC1P02 003 (KNHM); Matagalpa Dept., 6 km N Matagalpa, Selva Negra (85°54.6'W, 12°59.9'N), 1480 m elev., ridgetop cloud forest litter, female, 20.5.2002, leg. R. Anderson, #RSA2002-025 (KNHM); Granada, Reserva Silv., Priv., Domitila (85.9533 W, 11.7083 N), Mercury vapor light, female, 9.6.2011, leg. C.W. Shin, # NIC-CWS-2011, 066 (KNHM); Managua (86°12'W, 12°09'N), in house, 2 females, Oct. 2007, leg. M. Irmmler (UIC); Costa Rica: Puntarenas, Manzanillo, Coyolito Co., 5 males, 3 females 7.-8.1.2009, leg. W. Rossi (6 VAC, 2 UIC); Manzanillo env., female, 9.1.2009, leg. W. Rossi (VAC); Puntarenas, Coyolito, Sundt Finca, 2 females, 31.1.2008 (1 VAC, 1 UIC); Puntarenas, La Ensenada env., male, 9.1.2009, leg. W. Rossi (VAC); Heredia, 3 km S Puerto Viejo, OTS La Selva (84°01'W, 10°26'N), 100 m elev., 2 female, X.1992, IX.1992, leg. P. Hanson (KNHM); Guan., 14 km S Cañas, 2 females, 7.-10.3., 1.-4.9.1989, leg. F.D. Parker (KNHM); Heredia, La Selva, Biol. Stat. 3 km S Puerto Viejo (84°01'W, 10°26'N), Malaise trap, second growth, male, 3.-8.8.1992, leg. G. Wright (KNHM); Puntar-enas, Monte Verde, leaf litter & fruit fall, 1400 m elev., female, 5.5.1989, leg. J. Ashe, R. Brooks, R. Leschen, #031 (KNHM); 1 male, 1 female, Atenas (Salas), 750 m elev., 1.3.1939, 3.4.1943, leg. A. Bierig (FMNH); 3 males, 4 females, San Rafael Ojo de Agua, 5.9.1941, leg. A. Bierig (FMNH); 1 male, 2 females, Sardinal, 23.2.1941, leg. A. Bierig (FMNH); female, Chorones (Marín), 22.10.1940, leg. A. Bierig (FMNH); female, Caldera, 5.11.1943, leg. A. Bierig (FMNH); female, Desmonte, San Mateo, 500 m elev., 28.2.1939, leg. A. Bierig (FMNH); male, San José, 1935, leg. A. Bierig (FMNH); female, San José, 1937, leg. A. Bierig (FMNH); female, Puntarenas, 11.8.1939, leg.

A. Bierig (FMNH); 5 males, 2 females, La Caja, San José, Feb., Apr. 1940, 1931, leg. Schmidt (FMNH); female, San Rafael de San Ramón, Feb. 1940, leg. Moya (FMNH); Panama: Miramari (82.19-24W, 8.95-99N), car net, 2 females, 30.7.2014, leg. T. Struyve (TSC); male, Puerto Amurelles, Aug. 1930, leg. A. Bierig (FMNH); Ecuador: Sucumbios, Sacha Lodge (76°27'35"W, 0°28'14"S), flight intercept trap, female, 21.-24.3.1999, leg. R. Brooks, #ECU1B99 047 (KNHM); Bolivia: female, Dept. Beni, Prov. Vaca Diez, Isla de Montacu, forest leaf litter, 16.8.1990, leg. A. Parillo & P. Betella (FMNH); female, same region but 2 km NW Tumichucua, forest, leaf litter in sunken area, 12.8.1990, leg. A. Parillo (FMNH).

Diagnosis: Regarding the sparse punctuation of the head, *L. fusciventris* indeed resembles *L. fuscipennis* as mentioned in Sharp (1885). However, *L. fusciventris* is darker and without the light coloured pronotum of *L. fuscipennis*. In colouration and punctation, *L. fusciven-tris* resembles *L. sordida* and *L. bicornis* but punctuation of head is distinctly sparser than in these species. Regarding the aedeagus, the endophallus of *L. fusciventris* is covered by minute teeth, whereas the endophallus of *L. sordida* and *L. bicornis* carries large teeth.

Description: Length: 4.4 mm. Colouration: Brown; elytra and pronotum lighter brown; elytra lightened toward posterior margin; antennae and legs slightly lighter brown than head, pronotum, and abdomen.

Head: 0.75 mm long, 0.61 mm wide; eyes not promi-nent; short; postocular space three times as long as eyes; slightly divergent posteriad but with widely rounded posterior angles; short part of posterior margin straight; interantennal furrows deep; divergent posteriad; reaching mid-length of eyes; setiferous punctuation deep and irreg-ularly dense; on average, interstices between punctures as wide as diameter of punctures; wide midline impunctate; space between interantennal furrows impunctate; surface without microsculpture; glossy. Antennae with first antennomere as long as half-length of head; second and third antennomere thick; conical and one third longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere at least twice as wide as long; tenth antennomere more than 2.5 times as long as wide; all antennomeres pubescent. Prono-tum: 0.81 mm long, 0.56 mm wide; widest in anterior fourth; anteriorly, conically narrowed toward neck; poste-riod distinctly narrowed toward middle; posterior half approximately parallel; setiferous punctuation less deep and dense than on head; on average, interstices between punctures 1.5 times as wide as diameter of punctures; wide midline impunctate; surface without microsculpture; glossy. Elytra: 0.79 mm long, 0.68 mm wide; humeral angles obtuse; sides slightly divergent posteriad; poste-rior angles sub-rectangular; posterior margin retreated to suture; setiferous punctuation dense and deep; partly nearly coriaceous; surface less shiny than head and pronotum. Abdomen with dense setiferous punctuation; at

base of segments with isodiametric microsculpture; apex of segments without microsculpture; glossy; tergite VII of male straight; extremely slight emarginate; sternite VII of male semi-circular. Mesotibia with two, metatibia with three subapical ctenidia. Aedeagus small; oval; endophallus in posterior half as wide stripe covered by numerous minute teeth; several times folded; paramere short and approximately straight; widest in middle part; apex shortly rounded; inner face with pairs of short setae.

Lithocharodes fuscula SHARP, 1885

Figs 40 a-d, 43 M, 47 D

Lithocharodes fuscula SHARP, 1885: 494

Type material examined: male, lectotype (present designation): Guatemala, San Geronimo, leg. Champion (BMNH); female, syntype: Guatemala, near Guatemala City, leg. Champion (BMNH).

Diagnosis: Among the two syntypes from the BMNH studied, one male was found. This specimen was dissected and labelled as lectotype. *Lithocharodes fuscula* resembles a group of dark unicoloured species, smaller than 4 mm in size: *L. verhaaghi* and *L. silvicola*. The species of this group are extremely similar and can hardly be separated without studying the aedeagus. Male endophallus of *L. fuscula* has no spiral torsions.

Description: Length: 3.7 mm. Colouration: Totally brown; elytra slightly darker brown; legs and antennae slightly lighter brown.

Head: 0.70 mm long, 0.58 mm wide; eyes slightly prominent; postocular sides twice as long as eyes; posterior angles widely rounded; posterior margin slightly emarginate; interantennal furrows distinct; reaching posterior third of eyes; setiferous punctation moderately dense and deep; on average, interstices between punctures as wide as diameter of punctures; interstices on anterior vertex slightly shorter, on posterior vertex slightly wider; wide midline impunctate; surface with extremely weak microsculpture; shiny. Antennae with first antennomere slightly shorter than half-length of head; second and third antennomere conical; second slightly longer than wide; third as long as apical width; subsequent antennomeres wider than long and increasing in width; fourth antennomere twice as wide as long; tenth antennomere 2.5 times as wide as long; all antennomeres pubescent. Pronotum: 0.75 mm long, 0.53 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly, distinctly narrowed in middle third; in posterior third nearly parallel; posterior angles sub-rectangular; posterior margin nearly straight; setiferous punctation deeper than on head but partly sparser; wide midline impunctate; surface without microsculpture; glossy. Elytra: 0.70 mm long, 0.62 mm wide; humeral angles sub-rectangular; sides slightly divergent posteriorly; posterior

angles sub-rectangular; posterior margin nearly straight; setiferous punctation deep and dense; on average, interstices between punctures half as wide as diameter of punctures; surface with extremely weak microsculpture; shiny. Abdomen with finer setiferous punctation than on fore-body; punctation at base of segments denser than at apex; surface with weak irregular microsculpture; shiny; sternite VII of male evenly narrowed toward obtuse apex; posterior margin of tergite VII of male straight. Aedeagus oval with anterior angles sub-rectangular; endophallus in anterior half weakly sclerotised; posterior half distinctly sclerotised; partly covered by minute teeth and partly by long teeth.

Lithocharodes germana SHARP, 1885

Figs 17 a-c, 43 E, 46 E

Lithocharodes germana SHARP, 1885: 492

Type material examined: male, holotype: Guatemala, San Jerónimo, leg Sallé (BMNH).

Diagnosis: Regarding the colouration and the punctation of the head, *L. germana* resembles *L. collaris*. But *L. germana* is distinctly larger than *L. collaris* and the eyes are smaller. The postocular sides are three times as long as eyes in *L. germana* but only twice as long as eyes in *L. collaris*.

Description: Length: 6.3 mm. Colouration: Brown; head dark brown to nearly black; elytra slightly lighter brown.

Head: 0.87 mm long, 0.69 mm wide; sides divergent posteriorly; eyes short; postocular space three times as long as eyes; posterior angles sub-rectangular; interocular furrows moderately deep and slightly curved; nearly reaching posterior edge of eyes; in front of neck with indistinct dorsal depression; setiferous punctation deep; moderately dense and evenly distributed except wide impunctate midline; on average, interstices as wide as diameter of punctures; space between interocular furrows impunctate; surface without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical; longer than wide; subsequent antennomeres increasing in width and wider than long; fourth antennomere twice as wide as long; tenth antennomere nearly three times as wide as long; all antennomeres pubescent; fourth to eleventh antennomeres with denser pubescence. Pronotum: 0.78 mm long, 0.61 mm wide; widest in anterior third; anteriorly conically narrowed toward neck; narrowed in middle third; nearly parallel in posterior third; setiferous punctation deep and moderately dense, except for wide impunctate midline; adjacent to midline with irregular line of 14-15 punctures; surface without microsculpture; shiny. Elytra: 0.84 mm long; 0.68 mm wide; sides nearly parallel; humeral angles and posterior angles rectangular; posterior margin slightly retreated toward suture; setif-

erous punctation deep and dense; on average, interstices between punctures as wide as or slightly shorter than diameter of punctures; surface with weak, isodiametric reticulation; matt; less shiny than head and pronotum. Abdomen with dense setiferous punctation; with net-like reticulation; as matt as elytra; tergite VII of male with triangular emargination and tooth-like, prominent outer angles; sternite VII without peculiarities. Meso- and metatibia with two subapical ctenidia each. Aedeagus approximately oval, without distinct anterior angles; endophallus large, internal sack posteriorly recurved, covered with minute teeth; one short string with few large teeth; second more transparent, long string with medium sized teeth; paramere straight at base and abruptly curved at apex; with numerous setiferous punctures.

Lithocharodes hanagarthi spec. nov.

urn:lsid:zoobank.org:act:CB47DB88-4D42-4FC9-AF39-A5ED1D1758A3
Figs 9 a-d, 43 B, 46 B

Type material: male, holotype: Peru, Huanuco, Llullapichis, Panguana Biol. Stat. (74°5.68'W, 9°37'S), banana plantation, 17.5.1975, leg. W. Hanagarth (UIC). Paratypes: Peru, Huanuco, Llullapichis, Panguana Biol. Stat. (74°5.68'W, 9°37'S), floodplain forest, male, 6.5.1976, leg. W. Hana garth; same location and collector but Rio Pachitea, Cocha, pitfall trap #216, BPC, female, 9.5.1976 (UIC).

Diagnosis: *Lithocharodes hanagarthi* belongs to the group of light coloured species with sparse punctation of the head. In this respect, *L. hanagarthi* closely resembles *L. fuscipennis* but the eyes of *L. hanagarthi* are larger. In *L. hanagarthi*, postocular sides are 2.5 times as long as eyes, whereas in *L. fuscipennis* postocular sides are three times as long as eyes. Males of *L. hanagarthi* are easily to identify by the small nearly circular aedeagus with endophallus covered only by minute teeth.

Description: Length: 4.6 mm. Colouration: Light brown; head and elytra dark brown to black; small stripe at posterior margin of elytra light brown; legs slightly lighter brown.

Head: 0.78 mm long, 0.62 mm wide; eyes moderately long; postocular space 2.5 times as long as eyes; sides slightly divergent posteriad; posterior angles widely rounded; short part of posterior margin straight; inter-antennal furrows deep and moderately long; reaching posterior third of eyes; setiferous punctation deep and irregularly dense; on anterior vertex denser than on posterior vertex; interstices on anterior vertex shorter than diameter of punctures; interstices on posterior vertex as wide as diameter of punctures or even wider; space between interantennal furrows impunctate; vertex with wide impunctate midline; impunctate midline widened posteriad; surface without microsculpture; shiny. Antennae with first antennomere as long as half-length of head;

second and third antennomere longer than wide; conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere nearly 2.5 times as wide as long; antennomeres four to eleven densely pubescent. Pronotum: 0.88 mm long, 0.55 mm wide; widest in anterior third; strongly convergent anteriorly; posteriad, slightly convergent in middle third and approximately parallel in posterior third; posterior angles sub-rectangular; posterior margin slightly curved; setiferous punctation irregular and moderately deep; adjacent to wide impunctate midline with irregular line of 12 to 13 punctures; surface without microsculpture; shiny. Elytra: 0.79 mm long, 0.66 mm wide; sides nearly parallel; humeral angles sub-rectangular; posterior angles nearly rectangular; posterior margin slightly triangularly emarginate to suture; setiferous punctation moderately dense and deep; interstices between punctures nearly twice as wide as diameter of punctures; surface with weak microsculpture; less shiny than head and pronotum. Abdomen with weak setiferous punctation and weak microsculpture; posterior margin of tergite VII and sternite VII of male nearly straight or slightly convex; posterior margin nearly semi-circular. Mesotibia and metatibia with 3 subapical ctenidia each. Aedeagus small; oval; at anterior orifice slightly prominent; endophallus forming transparent band with central loop; covered by minute knobs; paramere slender; in apical third, nearly rectangularly flexed; along inner margin with several short setae.

Etymology: The name honours Werner Hanagarth, who extensively collected in the Panguana region and in other parts of Peru and unfortunately passed too early.

Lithocharodes karinae spec. nov.

urn:lsid:zoobank.org:act:067347B8-B4E1-4B17-96D3-9ADBA83D340F
Figs 23 a-d, 44 K, 48 I

Type material: male, holotype: Brazil, Mato Grosso, Campo Verde, Santa Luzia farm (55°2.09'W, 15°4.33'S), forest, 0-10 depth of soil, #10, 25.3.2014, leg. K. Peña-Peña (INPA). Paratypes: Panama: Canal Zone, Barro Colorado Is., under bark rotting logs, 5 females, 4.2.1976, 5.2.1976, 8.2.1976, 10.2.1976, pleg. A. Newton (FMNH); 2 females, wet wood, Berlese, 5.8.1969, leg. J. Lawrence, B. & T. Hlavac (FMNH); female, at *Fomes melanoporus*, 31.7.1969, leg. J.F. Lawrence (FMNH); female, at *Ganoderma* sp., 31.7.1969, leg. J.F. Lawrence (FMNH); Brazil: Amazonas, Manaus, Ilha Marchantheria (59°58'W, 3°15'S), Várzea, 1 male, 1 female, 22.1.1981, 16.2.1982, leg. J. Adis (UIC), Minas Gerais, Parque Serena de Canastra, nr. Nascimento de Rio Sao Francisco, malaise trap, female, 17.7.1997, leg. F. Perini, #BRA1F96 112 (KNHM); Bolivia: Santa Cruz Dept., 3.7 km SSE Buena Vista Hotel Flory y Fauna (63°33'15"W, 17°20'95"S), secondary forest, primary forest, 400-440 m elev. flight intercept trap, 2 females, 2.-9./3.-9./4.-9.11.2002, leg. R. Leschen,

#BOL1L02-055/53/54 (KNHM); Agua Clara Cementario (63°02'W, 19°04'S), from within non-epiphytic bromeliads, berlesate of soil, female, 27.4.2004, leg. A.R. Cline, J.L. Arrmayo, #BOL1Cline04 007.5 (KNHM).

Diagnosis: *Lithocharodes karinae* is a large black species with sparse punctation on posterior vertex. It resembles *L. katharinae* in dark colouration and size but the punctation on the head is sparser. In this respect, *L. karinae* resembles the smaller species *L. nigerrima* with still sparser punctation on the head. Males of both species are easy to separate by the shape of tergite VII, which has a straight posterior margin in *L. nigerrima* but a broad prominence in *L. karinae*. Moreover, the endophallus of *L. nigerrima* is apically bilobed and the paramere carries long basal and apical setae, whereas the endophallus of *L. karinae* forms a dentate band and the paramere is covered by shorter setae.

Description: Length: 5.6. Colouration: Black; legs and antennae dark brown.

Head: 0.90 mm long, 0.69 mm wide; sides slightly divergent posteriad; eyes small; postocular space approximately 3.6 times as long as eyes; interantennal furrows deep; slightly curved; reaching nearly posterior edge of eyes; setiferous punctation deep and irregularly dense; on anterior vertex, interstices shorter than diameter of punctures; on small parts nearly coriaceous; on posterior vertex, interstices at least as wide as diameter of punctures; space between interantennal furrows impunctate; vertex with impunctate midline; midline anteriorly smaller than near neck; surface without microsculpture; shiny. Antennae with first antennomere slightly longer than half-length of head; second and third antennomere longer than wide and conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.7 times as wide as long; tenth antennomere more than twice as wide as long; four to eleventh antennomeres densely pubescent. Pronotum: 1.01 mm long, 0.60 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriad, continuously narrowed; at posterior margin 0.84 times as wide as at widest part; posterior angles sub-rectangular; setiferous punctation deep; wide midline impunctate; adjacent to midline with line of approximately 17 punctures; laterally, punctation irregularly dense; on average, interstices between punctures shorter than diameter of punctures but close to anterior and posterior angles with few areas impunctate; without microsculpture; shiny. Elytra: 0.89 mm long, 0.72 mm wide; sides distinctly divergent posteriad; humeral angles sub-rectangular; posterior angles nearly rectangular; posterior margin triangularly emarginate; setiferous punctation deep and dense; partly in irregular lines; surface without microsculpture; shiny. Abdomen with dense setiferous punctation and without microsculpture; posterior margin of tergite VII of male weakly prominent medially with adjacent deep semi-circular emargination; sternite VII of male with wide

triangular incision. Mesotibia with three, metatibia with two subapical ctenidia. Aedeagus oval with indistinct anterior angles; endophallus straight with longitudinal torsion; covered by medium-sized teeth and two strings with slightly larger teeth; paramere with wide base; strongly narrowed toward curved apex; punctures at inner face with longer setae than at outer face.

Etymology: The species is named in honour of Karina Peña-Peña, who collected it during her PhD-studies on arable fields.

Lithocharodes katharinae spec. nov.

urn:lsid:zoobank.org:act:B16D6F77-971F-4D61-9934-BAB22A68A1A9

Figs 24 a-c, 44 J, 48 H

Type material: male, holotype: Venezuela, Aragua, Ranch Grande Biol. Stn. (67°41'W, 10°21'N), 1450 m elev., flight intercept trap, 25.-28.2.1995, leg. R.W. Brooks, #013 (KNHM). Paratypes: 1 female with same data as holotype #013 (KNHM); 1 male, 1 female from same location as holotype but along stream, 1115 m elev., 8.3./9.3.1995, leg. R. Brooks, #063/071 (KNHM); 1 male, 4 females from same location but 1370 m elev., 1.-8.3.1995, leg. R. Brooks, #046/047 (4 KNHM, 1 UIC); 1 female from same region and collector but Pico Periquitos, 1800 m elev., flight intercept trap, 27.2.-6.3.1995, leg. R. Brooks, #051 (KNHM); 1 female from same location but 1100 m elev., 27.2.1995, leg. S. Marshall (KNHM).

Diagnosis: *Lithocharodes katharinae* is a large black species with dense punctation on the head. Separating characters from *L. karinae* are noted there. Females of the species can hardly be separated from *L. ecuadoriensis*. In contrast to *L. ecuadoriensis*, sternite VII of males in *L. katharinae* are without semi-circular emargination and the paramere is straight and not curved.

Description: Length: 5.9 mm. Colouration: Dark brown to blackish; legs and antennae lighter brown.

Head: 0.95 mm long, 0.76 mm wide; eyes large; not prominent; postocular sides twice as long as eyes; posterior angles widely rounded; posterior margin slightly convex; interantennal furrows weak; reaching anterior third of eyes; setiferous punctation deep and irregularly dense; on anterior vertex and laterad with coriaceous punctation; on posterior vertex, interstices between punctures as wide as diameter of punctures; surface without microsculpture; shiny. Antennae with first antennomere slightly longer than half-length of head; second and third antennomere conical and approximately 1.5 times as long as wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; all antennomeres pubescent. Pronotum: 1.14 mm long, 0.70 mm wide; widest in anterior third; anteriorly, conically narrowed

toward neck; posteriad, distinctly narrowed in middle third and sub-parallel in posterior third; posterior margin slightly convex; setiferous punctation deep and dense; on average; interstices between punctures as wide as diameter of punctures; wide midline impunctate; irregular line adjacent to midline with 22–23 punctures; surface without punctures; glossy. Elytra: 1.12 mm long, 0.97 mm wide; humeral angles rectangular; sides sub-parallel; posterior angles shortly rounded; posterior margin widely retreated toward suture; setiferous punctation moderately deep and dense; on average, interstices between punctures as wide as diameter of punctures; surface with weak irregular microsculpture; shiny. Abdomen with setiferous punctation finer than on fore-body; surface with deeper and denser microsculpture than on elytra; microsculpture denser at base of segments than at apex; sternite VII of male with simply rounded apical margin; tergite VII of male with straight apical margin. Meso- and metatibia with two subapical ctenidia each. Aedeagus oval with sub-rectangular anterior angles; endophallus covered by moderately long lobes in anterior half; posterior half of endophallus transparent; covered by minute teeth; paramere short with broad basic half; apically narrowed to sub-acute apex; inner face covered by thin and moderately long setae.

Etymology: The species is named after my grand daughter.

Lithocharodes lescheni spec. nov.

urn:lsid:zoobank.org:act:56C738F3-B7E8-48CD-8D89-549249716A46

Figs 28 a-d, 44 D, 48 A

Type material: male, holotype: Peru, Tambopata Prov., Madre de Dios Dpto., 15 km N Puerto Maldonado, Reserva Cuzco Amazônica (12°33'S, 69°03'W), 200 m elev., plot #Z1 trail 26, flight intercept trap, 16.7.1989, leg. J.S. Ashe, R. Leschen, #519 (KNHM). Paratypes: Bolivia: Cochabamba, Cochabamba, 67.5 km NE Est. Biol. Valle del Sajita, Univ. de San Simon (64°47'52"W, 17°6'33"S) 300 m elev., flight intercept trap, 1 male, 1 female, 7.-9.2.1999, leg. F. Genier, #BOL1G99 041 (KNHM); same location but 2 males, 9.-13.2.1999, leg. R. Hanley, #BOL1H00 078 (KNHM); Cochabamba, 117 km E Yungas, (Cochabamba-Villa Tunari Rd.) (65°41'12"W, 17°6'32"S), 1040 m elev., flight intercept trap, male, 8.-10.2.1999, leg. R. Hanley, BOL1H99 062 (KNHM); Santa Cruz Dept., 3.7 km SSE Buena Vista Hotel Flora y Fauna (63°33'W, 17°29'S), flight intercept tarp, female, 2.5.2004, leg. A.R. Cline, #BOL1Cline04 014.5 (KNHM); Peru: 4 males, 10 females, same data as holotype and 30.6., 13.7., 15.7., 16.7., 28.7., (12 KNHM, 2 UIC); same location and collectors but trail to Z1, flower fall, male, 13.7., 14.6.1989, #058 (KNHM); Madre de Dios, Pentacolla Lodge, Alto Madre de Dios River (71°13'55"W, 12°39'22"S), 400 m elev., flight intercept trap, male,

23.-26.10.2000. leg. R. Brooks, #PERU1B00099 (KNHM); Ecuador: Zamora-Chinchipec, Rio Bambuscaro (78°59'W, 4°7'S), flight intercept trap, male, 26.6.-4.7.2001, leg. P. Hibbs, #ECU1H96 001 (KNHM).

Diagnosis: Regarding the small size, dark colouration, and dense punctation of the head, *L. lescheni* most closely resembles *L. pampana* and *L. peruana* from the same region. In contrast to *L. lescheni*, head of *L. peruana* is more divergent posteriad and sternite VII of males is not emarginate. The aedeagus is long oval with rectangular apex and not nearly circular. Females of *L. lescheni* and *L. pampana* can hardly be separated. However, males are easy to identify. Sternite VII of *L. lescheni* is widely emarginate without central triangular prominence such as in *L. pampana*. The endophallus of *L. lescheni* is apically straight with lobes and not with spiral torsions such as in *L. pampana* and in *L. peruana*.

Description: Length: 4.8 mm. Colouration: Head black, pronotum slightly lighter, brown; elytra even lighter brown; abdomen as brown as pronotum; legs and antennae as light brown as elytra.

Head: 0.83 mm long, 0.63 mm wide; eyes large, slightly prominent; postocular space twice as long as eyes; slightly divergent to posterior angles; posterior angles widely rounded; posterior margin nearly convex; only small part close to neck straight; interantennal furrows deep; reaching mid-length of eyes; setiferous punctation moderately deep and irregularly dense; anteriorly denser than close to neck; between eyes, punctation nearly coriaceous; close to neck, interstices between punctures nearly twice as wide as diameter of punctures; space between interocular furrows with few punctures; vertex with moderately wide impunctate midline; surface with irregular weak striae; surface not glossy. Antennae with first antennomere as long as half-length of head; second and third antennomere longer than wide and conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere slightly less than twice as wide as long; tenth antennomere slightly more than twice as wide as long; antennomeres four to eleven densely pubescent. Pronotum: 0.92 mm long, 0.60 mm wide; widest in anterior third; shortly convergent to neck; posteriad, slightly convergent to middle; posterior half nearly parallel; posterior angles sub-rectangular; posterior margin slightly convex; setiferous punctation deep and moderately dense; on average, interstices between punctures as wide as diameter of punctures; wide midline impunctate; adjacent to midline with irregular row of 16–17 punctures; surface without microsculpture; glossy. Elytra: 0.90 mm long, 0.78 mm wide; humeral angles sub-rectangular; sides parallel; posterior angles shortly rounded; posterior margin slightly convex with incision to suture; setiferous punctation moderately deep and dense; on average, interstices slightly shorter than diameter of punctures; punctures partly in irregular rows; surface with weak isodiametric microsculpture;

less shiny than pronotum. Abdomen with much weaker but denser setiferous punctation than elytra; surface with distinct isodiametric microsculpture; even less shiny than elytra; posterior margin of tergite VII of male weakly convex; posterior margin of sternite VII of male deeply sinuate; outer angles more prominent than medial prominence. Meso- and metatibia with three subapical ctenidia each. Aedeagus large; in posterior half oval; in central part slightly constricted; anterior angles sub-rectangular; endophallus anteriorly with two strings; one string densely covered by large lobes; second string with several large teeth; posterior part sack-like and heart-shaped covered by numerous minute teeth; paramere short; curved; with long setae at inner face.

Etymology: The species is named in honour of Richard Leschen, who extensively collected staphylinids in the Neotropical region.

Lithocharodes nigerrima spec. nov.

urn:lsid:zoobank.org:act:AC1C7A9C-0F22-4211-B88E-F95ACF767B38

Figs 34 a-d, 44 L, 48 J

Type material: male, holotype: French Guiana, Saül, Galbao summit (53°16'42"W, 3°37'18"N), 740 m elev., flight intercept trap, 5.-7.6.1997, leg. J. Ashe, R. Brooks, #FG1AB97 154 (KNHM). Paratypes: French Guiana, 2 males, 1 female with same data as holotype (2 KNHM, 1 UIC); Saül, 7 km N, Les Eaux Claires (53°13'19"W, 3°39'46"N), 220 m elev., flight intercept trap, 2 females, 31.5.-3.6.1997, leg. J. Ashe, R. Brooks, #FG1AB97 123 (KNHM).

Diagnosis: The diagnostic characters to separate *L. nigerrima* from the other dark species with sparse punctation on the head are already mentioned in the diagnosis part of *L. karinae*. Males of *L. nigerrima* are easy to identify by the bilobed endophallus and the specific paramere with two patches of long setae, which is unique in the Neotropical *Lithocharodes* species.

Description: Length: 4.8 mm. Colouration: Totally black; legs and antennae dark brown.

Head: 0.85 mm long, 0.71 mm wide; eyes slightly prominent; postocular sides nearly parallel; twice as long as eyes; posterior angles widely rounded; interantennal furrows weak; reaching anterior third of eyes; setiferous punctation moderately deep and irregularly sparse; on average, interstices between punctures as wide as diameter of punctures or slightly wider; on anterior vertex denser than on posterior vertex; wide midline impunctate; surface without microsculpture; glossy. Antennae with first antennomere slightly longer than half-length of head; second and third antennomere conical and longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere nearly twice as long as wide; tenth antennomere more than

twice as wide as long; all antennomeres densely pubescent. Pronotum: 0.94 mm long, 0.62 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly narrowed toward shortly rounded posterior angles in slightly sinuate curve; setiferous punctation as deep as on head; sparse; on average, interstices between punctures twice as wide as diameter of punctures; wide midline impunctate; irregular row of punctures adjacent to midline with 10 punctures; surface without microsculpture; glossy. Elytra: 0.94 mm long, 0.76 mm wide; humeral angles rectangular; sides nearly parallel posteriorly; posterior angles shortly rounded; posterior margin convex; widely retreated toward suture; setiferous punctation weaker as on pronotum but as sparse; partly in irregular rows; surface without microsculpture; shiny. Abdomen with weaker but denser setiferous punctation as on fore-body; segments at base with distinct transversely reticulate microsculpture; matt; in medio-posterior half of segments without microsculpture; shiny; posterior margin of sternite VII of male straight; covered by long setae; posterior margin of tergite VII of male with two short triangular processes separated by concave emargination. Mesotibia with three, metatibia with two subapical ctenidia. Aedeagus long-oval; at apex slightly rectangular; endophallus in posterior part sack-like, covered by moderately large teeth; in middle part covered with minute teeth; in apical part divided in two strings; paramere spoon-like; at base and at apex with clusters of long setae.

Etymology: The species name is the superlative of the Latin word *niger* and refers to the black colouration.

Lithocharododes nigripennis (LECONTE, 1863)

Figs 21 a-d, 43 H, 46 F

Leptolinus nigripennis LECONTE, 1863: 42

Leptacinus nigripennis; LECONTE, 1880: 168

Lithocharodes nigripennis; CASEY, 1906: 411

Lithocharodes pallidus CASEY, 1906: 410

Lithocharodes nigripennis (LECONTE, 1863); SMETANA 1982: 126

Material examined: Mexico: leg. Klinglh., without further information, *L. pallidus* det. Bernhauer, male, #12715 (SDEI); Coahuila, Hwy. 74, 1.6 km S Jct. Hwy 30, under debris along stream, 29.9.1990, leg. J.S. Ashe (7 KNHM, 1 UIC); Nuevo Leon, 37 km SW Linares, 4.8 km S, on Busque Escuela Rd., under stones/leaves, 1300 m elev., female, 21.3.1991, leg. R. Brooks, R. Leschen #19 (KNHM); 1 male, 1 female, Veracruz, Ciudad Aleman, tropical evergreen forest, blacklight, <100 ft elev., 197.1971, leg. A. Newton (FMNH); 5 females, 1 male, 2.2 mi E Jaltipan, Hwy 180, lowland tropical, 150 m elev., UV light, 6.5.1977, leg. J.S. Ashe (FMNH); female, Veracruz, Fortin de las Flores, Cerveceria Moctezuma, UV light, 3.8.1964, leg. D. Rbago (FMNH); 2 females, Tamps., Cd. Mante, UV light, 5.-8.7.1969, leg. S. Peck (FMNH);

female, San Luis Potosi, Tamazunchale, (Quinta, Chilla Courts), ca. 600 ft elev., tropical sub-evergreen forest near river, blacklight, 19.7.1970, leg. A. Newton (FMNH); Jalisco, 15 mi W Guadalajara, under stones, 4.7.1953, leg. C. Seevers (FMNH); 1 male, 2 female, Nayarit, San Blas, 5.7.1972, leg. K. Stephan (FMNH); Jalisco, Autlán de Navarro outskirts (104°21.6'W, 19°46.6'N), 950 m elev., suburban yard, under rock, 15.9.1999, leg. A. Newton (FMNH).

Diagnosis: *Lithocharodes nigripennis* resembles medium-sized species of 4.0 mm to 5.5 mm length with dense punctation of the head. Light, yellow specimens that were already mentioned by SMETANA (1982) and originally described by CASEY (1906) as *L. pallidus* are similar to *L. puncticeps* but the eyes are still smaller than in that species. The postocular sides are 3.6 times as long as eyes in *L. nigripennis* whereas they are only 3 times as long as eyes in *L. puncticeps*. Males are easy to distinguish by the structure of the endophallus, which is transparent with minute teeth in *L. puncticeps* but covered by lobes in *L. nigripennis*. Moreover, the paramere is slenderer in *L. puncticeps* but broader in *L. nigripennis*. Dark specimens extremely resemble *L. elongata* in size, punctation and colouration. *Lithocharodes elongata* is slightly darker, nearly black, whereas *L. nigripennis* is lighter, dark brown, even in the dark specimens. Main difference is in the structure of the aedeagus, in particular, in the shape of the paramere.

Remarks: The species was sufficiently described by SMETANA (1982). Thus, a detailed description is not needed. *Lithocharodes nigripennis* is widely distributed in the southern United States and northern Mexico. As the species seems to be extremely variable in colouration, misidentification is possible. Positive identification requires dissection of the aedeagus to separate it from the similar species *L. puncticeps* and *L. elongata*. Due to the variable colouration, the species was listed twice in the following key.

Lithocharodes nigrita spec. nov.

urn:lsid:zoobank.org:act:51DB16D4-FB55-4338-B12D-AFD4290322C0

Figs 25 a-d, 44 G, 48 E

Type material: male, holotype: Peru, Cusco, Cock of the Rock Lodge, NE Paucartambo (71°32.7'W, 13°03.3'S), 1120 m elev., flight intercept trap, 4.-9.11.2007, leg. D. Brzoska, #PER1B07 001 (KNHM). Paratypes: Peru: 1 female, 1 male with same data as holotype (1 KNHM, 1 UIC); Dept. Junin, Pampa Hermosa Lodge, 22 km N San Ramon (75°25.5'W, 10°59.3'S), 1220 m elev., flight intercept trap, male, 24.-27.11.2007, leg. D. Brzoska (KNHM); Bolivia: Cochabamba, Cochabamba, 117 km E Yungas (Cochabamba – Villa Tunari Rd.) (65°41'12"W, 17°6'32"S), 1040 m elev., flight intercept trap, 3 males, 2 female, 1.-6./10.-12.2.1999, leg. R. Hanley, #BOL1H99

073/028 (3 KNHM, 1 UIC)); same region but 109 km E (65°42'54"W, 17°8'52"S), flight intercept trap, female, 8.-12.2.1999, leg. F. Genier #BOL1G99 060 (KNHM); same region but 105 km E Yungas, nr. Rio Carmen Mayu (65°43'50"W, 17°8'51"S), 1750 m elev., flight intercept trap, female, 8.-12.2.1999, leg. R. Hanley #BOL1H99 071 (KNHM); same region but 124 km E Yungas (65°38'43"W, 17°3'54"S), 730 m elev., flight intercept trap, female, 1.-6.2.1999, leg. R. Hanley, #BOL1H99 029 (KNHM).

Diagnosis: *Lithocharodes nigrita* is one of the medium-sized dark species with dense punctation of the head. It can be separated from the similar *L. ecuadoriensis*, *L. katharinae* and *L. boliviana* by the long elytra, which are longer than the pronotum, whereas elytra are only as long as the pronotum in the other species. Tergite VII and sternite VII of male are without peculiarities and, thus, are similar to *L. katharinae* and *L. boliviana*. The endophallus is totally covered by medium-sized teeth without lobes such as in *L. ecuadoriensis* and not transparent such as in *L. katharinae* and *L. boliviana*.

Description: Length: 5.4 mm. Colouration: Totally black; legs and antennae dark brown.

Head: 0.97 mm long, 0.77 mm wide; eyes large, slightly prominent; postocular sides slightly divergent; 2.4 times as long as eyes; posterior angles widely rounded; posterior margin convex; interantennal furrows indistinct; setiferous punctation extremely dense; on average, interstices between punctures one fourth as wide as diameter of punctures; on anterior vertex partly coriaceous; small midline impunctate; interstices between punctures without microsculpture; surface nearly matt due to dense punctation. Antennae with first antennomere two thirds as long as head length; second and third antennomere conical; longer than wide; subsequent antennomeres wider than long and increasing in width; third antennomere nearly twice as wide as long; tenth antennomere 2.5 times as wide as long; all antennomeres densely pubescent. Pronotum: 1.09 mm long, 0.70 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; in middle third slightly narrowed; in posterior third nearly parallel; setiferous punctation deep and dense; on average, interstices between punctures one fourth to half as wide as diameter of punctures; moderately wide midline impunctate; irregular row of punctures adjacent to midline with 24-25 punctures; surface without microsculpture; shiny. Elytra: 0.76 mm long, 0.70 mm wide; humeral angles sub-rectangular; sides slightly divergent; posterior angles sub-rectangular; posterior margin slightly convex; widely retreated to suture; setiferous punctation dense but less dense than on head and pronotum; on average, interstices as wide as to half as wide as diameter of punctures; surface with weak microsculpture; less shiny than pronotum. Abdomen with dense but weak setiferous punctation; surface with denser and deeper isodiametric microsculpture than on elytra; sternite VII of male simply rounded at apex; tergite VII of male with

straight apical margin. Mesotibia with three, metatibia with two subapical ctenidia. Aedeagus oval with triangular prominence at apical orifice; endophallus with two strings; both with slight torsions around each other; one string with larger teeth in several rows; second string with minute teeth; paramere bilobed; both lobes slender; outer lobe half as long as inner lobe; inner lobe slightly curved; at apex with small spot with minute sensillae; apical half without setae; in basal half with numerous long setae at inner face.

Etymology: The species name is derived from the same Latin word (meaning black) and refers to the blackish colouration.

Lithocharodes obscura spec. nov.

urn:lsid:zoobank.org:act:F520ED25-EB0D-4CFB-AD03-F8322592C96C

Figs 10 a-d, 43 P, 47 G

Type material: male, holotype: Bolivia, Santa Cruz Dept, 3.7 km SSE Buena Vista Hotel Flora y Fauna (63°33.15'W, 17°29.95'S), 400-440 m elev., secondary forest, flight intercept trap, 2.-9.11.2002, leg. R. Leschen, #BOL1L02-055 (KNHM).

Diagnosis: The species is unique by its shape and structure of the aedeagus. It likely represents another related genus to *Lithocharodes*. But our actual knowledge about the aedeagal variation in this genus is too poor to establish a new genus for the species. The species can be also distinguished from the other species of the genus by the rectangular shape of the head in combination with the moderately dense setiferous punctation.

Description: Length: 5.2 mm. Colouration: Dark brown to blackish; legs and antennae brown.

Head: 0.95 mm long, 0.81 mm wide; eyes small; not prominent; postocular sides slightly divergent; approximately three times as long as eyes; posterior angles shortly rounded to straight posterior margin; inter-antennal furrows reaching anterior third of eyes; setiferous punctation moderately deep and dense; on average, interstices between punctures as wide as diameter of punctures; surface partly with extremely weak microsculpture; partly without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical and 1.5 times as long as wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as wide as long; all antennomeres pubescent. Pronotum: 1.07 mm long, 0.71 mm wide; widest in anterior fourth; anteriorly, conically narrowed toward neck; narrowed in middle third; nearly parallel in posterior third; posterior angles obtuse; posterior margin slightly convex; setiferous punctation moderately deep and dense; interstices between punctures at least as wide

as diameter of punctures; mostly 1.5 times to twice as wide as diameter of punctures; wide midline impunctate; surface without microsculpture; shiny. Elytra: 0.94 mm long, 0.84 mm wide; humeral angles obtuse; sides slightly divergent posteriorly; posterior angles sub-rectangular; posterior margin distinctly triangularly retreated toward suture; setiferous punctation moderately deep and dense; surface with irregular ground sculpture. Abdomen with weaker and sparser setiferous punctation than fore-body; surface of segments with weak and sparse microsculpture at base and nearly without microsculpture in apical part; posterior margin of sternite VII of male convexly prominent and with central triangular incision; tergite VII of male with nearly straight posterior margin. Meso- and metatibia with two subapical ctenidia each. Aedeagus slightly convergent posteriorly; anterior half sub-rectangular; anterior angles and central orifice slightly prominent; dorsal plate small and restricted to posterior third; endophallus short; small anterior part and thicker posterior part covered by minute teeth; contorted; paramere slender; basic half straight; apical half distinctly curved; at apex, short setae confined to inner face at curved part; more setae at base.

Etymology: The species name is derived from the same Latin word (meaning dark) and refers to the dark colouration.

Lithocharodes pampana spec. nov.

urn:lsid:zoobank.org:act:5EFD07C-A8EE-42CB-B1E8-901599251C83

Figs 3 a-d, 44 E, 48 B

Type material: male, holotype: Peru: Dept. Junin, Pampa Hermosa Lodge, 22 km N San Ramón (75°25'5"W, 10°59'3"S), flight intercept trap, 24.-27.11.2007, leg. D. Brzoska, #PER1B07 006 (KNHM). Paratypes: Peru, 1 male, 1 female with same data as holotype (KNHM); Pasco Dept., Villa Rica Rd. (75°18'54"W, 10°47'6"S), 1475 m elev., flight intercept trap, 2 males, 9 females, 15.-18.10.1999, leg. R. Brooks, D. Brzoska #PERU1B99 030C (9 KNHM, 2 UIC); Junin Dept. La Merced, 9.5 km NE La Merced-Villa Rica Rd. (75°18'18"W, 10°58'42"S), 880 m elev., flight intercept trap, male, 15.-21.10.1999, leg. R. Brooks, #PERU1B99 096 (KNHM).

Diagnosis: According to size, dark colouration, and dense punctation of the head, *L. pampana* is similar to *L. peruana* and *L. lescheni*. Distinguishing characters are already mentioned there. The aedeagus highly resembles that of *L. verhaaghi* and *L. silvicola* regarding the spiraled endophallus, but *L. pampana* is distinctly larger than these two species. Moreover, the paramere has a flexed apex and shorter setae at inner face. The endophallus of *L. pampana* has several spiral torsions such as in *L. verhaaghi* but it is thicker and more densely covered by teeth.

Description: Length: 4.5 mm. Colouration: Black to dark brown; legs and antennae slightly lighter, brown.

Head: 0.79 mm long, 0.62 mm wide; eyes moderately large; postocular space 2.5 times as long as eyes; sides nearly parallel; interocular furrows moderately deep; reaching posterior third of eyes; setiferous punctation irregularly dense; on anterior and lateral vertex nearly coriaceous; close to neck sparser; interstices between punctures wider than diameter of punctures; wide midline impunctate; space between interantennal furrows impunctate; surface without microsculpture; glossy. Antennae with first antennomere as long as half-length of head; second and third antennomere longer than wide; conical; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere twice as long as wide; antennomeres four to eleven densely pubescent. Pronotum: 0.87 mm long, 0.57 mm wide; widest in anterior third; anteriorly, conically convergent toward neck; posteriorly, slightly convergent to middle; posterior half nearly parallel; posterior angles rounded, posterior margin slightly convex; setiferous punctation deep and moderately dense; on average, interstices between punctures as wide as or slightly wider than diameter of punctures; wide midline impunctate; adjacent to midline with irregular row of 17 to 18 punctures; surface without microsculpture; glossy. Elytra: 0.83 mm long, 0.72 mm wide; humeral angles sub-rectangular; sides slightly divergent posteriorly; posterior angles sub-rectangular; posterior margin weakly convex; retreated to suture; setiferous punctation dense and moderately deep; surface with weak isodiametric microsculpture; less shiny than pronotum. Abdomen with denser but weaker setiferous punctation than elytra; surface with dense isodiametric microsculpture; even less shiny than elytra; posterior margin of sternite VII of male with triangular central prominence and deep emargination at each side; posterior margin of tergite VII of male nearly straight and longitudinal striae as long as half-length of segment. Mesotibia with three, metatibia with two subapical ctenidia. Aedeagus oval; anteriorly wider than posteriorly; endophallus with four torsions; covered by minute teeth; paramere short and straight; apex flexed; inner face with short setae.

Etymology: The species name is derived from Pampa, a type of ecosystem in high elevations of Peru.

Lithocharodes peruana spec. nov.

urn:lsid:zoobank.org:act:44E3E16F-6262-4A6B-8BF1-CE656372382A

Figs 7 a-d, 44 F, 48 C

Type material: male, holotype: Peru, Madre de Dios, Cocha Cashu Bio. Stn., Manu National Park, (71°24'24"W, 11°53'45"S), 350 m elev., flight intercept trap, 17.-19.10.2000, leg. R. Brooks, #PERU1B00 042 (KNHM). Paratypes: 5 males, 2 females, with same data as holotype (6 KNHM, 1 UIC); Peru, Tambopata

Prov., Madre de Dios Dpt., 15 km N Puerto, Maldonado Reserva Cuzco Amazónica (69°03'W, 12°33'S), 200 m elev., Plot #Z1U16, #Z1U19, #Z2U19, #Z2E14, #Z2E15, #Z2E16, Z1U16, #Z2U16, #Z2E17, #Z1 trail 26, Swamp trail, Quebrada Mariposa, flight intercept trap, 19 males, 40 females, 15.6., 17.6., 20.6., 22.6., 24.6., 26.6., 28.6., 3.7., 13.7., 15.7., 16.7., 17.7., 19.7., 30.6.1989, leg. J. Ashe, R.A. Leschen, #522 (53 KNHM, 6 UIC); same location and collectors but berlesate, Palmaceae flower fall/logs, Plot #Z2E20-21, male, 25.6.1999 (KNHM); Cocha Salvador, Reserved Zone, Manu National Park (71°31'36"W, 12°0'13"S), 310 m elev., flight intercept trap, 5 males, 2 female, 20.-21.10.2000, leg. R. Brooks, #PERU1B00 070 (4 KNHM, 1 UIC); Cocha Cashu Biol. Stn., Manu National Park (71°24'24"W, 11°53'45"S), 350 m elev., flight intercept trap, 1 male, 1 female, 17.-19.10.2000, leg. R. Brooks, #PERU1B00042 (KNHM); Pantiacolla Lodge, 8 km N El Mirador trail, Alto Madre de Dios River (71°16'41"W, 12°38'30"S), 800 m elev., flight intercept trap, 23.-26.10.2000, leg. R. Brooks, #PERU1B00 102 (KNHM); same location and collector but 5.5 km NW El Mirador trail, Alto Madre de Dios River (71°15'28"W, 12°39'10"S), 500 m elev., flight intercept trap, 3 females, 23.-26.10.2000, #PERU1B00100 (KNHM); same region, CICRA Field Station, garden (70.10.10°W, 12.56.94°S), 260 m elev., malaise trap, 22.-29.7.2010, leg. M. Endara, #PER10-07-MAT-008 (KNHM); Dept. Loreto, Campamento San Jacinto (75°51.77'W, 2°18.75'S), 175-215 m elev., flight intercept trap, #66, female, 9.7.1993, leg. R. Leschen (KNHM).

Diagnosis: According to the small size, dark colouration and dense punctation of the head, *L. peruana* is similar to *L. pampana* and *L. lescheni*. The distinguishing characters are already listed there. *Lithocharodes peruana* can be recognized by the extremely divergent head. Males are easy to separate from other *Lithocharodes* species by the small, nearly circular aedeagus with a thick, transparent endophallus totally covered by minute teeth.

Description: Length: 4.3 mm. Colouration: Dark brown to blackish; legs and antennae lighter brown.

Head: 0.73 mm long, 0.63 mm wide; eyes large; slightly prominent; postocular space twice as long as eyes; postocular sides distinctly divergent; posterior angles widely rounded; posterior margin slightly convex; in short medial part straight; interantennal furrows long and deep; reaching posterior third of eyes; setiferous punctation deep and dense; partly coriaceous; on average, interstices between punctures less than half as wide as diameter of punctures; small midline impunctate; surface between punctures without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical and slightly longer than wide; subsequent antennomeres distinctly wider than long and increasing in width; fourth antennomere twice as wide as long; tenth antennomere 2.2 times as wide as long; all antennomeres densely

pubescent. Pronotum: 0.85 mm long, 0.57 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; slightly narrowed in middle third; approximately parallel in posterior third; posterior margin slightly convex; setiferous punctation as deep as on head but distinctly sparser; on average, interstices between punctures slightly shorter than diameter of punctures; moderately wide midline impunctate; midline in anterior third wider than in posterior third; surface without microsculpture; shiny. Elytra: 0.60 mm long, 0.55 mm wide; humeral angles sub-rectangular; sides divergent to posterior angles; posterior angles sub-rectangular; posterior margin slightly convex; retreated to suture; setiferous punctation weaker but denser than punctation on pronotum; on average, interstices between punctures half as wide as diameter of punctures; surface with weak isodiametric microsculpture; less shiny than pronotum. Abdomen with denser but weaker setiferous punctation than on elytra; isodiametric microsculpture deeper than on elytra; surface less shiny than elytra; posterior margin of sternite VII and tergite VII of male nearly straight. Aedeagus oval; endophallus thick, sack-like, covered by numerous minute teeth and folded several times; paramere bilobed; outer lobe simple without any setae; inner lobe moderately slender; slightly curved; apical part flexed; inner face with long setae; setae at base longer than setae at apex.

Etymology: The species name is derived from the country's name, where it was found.

Lithocharodes puncticeps SHARP, 1885

Figs 35 a-d, 43 I, 46 G

Lithocharodes puncticeps SHARP, 1885: 493

Type material examined: male, syntype: Mexico, Jalapa, leg. Höge (BMNH).

Additional material: Mexico, Veracruz, 7 mi N Sontecomapan, near beach, black light, 1 male, 8 females, 2., 3., 7. Aug. 1970, leg. A. Newton (8 FMNH, 1 UIC); Oaxaca, Pueblo Nuevo, 1590 m elev., female, 1.-12.8.1986, leg. A. & A. Howden (FMNH); Q. Roo, Kohunlich, 42 mi W Chetumal, tropical seasonal forest, UV light, 16.7.1983, leg. S. Peck (FMNH); Truqui, male, 1905, coll. Fry (FMNH).

Diagnosis: *Lithocharodes puncticeps* is most similar to light specimens of *L. nigripennis* in size, colouration and punctation of the head. The distinguishing characters are listed there.

Description: Length: 4.7 mm. Colouration: Brown; pronotum light yellow-brown; elytra darker than pronotum with lightened posterior angles; legs and antennae light brown.

Head: 0.76 mm long, 0.61 mm wide; elongate; eyes small; postocular sides 2.7 times as long as eyes; approximately parallel; posterior angles widely rounded; posterior margin shortly straight in front of neck; setiferous punctation dense and deep; on average, interstices between punctures half as wide as diameter of punctures; anteriorly partly coriaceous; interantennal furrows moderately deep; reaching anterior third of eyes; wide midline impunctate; surface without microsculpture; glossy. Antennae with first antennomere half as long as head; second and third antennomere conical; longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere nearly twice as wide as long; tenth antennomere slightly more than twice as wide as long; all antennomeres distinctly pubescent. Pronotum: 0.81 mm long, 0.61 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; distinctly narrowed in middle third; slightly convergent in posterior third; setiferous punctation as deep as on head but much sparser; on average, interstices between punctures as wide as diameter of punctures or partly wider; wide midline impunctate; irregular line of punctures adjacent to midline with 9-10 punctures; surface without microsculpture; glossy. Elytra: 0.84 mm long, 0.69 mm wide; humeral angles sub-rectangular; sides nearly parallel posteriorly; posterior angles sub-rectangular; posterior margin slightly convex; short incision at suture; setiferous punctation even sparser than on pronotum; on average, interstices twice as wide as diameter of punctures; surface with weak isodiametric microsculpture; less shiny than head and pronotum. Abdomen with dense but weak setiferous punctation; surface with isodiametric microsculpture; as shiny as on elytra; posterior margin of sternite VII of male with wide medial prominence; posterior margin of tergite VII of male convex with short medial incision. Mesotibia with one, metatibia with two subapical ctenidia. Aedeagus oval; small; endophallus short, with minute teeth and few slightly larger but still minute teeth in between; paramere slender; slightly curved to nearly acute apex; with few, fine setae.

Lithocharodes rufula SHARP, 1885

Figs 41 a-d, 43 F, 46 H

Lithocharodes rufula SHARP, 1885: 494

Type material examined: 2 female syntypes: Guatemala, Rio Naranjo, leg. Champion; near Guatemala City, leg. Champion (BMNH).

Additional material: Mexico, Chiapas, Cinco Cerros, 5 km S Rio de Oro, 810 m elev., sifted leaf litter in dry streambed, male, 8.6.1991, leg. J. Ashe, #78 (KNHM); Chiapas, El Chorreadero, 8 km SE Chiapa de Corzo, 650 m, sifted leaf litter, male, 3.6.1991, leg. J. Ashe,

#56 (KNHM); 1 male, 1 female, Tuqui, 1905, coll. Fry (FMNH).

Diagnosis: *Lithocharodes rufula* is one of the smallest *Lithocharodes* species. It is similarly small and lightly coloured as *L. verhaaghi* and *L. hanagarthi*. However, the colouration of the two latter species is dark, whereas colouration of *L. rufula* is lighter reddish to yellowish. Males are additionally separated from *L. hanagarthi* by the sclerotised endophallus, densely covered by intermediately large teeth. In contrast to *L. verhaaghi*, the endophallus of *L. rufula* has no spiral torsions.

Description: Length: 3.9 mm. Colouration: Light brown; elytra darker brown; legs and antennae light brown to dark yellow.

Head: 0.72 mm long, 0.58 mm wide; eyes slightly prominent; postocular space 2.5 times as long as eyes; distinctly divergent posteriad; posterior angles sub-rectangular; posterior margin deeply emarginate; interantennal furrows deep and long; slightly sinuate; reaching posterior third of eyes; setiferous punctation deep and irregularly dense; anteriorly denser than posteriorly; anteriorly, interstices between punctures much smaller than diameter of punctures; on posterior vertex, interstices as wide as diameter of punctures; narrow midline impunctate; interantennal space impunctate except close to furrows; surface without microsculpture; glossy. Antennae short and thick; first antennomere half as long as head along midline; second and third antennomere conical and as wide as long; subsequent antennomeres much wider than long and increasing in width; fourth antennomere more than twice as wide as long; tenth antennomere 2.5 times as wide as long and one third wider than fourth; all antennomeres pubescent. Pronotum: 0.75 mm long, 0.55 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; slightly narrowed in middle third; nearly parallel in posterior third; on average, setiferous punctation deep and dense; punctures irregularly large; punctation partly coriaceous; moderately wide midline impunctate; surface without microsculpture; glossy. Elytra: 0.74 mm long, 0.62 mm wide; humeral angles sub-rectangular; posteriad, sides nearly parallel; posterior angles sub-rectangular; posterior margin nearly straight; setiferous punctation fine and dense; surface with indistinct microsculpture; less shiny than head and pronotum. Abdomen with dense but fine setiferous punctation; with weak isodiametric microsculpture; moderately shiny; posterior margin of tergite VII of male slightly elevated and nearly straight; posterior margin of sternite VII of male nearly semi-circular. Aedeagus long oval; anteriorly approximately rectangular; endophallus with one elongate wide string covered by minute teeth; folded posteriorly; second string shorter but with longer teeth; paramere moderately slender; slightly curved; bilobed; outer lobe half as long as inner lobe; inner lobe with pairs of short setae along inner face and two setae at apical part of outer face.

Lithocharodes silvicola spec. nov.

urn:lsid:zoobank.org:act:307A352E-8017-4653-AB6C-530B6694978

Figs 4 a-d, 43 N, 47 E

Type material: male, holotype: Ecuador, Pichincha, R.B. Marquipucuna (78°38'W, 0°07'S), montane evergreen forest litter, 1200 m elev., 27.10.1999, leg. R. Anderson, #208b (KNHM). Paratypes: Ecuador: 2 females, with same data as holotype (KNHM); Pichincha, Marquipucuna Biological Station (78°37'37"W, 0°5'34"S), ridgetop montane forest litter, mixed Cecropia cloud forest, 1600 m elev., male, 29.10.1999, leg. R. Anderson, #ECU1A99 214B (KNHM).

Diagnosis: *Lithocharodes silvicola* is similarly small as *L. rufula*, *L. verhaaghi* and *L. hanagarthi* but differs in its darker colour. Regarding size and dark colouration, *L. silvicola* most closely resembles *L. fuscula* from Central America. Females of both species can hardly be separate. The impunctate midline on the head in *L. silvicola* is wider than that in *L. fuscula*. Unfortunately, males are unknown for *L. fuscula*. *Lithocharodes silvicola* belongs to the *L. verhaaghi* group with a spiraled endophallus. Within this group, *L. silvicola* can be separated by the lower number of torsions. In *L. silvicola* only two torsions are present whereas the endophallus of the two other species has at least three torsions.

Description: Length: 3.8 mm. Colouration: Dark brown; legs and antennae slightly lighter brown.

Head: 0.73 mm long, 0.58 mm wide; eyes slightly prominent; postocular sides slightly divergent; approximately twice as long as eyes; interantennal furrows curved; reaching mid-length of eyes; setiferous punctation deep and dense; on average, interstices between punctures half as wide as diameter of punctures; on anterior vertex, interstices slightly shorter than on posterior vertex; moderately wide midline impunctate; surface with extremely weak microsculpture; shiny. Antennae with first antennomere as long as half head-length; second and third antennomere conical; second antennomere nearly twice as long as wide; third antennomere 1.5 times as long as wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere twice as wide as long; tenth antennomere nearly three times as wide as long; all antennomeres densely pubescent. Pronotum: 0.79 mm long, 0.52 mm wide; widest slightly behind anterior third; anteriorly, conically narrowed toward neck; distinctly narrowed in middle third; nearly parallel in posterior third; posterior angles widely rounded; posterior margin convex; setiferous punctation deep and dense; on average, interstices between punctures as wide as diameter of punctures; wide midline impunctate; irregular row of punctures adjacent to midline with 15 to 16 punctures; surface with weak microsculpture; less shiny than head. Elytra: 0.67 mm long, 0.62 mm wide; humeral angles obtuse; sides slightly divergent anteriorly; posterior angles shortly rounded; posterior margin slightly convex; widely

retreated to suture; setiferous punctation dense and deep; partly coriaceous; on average, interstices between punctures half as wide as diameter of punctures; surface with weak microsculpture; as shiny as pronotum. Abdomen with moderately dense and fine setiferous punctation; microsculpture much more distinct than on pronotum and elytra; less shiny; posterior margin of sternite VII and tergite VII of male convex. Meso- and metatibia with two subapical ctenidia each. Aedeagus small; oval; endophallus with two torsions in posterior half and a straight part in anterior half; covered by minute teeth; paramere bilobed; outer lobe thick and nearly semi-circular; inner lobe slender and nearly straight with wide base; inner face with few, thin setae; apex with small spot of minute sensillae.

Etymology: The species name is a combination of the Latin words *silva* and *colare* meaning living in the forest and refers to the rainforest habitat, where the species was found.

Lithocharodes simillima SHARP, 1885

Figs 14 a-c, 43 J, 46 I

Lithocharodes simillima SHARP, 1885: 49

Type material: male, holotype: Guatemala, Cahabon, leg. Champion (BNMH).

Diagnosis: *Lithocharodes simillima* SHARP, 1885 resembles the other large light brown species with dense punctation on the head, such as *L. puncticeps* SHARP, 1885. It can be separated from *L. puncticeps* by the overall lighter colouration and the divergent sides of the head, whereas in *L. puncticeps* only the pronotum is light brown and the sides of the head are approximately parallel. It can be easily recognized by the structure of the endophallus, with large acute spines in the posterior part and large lobes in the middle part.

Description: Length: 4.9 mm. Colouration: Brown; head slightly darker brown than pronotum and elytra. Head: 0.69 mm long, 0.47 mm wide; sides slightly divergent posteriad; postocular space three times as long as eyes; interocular furrows reaching mid-length of eyes; setiferous punctation deep and dense; on average, interstices between punctures as wide as or smaller than diameter of punctures; midline, including space between interocular furrows, impunctate; impunctate midline wider near neck than between eyes; surface without microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical; longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere 1.5 times as wide as long; tenth antennomere 1.8 times as wide as long; antennomeres four to eleven pubescent. Pronotum: 0.69 mm long; 0.47 mm wide; widest in

anterior third; conically narrowed toward neck; slightly narrowed in middle third and nearly parallel in posterior third; setiferous punctation moderately dense, except for wide impunctate midline; adjacent to impunctate midline with irregular sinuate line of punctures; surface without microsculpture; shiny. Elytra: 0.68 mm long; 0.60 mm wide; sides slightly divergent posteriad; humeral angles sub-rectangular; posterior angles nearly rectangular; posterior margin slightly retreated to suture; setiferous punctation dense and moderately deep; on average, interstices between punctures as wide as diameter of punctures; surface with weak irregular microsculpture; less shiny than head and pronotum. Abdomen densely covered by setiferous punctation; with weak transverse microsculpture; as matt as elytra; posterior margin of tergite VII of male with weak triangular emargination; in front of posterior margin with several short longitudinal striae. Meso and metatibia with 2 subapical ctenidia each. Aedeagus oval with indistinct anterior angles; endophallus with two strings; one string with large lobes differing in length; second string with long teeth in middle part; both strings linked by transparent sack covered by minute teeth; paramere slender; curved in apical third; covered by numerous short setae.

Lithocharodes somoleptoides spec. nov.

urn:lsid:zoobank.org:act:0FBFC297-E285-4637-853C-2DC467FE2E1C

Figs 42 a-c, 45 L, 50 F

Type material: male, holotype: Mexico, Chiapas, Yerbabuena Reserve, 2.1 km NW Pueblo Nuevo, Solistahuacan, 2070 m elev., Liquidambar litter forest, 23.9.1992, leg. R. Anderson #92-114 (NHM). Paratypes: 5 males, 6 females with same data as holotype (9 KNHM, 2 UIC).

Diagnosis: The species highly resembles species of the genus *Somoleptus* by the slender shape. Even the shape of the paramere is similar to that of most *Somoleptus* species. However, it has distinct interantennal furrows and the specific cone-like structure at the aedeagal orifice are absent. Within the genus *Lithocharodes* it mostly resembles *L. elegans* and *L. surinamensis* in size and overall colouration. *Lithocharodes somoleptoides* can be separated from these two species by the short elytra and eyes. Similarly short elytra are also found in *L. curtipennis*, but in *L. curtipennis*, elytra are still shorter than wide, whereas they are approximately quadrate in *L. somoleptoides*. Additionally, the endophallus with its several torsions distinctly differs from that of *L. curtipennis*.

Description: Length: 4.7 mm. Colouration: Brown, pronotum lighter brown than head and elytra; abdominal segments lighter brown than elytra; darkened posteriad except segment VII, being again light brown; legs and antennae light brown.

Head: 0.81 mm long, 0.61 mm wide; eyes small; postocular sides nearly 5 times as long as eyes; slightly

divergent posteriad; posterior angles widely rounded; shape of posterior head nearly semi-circular; interantennal furrows reaching anterior third of eyes; setiferous punctation deep and moderately dense; on average, interstices at least as wide as diameter of punctures; narrow midline impunctate; surface with weak isodiametric microsculpture; moderately shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere much longer than wide; both antennomeres combined approximately half as long as first antennomere; subsequent antennomeres much shorter, wider than long, and increasing in width; fourth antennomere twice as wide as long; tenth antennomere 2.5 times as wide as long; antennomeres four to eleven pubescent. Pronotum: 0.94 mm long, 0.59 mm wide; widest at anterior third; at widest width only weakly wider than at posterior margin; posterior angles obtuse; sub-rectangular; posterior margin slightly convexly curved; setiferous punctation on average deeper and distinctly denser than on head; wide midline impunctate; irregular line adjacent to midline with approximately 19 punctures; punctures of line partly coriaceous in posterior half; surface with weak isodiametric microsculpture; moderately shiny. Elytra: 0.68 mm long, 0.67 mm wide; humeral angles absent; sides distinctly divergent to posterior angles; posterior angles rectangular; posterior margin deeply retreated to suture forming triangular emargination; setiferous punctation deeper and denser than on head and pronotum; on average, interstices between punctures less than half as wide as diameter of punctures; isodiametric microsculpture even weaker than on head and pronotum; moderately shiny. Abdomen with weaker and sparser setiferous punctation than on fore-body; surface with transversely reticulate microsculpture; posterior margin of sternite VII of male semi-circularly prominent, posterior margin of tergite VII of male nearly straight. Meso- and metatibia with one subapical ctenidium each. Aedeagus oval; divergent posteriad; without anterior and posterior angles; endophallus as band with several torsions; covered by numerous medium-sized teeth; paramere slender; curved in apical third; with few short setae.

Etymology: The species name refers to the high similarity in shape with the genus *Somoleptus*.

Lithocharodes sordida SHARP, 1885

Figs 12 a-d, 44 P, 49 D

Lithocharodes sordida SHARP, 1885: 493

Type material examined: female, holotype: Panama, Bugaba, 800–1000 f., leg. Champion (BMNH).

Additional material: Nicaragua, Matagalpa, RN Cerro Masún (85.23299 W, 12.95990 N), tropical wet forest, 750 m elev., flight intercept trap, 2 males, 1.-4.5.2011, leg. ?, #LLAMA11 Ft-D-01-1-02 (1 KNHM, 1 UIC); RAAN,

PN Cerro Saslaya (84.97857 W, 13.77054 N), tropical wet forest, 290 m elev., Malaise trap, female, 6.-10.5.2011, leg. ?, #LLAMA11 Ma-D-02-3-01 (KNHM); Costa Rica, Guanacaste, Patilla Biological Station (85°25'33"W, 10°59'22"N), 610 m elev., flight intercept trap, 2 males, 1 female, 13.-15.7.2000, leg. J. Ashe, R. Brooks, Z. Falin, #CR1ABF00 135 (KNHM); Maritza Biological Station, streamside litter, 550 m elev., female, 22.3.1993, leg. J. & A. Ashe. #041 (KNHM); Heredia, Sto. Domingo del Heredia, INBio Cafetal, 1100 m elev., flight intercept trap, female, 25.-28.6.1997, leg. S. & J. Peck, #CR1P97 027 (KNHM); Puntarenas, Monte Verde, fungi on logs, 1400 m elev., male, 9.5.1989, leg. J. Ashe, R. Brooks, R. Leschen (KNHM); Panama, Chiriqui, 20 km N Gualaca, Finca la Suiza (82°12'W, 8°39'N), 1350 m elev., flight intercept trap, male, 22.-24.5.1995, leg. J. & A. Ashe, #054 (KNHM); Panama, Cerro Campana, cloud forest leaf litter, 3200 f elev., Berlese, male, Feb. 1976, leg. A. Newton (FMNH); Canal Zone, Madden Forest Pres., litter around fermented pal, fruits, male, 1.7.1976, leg. A. Newton (FMNH).

Diagnosis: *Lithocharodes sordida* is easily recognized by the endophallus of the aedeagus, which has two large curved spines and the specific shape of sternite VII of male. The identification without dissection of the aedeagus is difficult. Among the similarly large species with moderately dense setiferous punctation of the head, it is conspicuous by its dark colouration and the short and broad head.

Description: Length: 4.5 mm. Colouration: Black to dark brown; legs and antennae slightly lighter brown.

Head: 0.94 mm long, 0.78 mm wide; eyes small; postocular sides more than 3 times as long as eyes; slightly divergent posteriad; posterior angles widely rounded; small central part of posterior margin straight; interantennal furrows distinct; reaching mid-length of eyes; setiferous punctation moderately dense and deep; on average, interstices between punctures as wide as diameter of punctures; wide midline impunctate; space between interantennal furrows impunctate; surface with extremely weak and sparse longitudinal microsculpture; shiny. Antennae with first antennomere as long as half-length of head; second and third antennomere conical and longer than wide; subsequent antennomeres wider than long and increasing in width; fourth antennomere slightly wider than long; tenth antennomere nearly twice as wide as long; all antennomeres densely pubescent. Pronotum: 1.02 mm long, 0.66 mm wide; widest in anterior third; anterior, conically narrowed toward neck; sides slightly narrowed in middle third; nearly parallel in posterior third; setiferous punctation deep and moderately dense; on average, interstices between punctures as wide as diameter of punctures or slightly wider; wide midline impunctate; surface with extremely weak and sparse longitudinal microsculpture; shiny. Elytra: 0.93 mm long, 0.81 mm wide; humeral angles sub-rectangular; sides slightly

divergent posteriad; posterior angles sub-rectangular; posterior margin slightly convex; retreated to suture; setiferous punctation weaker and sparser than on pronotum; on average, interstices between punctures twice as wide as diameter of punctures; surface with weak isodiametric microsculpture; less shiny than on pronotum. Abdomen with setiferous punctation weaker and sparser than on elytra; isodiametric microsculpture deeper than on elytra; surface less shiny; posterior margin of sternite VII of male deeply emarginate; posterior margin of tergite VII of male straight. Meso- and metatibia with two subapical ctenidia each. Aedeagus nearly oval; anteriorly wider with rounded angles than at slightly acute apex; endophallus anteriorly with large flexed teeth; posteriorly with oval sack densely covered by minute teeth; paramere forming large plate with sinuate inner face; outer face with long setae.

Lithocharodes spinigera SHARP, 1885

Figs 31 a-d, 43 D, 47 A

Lithocharodes spinigera SHARP, 1885: 491

Type material examined: male, lectotype (present designation): Guatemala, near city (BMNH). I studied two of the twelve syntypes of Sharp's collection, a male and a female. Both were fixed on one plate. The male was selected as lectotype and a lectotype label attached to the pin.

Additional material examined: Guatemala without more information, coll. Sharp (BMNH).

Diagnosis: *Lithocharodes spinigera* can be separated from similarly large species with light brown colouration, such as *L. simillima*, by the sparser punctation of the head, in particular on the posterior vertex. The shape of the head is very similar to that in *L. simillima*. Males are easy to identify by the long triangular process of sternite VII and the absence of spines on the endophallus. In *L. simillima*, no process at sternite VII is present and the endophallus has several large spines. As SHARP (1885) already noted, the male's spine on sternite VII is shorter and wider than in *L. armata*. Colouration, shape and punctation of head is very similar in both species. The aedeagus also resembles that of *L. armata*, but that of *L. armata* has lobes in the middle part of the endophallus, which are absent in *L. spinigera*.

Description: Length: 5.3 mm. Colouration: Dark brown; pronotum, legs and antennae slightly lighter brown. Head: 0.74 mm long, 0.53 mm wide; eyes small; postocular sides slightly divergent to widely rounded posterior angles; postocular space 2.5 times as long as eyes; eyes not prominent; interantennal furrows weak and short; setiferous punctation irregular; on anterior vertex much denser than on posterior vertex; small midline impunctate except few irregular punctures; on average, interstices between punctures

as wide as diameter of punctures or slightly shorter; on posterior vertex, interstices wider, 2 to 2.5 times as wide as diameter of punctures; laterally between setiferous punctures with moderately dense micro-punctation; surface without microsculpture; shiny. Antennae with first antennomere as long as one third of head-length; second and third antennomere conical; longer than wide; subsequent antennomeres distinctly wider than long; fourth antennomere twice as wide as long; tenth antennomere nearly three times as wide as long; fourth to eleventh antennomeres pubescent; fourth to tenth antennomeres with apical crown of short setae. Pronotum: 0.78 mm long, 0.47 mm wide; widest in anterior third; anteriorly, narrowed toward neck; in middle third, narrowed in concave curve; in posterior third, sides nearly parallel; posterior angles sub-rectangular; setiferous punctation deep and moderately dense except wide impunctate midline; adjacent to midline with irregular line of 12 to 13 punctures; surface without microsculpture; shiny. Elytra: 0.76 mm long, 0.57 mm wide; sides nearly parallel; humeral angles sub-rectangular; posterior angles rectangular; posterior margin weakly retreated to suture; setiferous punctation evenly moderately dense and deep; surface with extremely weak microsculpture; shiny. Abdomen with dense setiferous punctation; microsculpture slightly deeper and denser than on elytra; surface less shiny; posterior margin of sternite VII of male with long triangular acute process; on both sides of process deeply emarginate. Meso- and metatibia with two subapical ctenidia each. Aedeagus oval; anterior angles slightly prominent; endophallus thickly covered by short teeth; anteriorly narrower than posteriorly; inner lobe of paramere approximately parallel at base; slightly widened anteriorly; anterior third curved ending in obtuse apex; covered by fine setae except at basal third.

Lithocharodes surinamensis spec. nov.

urn:lsid:zoobank.org:act:AF3EE982-3573-4991-9AEF-A34345F2BA88

Figs 15 a-d, 45 K, 50 D

Type material: male, holotype: Suriname, Brokopondo, Brownsberg Nature Preserve (55°10'53"W, 4°56'55"N), ca. 440 m elev., flight intercept trap, 22.-25.6.1999, leg. Z.H. Falin #SUR1F99 121 (KNHM). Paratypes: Suriname, 1 male with same data as holotype (UIC); same region but Witi Creek Trail (55°10'53"W, 4°56'55"N), flight intercept trap, 2 females, 23.-25.6.1999, leg. Z.H. Falin, A. Gangadin, H. Hiwat, #SUR1F99 117 (KNHM) Saracca, West Suriname Road, 139 km WSW Zanderij Airport (56°4'W, 5°9'N), ca. 40-50 m elev., flight intercept trap, female, 10.-14.6.1999, leg. Z.H. Falin, B. DeDijn, #SUR1F99 075 (KNHM); Marowinje, Perica, 70 km E Paramaribo, on East-West Road (54°36'31"W, 5°40'28"N), 5 m elev., flight intercept trap, 3 females, 31.5.-5.6.1999, leg. Z.H. Falin, B. DeDijn, #SUR1F99 034 (KNHM); Marowijne, Palumeu (55°26'18"W, 3°20'56"W), ca. 160 m elev., flight intercept trap, 7.-8.7.1999, leg. Z.H. Falin, #SUR1F99 183 (KNHM).

Diagnosis: *Lithocharodes surinamensis* belongs to the group of medium-sized species with dark brown to nearly blackish colouration, which are difficult to distinguish. The species is mainly separated from the other species by the endophallus of the aedeagus that bears large triangular teeth in the apical part and only minute denticles in the posterior part. The aedeagus of *L. dubiosa* has a twisted endophallus without large teeth. *Lithocharodes surinamensis* is slightly lighter than *L. elegans* and the head is more elongate. However, the aedeagus is totally different from that of *L. elegans*.

Description: Length: 4.7 mm. Colouration: Dark brown; legs and antennae slightly lighter brown.

Head: 0.79 mm long, 0.65 mm wide; eyes moderately large; slightly prominent; postocular sides approximately 2.5 times as long as eyes; interantennal furrows weak; reaching anterior third of eyes; setiferous punctation weak and sparse; on average, on anterior vertex, interstices at least as wide as diameter of punctures; on posterior vertex, slightly wider; moderately wide midline impunctate; surface with weak isodiametric microsculpture; moderately shiny. Antennae with first antennomere slightly longer than half-length of head; second and third antennomere conical; approximately as long as their apical width; subsequent antennomeres wider than long, increasing in width; fourth antennomere twice as wide as long; tenth antennomere 2.5 times as wide as long; fourth to eleventh antennomeres pubescent. Pronotum: 0.89 mm long, 0.58 mm wide; widest in anterior third; shortly narrowed toward neck in convex curve; narrowed in middle third; parallel in posterior third; posterior margin slightly convex; setiferous punctation moderately sparse and deep; on average, interstices between punctures one to two times as wide as diameter of punctures; wide midline impunctate; surface with weak microsculpture; moderately shiny. Elytra: 0.87 mm long, 0.73 mm wide; humeral angles sub-rectangular; sides slightly divergent posteriad; posterior angles rounded; posterior margin triangularly retreated to suture; setiferous punctation denser than on pronotum; on average, interstices between punctures as wide as diameter of punctures; surface with isodiametric microsculpture; moderately shiny. Abdomen more sparsely punctate than elytra; surface with weak transverse microsculpture; surface moderately shiny; posterior margin of sternite VII and tergite VII of male slightly convex. Meso- and metatibia with two subapical ctenidia each. Aedeagus long-oval with sub-rectangular anterior part; endophallus forming wide transparent band covered by numerous teeth; teeth anteriorly slightly larger than posteriorly; laterally with six large teeth on each side; paramere slender; curved in anterior third; at inner face with numerous long setae.

Etymology: The species is named after the country, where it was collected.

Lithocharodes triangula spec. nov.

urn:lsid:zoobank.org:act:8BCFB5FF-F6A3-4F93-A1CE-033F3898DE6B

Figs 13 a-d, 44 A, 47 H

Type material: male, holotype: Honduras, Santa Barbara, La Fe, Finca la Roca, 5.3 km S Peña Blanca (88°02'W, 14°57'N), 740 m elev., flight intercept trap, 19.-21.6.1994, leg. R. Brooks, J. Ashe, #174 (KNHM).

Diagnosis: With 6.6 mm length, *L. triangula* is one of the largest species of the genus. It is only slightly shorter than *L. aculeata*. In addition to the large size, *L. triangula* is conspicuous by the straight posterior margin of the head in combination with the black colouration. Males are easily recognized by the specific structure of tergite VII and the triangular process of sternite VII with the semi-circular emargination on each side of the process.

Description: Length: 6.6 mm. Colouration: Black; legs and antennae dark brown.

Head: 1.21 mm long, 0.98 mm wide; eyes small; not prominent; postocular sides slightly divergent posteriad; 3.6 times as long as eyes; interantennal furrows deep; slightly curved; reaching posterior third of eyes; setiferous punctation dense and deep; on anterior vertex coriaceous; on posterior vertex, interstices one fourth as wide as diameter of punctures; narrow midline impunctate; microsculpture weak and dense; surface matt. Antennae with first antennomere slightly shorter than half-length of head; second and third antennomere conical and longer than wide; second antennomere approximately 1.5 times as long as wide; third antennomere nearly twice as long as wide; subsequent antennomeres wider than long and increasing in width; fourth to tenth antennomeres twice as wide as long; antennomeres four to eleven pubescent. Pronotum: 1.26 mm long, 0.87 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriad, evenly narrowed toward posterior margin; posterior angles sub-rectangular; posterior margin nearly straight; setiferous punctation deep and dense; on average, interstices between punctures one fourth as wide as diameter of punctures; only in small parts in posterior half slightly wider; wide midline impunctate; surface without microsculpture; glossy. Elytra: 1.21 mm long, 1.07 mm wide; humeral angles sub-rectangular; sides divergent posteriad; posterior angles sub-rectangular; posterior margin slightly convex; widely retreated to suture; setiferous punctation dense and deep; on average interstices between punctures half as wide as diameter of punctures; surface with weak isodiametric microsculpture; matt. Abdomen with setiferous punctation dense but weaker than on fore-body; base of segments with dense and deep nearly isodiametric microsculpture; apical half of segments with distinctly weaker microsculpture; shinier; posterior margin of sternite VII of male with long triangular central tooth; adjacent to tooth with deep semi-circular emargination; posterior margin of tergite VII of male with triangular central incision. Meso- and metatibia with three subapical ctenidia each. Aedeagus

oval; sub-rectangular in anterior half; endophallus with several large teeth; paramere slender; s-like curved; inner face with several setae; base with extremely long setae; apex with few minute striae.

Etymology: The specific epithet is derived from the Latin words *tri* (meaning three) and *angulus* (meaning angled) and refers to the triangular prominence of sternite VII of male.

Lithocharodes trinitatis BLACKWELDER, 1943

Figs 5 a-d, 45 D, 49 G

Lithocharodes trinitatis BLACKWELDER, 1943: 500

Type material examined: male, holotype: Trinidad, St. Augustine, 3.8.1935, leg. N.A. Weber (MCZ). Female paratype: near Maracas Falls, 1.10.1935, leg. N.A. Weber (MCZ).

Diagnosis: Regarding the spiral structure of the endophallus, *L. trinitatis* is certainly related to the *L. verhaaghi*-group. It is slightly larger than most species of the group. The species also resembles *L. fusciventris* SHARP, 1885 in size, colouration, and punctuation of head and pronotum. It can be distinguished from this and similar species by the denser, nearly coriaceous punctuation on the clypeus.

Description: Length: 4.1 mm Colouration: Brown; head darker brown; pronotum lighter brown; legs and antennae yellow brown.

Head: 0.63 mm long, 0.51 mm wide; eyes not prominent; moderately large; postocular sides 2.2 times as long as eyes; slightly divergent to posterior angles; posterior angles nearly rectangular; posterior margin straight; inter-antennal furrows weak; setiferous punctuation moderately dense and deep; on average, interstices between punctures as wide as or wider than diameter of punctures; punctuation anteriorly denser than posteriorly; on clypeus partly coriaceous; surface without microsculpture; polished. Antennae thick; first antennomere slightly shorter than half-length of head; second antennomere triangular, as long as apical width; third antennomere slightly wider than long; subsequent antennomeres increasing in width; distinctly wider than long; fourth antennomere 2.2 times as wide as long; tenth antennomere 2.5 times as wide as long; antennomeres four to eleven pubescent; all antennomeres with long setae. Pronotum: 0.65 mm long, 0.49 mm wide; widest in anterior third; anteriorly, distinctly convergent toward neck; posteriorly, slightly convergent to posterior angles; posterior angles rounded; setiferous punctuation moderately dense and deep; irregular line of punctures adjacent to wide impunctate midline with approximately 15 punctures; surface without microsculpture; polished. Elytra: 0.67 mm long, 0.59 mm wide; humeral angles sub-rectangular; sides posteriorly nearly

parallel; posterior margin widely curved; deeply retreated to suture; setiferous punctuation denser and deeper than on head and pronotum; surface with irregular slightly coriaceous ground sculpture; less shiny than head and pronotum. Abdomen with moderately dense setiferous punctuation; punctuation finer and wider than on fore-body; surface with weak microsculpture; slightly shiny; posterior margin of sternite VII of male convex; posterior margin of tergite VII of male straight. Aedeagus long oval; posteriorly more rounded than anteriorly; endophallus in anterior half with three torsions; in posterior half more transparent and with irregular number of torsions; paramere triangular; short; wide at base and strongly narrowed toward apex; at inner side with three setae.

Lithocharodes verhaaghi spec. nov.

urn:lsid:zoobank.org:act:37168761-B2E0-4845-94ED-83B48C45CF71

Figs 2 a-d, 43 L, 47 C

Type material: male, holotype: Peru: Huanuco, Lullapichis, Panguana Biol. Stat. (74°5.68'W, 9°37'S), 21.1. -18.2.1984, leg. M. Verhaaghi (UIC). Paratypes: 2 males, 1 female with same data as holotype, pitfall trap #BF1 (UIC); male, from same location and same collector as holotype, but 18.2.1984, #PWa6 (UIC); Tambopata Prov., Madre de Dios Dpto., 15 km NE Puerto Maldonado, Reserva Cuzco Amazónico (69°03'W, 12°33'S), 200 m elevation, Plot #Z2E8, flight intercept trap, 5 males, 15.6.1989, 2.7.1989, 13.7.1989, 16.7.1989, 19.7.1989, leg. J.S. Ashe & R.A. Leschen, #059 (KNHM); Bolivia: Dept. Santa Cruz, Saavedra, Agr. Exp. Stat., black light trap, male, 28.12.1959, leg. B. Cumming (FMNH); female, Dept. Beni, Prov. Vaca Diez, 2.5 km NW of Tumichucua, forest, flight intercept trap, 11.8.1990, leg. P. Parillo & P. Betella (FMNH).

Diagnosis: *Lithocharodes verhaaghi* is one of the smallest *Lithocharodes* species. Among similarly small species, *L. verhaaghi* can be recognized by the parallel shape of the head with large eyes.

Description: Length: 3.4 mm. Colouration: Head black; pronotum, elytra and abdomen dark brown; legs and antennae yellow brown.

Head: 0.55 mm long; 0.44 mm wide; eyes relatively large, not prominent; postocular sides 2.2 times longer than eyes; sides approximately parallel; posterior angles sub-rectangular; interantennal furrows weak and short; reaching anterior edge of eyes; setiferous punctuation deep and dense; anteriorly much denser than close to neck; impunctate midline between interocular furrows extremely narrow; on posterior vertex wider than on anterior vertex; surface without microsculpture; shiny. Antennae with first antennomere slightly longer than half-length of head; second and third antennomere longer than wide and conical; second slightly longer than third; subsequent antennomeres wider than long and increasing in width; fourth antennomere slightly wider than long; tenth antennomere 2.5 times as

long as wide; fourth to eleventh antennomeres pubescent. Pronotum: 0.60 mm long, 0.39 mm wide; widest in anterior third; anteriorly, conically narrowed toward neck; posteriorly, slightly narrowed in weak concave curve; posterior angles rounded; posterior margin convexly curved; setiferous punctation as deep and dense as on posterior part of head; with wide impunctate midline; impunctate midline in anterior third wider than posterior third; adjacent to midline with line of 18 to 19 punctures; surface without microsculpture; shiny. Elytra: 0.61 mm long, 0.54 mm wide; sides divergent posteriorly; humeral angles subrectangular; posterior angles nearly rectangular; posterior margin convexly rounded; retreated to suture; setiferous punctation dense but weaker than on pronotum; surface

with irregular, weak and coriaceous microsculpture; less shiny than pronotum. Abdomen with similarly dense setiferous punctation as elytra, but finer; weak microsculpture coriaceous; posterior margin of abdominal tergite VII of male straight; posterior margin of sternite VII of male nearly semi-circular. Meso- and metatibia with one subapical ctenidium. Aedeagus oval with nearly parallel anterior sides; anterior angles thick and obtuse; slightly prominent; anterior part of endophallus straight; posterior part with three wide torsions; paramere short; triangular with long setae at inner face.

Etymology: The species is named in honour of its collector, Manfred Verhaagh, who collected extensively in the Panguana Station area.

Key to the Neotropical species

1. Bicoloured, with pronotum light red to yellow, head and elytra blackish or totally light reddish or light brown 2
 - Unicoloured, totally dark brown or blackish, in some species, pronotum slightly lighter brown but never light red or yellow 13
2. Setiferous punctation at least on posterior vertex sparser; on average, interstices between punctures at least as wide as diameter of punctures 3
 - Setiferous punctation of head denser; interstices between punctures half as wide as diameter of punctures or shorter 8
3. Eyes small, postocular sides three times as long as eyes; head at least in posterior half yellow 4
 - Eyes larger, postocular sides 2.5 times as long as eyes; head dark or light brown 6
4. Sternite VII of male with long and wide medial process *bierigi* spec. nov.
 - Sternite VII of male with convex posterior margin 5
5. Smaller species of 5.1 mm length; endophallus of aedeagus straight *L. fuscipennis* (SHARP, 1876)
 - Larger species of 5.4 mm length; endophallus of aedeagus with torsion in basal half *L. clavicornis* (ERICHSON, 1839)
6. Larger, more than 5 mm long; head light brown; sternite VII of male with long central spine 7
 - Smaller, 4.6 mm long; head black; sternite VII of male without long spine *L. hanagarthi* spec. nov.
7. On anterior vertex, setiferous punctation of head nearly coriaceous; sternite VII of male with long spine; endophallus with minute teeth *L. spinigera* SHARP, 1885
 - Setiferous punctation of anterior vertex denser than on posterior vertex but not nearly coriaceous; sternite VII of male with shorter and broader spine; endophallus with lobes *L. armata* SHARP, 1885
8. Large species, longer than 6 mm *L. germana* SHARP, 1885
 - Smaller species, smaller than 5.5 mm 9
9. Small species, not longer than 4 mm *L. rufula* SHARP, 1885
 - Larger species, between 4 mm and 5.5 mm long 10
10. Eyes large, postocular sides 2.3 times as long as eyes *L. collaris* SHARP, 1885
 - Eyes smaller, postocular sides between 2.7 times and 3.6 times as long as eyes 11
11. Eyes extremely small, postocular sides 3.6 times as long as eyes; endophallus of aedeagus with dense row of lobes *L. nigripennis* (LECONTE, 1863)
 - Eyes slightly larger, postocular sides approximately three times longer than eyes 12
12. Sides of head approximately parallel; endophallus of aedeagus only with minute teeth *L. puncticeps* SHARP, 1885

– Sides of head distinctly divergent posteriorly; endophallus of aedeagus with large teeth and lobes	<i>L. simillima</i> SHARP, 1885
13. Large species of more than 7 mm length, eyes extremely reduced, postocular sides ten times as long as eyes and approximately parallel	<i>L. aculeata</i> spec. nov.
– Species smaller, between 3.4 mm and 6.6 mm; eyes longer, postocular sides not more than 5 times as longer as eyes	14
14. Elytra distinctly shorter than pronotum and shorter than wide	<i>curtipennis</i> spec. nov.
– Elytra at least quadrate; mostly longer than wide	15
15. Smaller species, between 3.4 mm and 3.8 mm, with large eyes, postocular sides approximately twice as long as eyes	16
– Larger species, between 4.0 mm and 6.6 mm, postocular sides between 2.0 and 3.6 times as long as eyes	20
16. Small species of 3.4 to 3.7 mm length; postocular sides parallel	17
– Larger species of 3.7 mm to 3.8 mm with divergent postocular sides; two extremely similar species	18
17. Species only 3.4 mm long; brown; elytra longer than pronotum	<i>L. verhaaghi</i> spec. nov.
– Slightly larger species of 3.7 mm length; black; elytra shorter than pronotum	<i>L. compacta</i> spec. nov.
18. Species from north-easternmost region (Bahamas) with second antennomere distinctly longer than third	<i>L. floridanus</i> (LECONTE, 1880)
– Species from Central and South America with second and third antennomere approximately equal in length	19
19. Species from Guatemala with narrow impunctate midline on head	<i>L. fuscula</i> SHARP, 1885
– Species from Ecuador with wide impunctate midline on head	<i>L. silvicola</i> spec. nov.
20. Posterior margin of head widely concave	21
– Posterior margin of head convex or straight	22
21. Smaller, 4.3 mm long, head nearly quadrate; length : width ratio 1.06; dorsal plate of aedeagus covering dorsal side; paramere as in Fig. 16b	<i>L. brooksi</i> spec. nov.
– Larger, 5.2 mm long; head more elongate; length : width ratio 1.20; dorsal plate of aedeagus restricted to posterior half; paramere as in Fig. 10b	<i>L. obscura</i> spec. nov.
22. Larger species between 6.3 mm and 6.6 mm length; tergite VII of male with incision	23
– Species not longer than 6.0 mm; tergite VII of male without incision	24
23. Slightly larger, 6.6 mm long, tergite VII of male with triangular incision; sternite VII of male with triangular process, paramere slender and curved, as in Fig. 13b	<i>L. triangula</i> spec. nov.
– Smaller, 6.3 mm long, tergite VII of male with small incision; sternite VII of male without process, paramere broad with wide apex, as in Fig. 30b.	<i>L. ashei</i> spec. nov.
24. Head totally covered by dense setiferous punctation; on posterior vertex, interstices less than half as wide as diameters of punctures	26
– At least on posterior vertex setiferous punctation sparser; interstices more than half as wide as diameter of punctures	33
25. Head elongate, postocular sides at least three times longer than eyes	26
– Head less elongate; postocular sides 2 to 2.5 times as long as eyes	27
26. Paramere broad with apical process, endophallus broad with small teeth, 6.0 mm long	<i>L. elongata</i> spec. nov.
– Paramere slender, apically curved, endophallus slender with one loop, slightly shorter, 5.5 mm long	<i>L. nigripennis</i> LECONTE, 1863
27. Smaller than 5 mm	28
– Larger than 5 mm	30

28. Head distinctly divergent; sternite VII of male straight, without emargination *L. peruana* spec. nov.
 – Head less divergent, nearly parallel; sternite VII of male with emargination 29
29. Sternite VII of male with wide medial process, with adjacent emargination; paramere with long outer lobe; endophallus with spiral torsions *L. pampana* spec. nov.
 – Sternite VII of male widely emarginated, without distinct medial process; paramere with short outer lobe; endophallus with apical lobes and basic sack covered by minute teeth *L. lescheni* spec. nov.
30. Elytra longer than pronotum; paramere long and slender *L. nigrita* spec. nov.
 – Elytra approximately as long as pronotum; paramere shorter or broader 31
31. Setiferous punctation of head and pronotum denser; interstices between punctures of pronotum half as wide as diameter of punctures; sternite VII of male without emargination 32
 – Setiferous punctation of head and pronotum less dense; interstices between punctures of pronotum partly as wide as diameter of punctures; sternite VII male with semi-circular emargination *L. ecuadoriensis* spec. nov.
32. Larger, 5.9 mm long; aedeagus long-oval, with straight paramere *L. katharinae* spec. nov.
 – Smaller, 5.2 mm long; aedeagus more circular, with long curved paramere *L. boliviana* spec. nov.
33. Large species of 5.6 mm length; tergite VII of male with broad process *L. karinae* spec. nov.
 – Smaller species of less than 5.0 mm length; tergite VII of male without broad process 34
34. Head with sparse setiferous punctation; interstices between punctures wider than diameters of punctures; parameres straight with two patches of long setae *L. nigerrima* spec. nov.
 – Setiferous punctation denser; shape and setation of parameres different 35
35. Postocular sides only 1.8 times as long as eyes, sternite VII of male with broad medial process
 *L. denticulata* spec. nov.
 – Postocular sides longer, at least 2.5 times as long as eyes; sternite VII of male without central process 36
36. Setiferous punctation on head and pronotum sparser; interstices between punctures on pronotum more than twice as wide as diameter of punctures 37
 – Setiferous punctation of head and pronotum denser; interstices between punctures on pronotum as wide as diameter of punctures 38
37. Punctation of head anteriorly not denser than posteriorly; endophallus without spiral torsions
 *L. fusciventris* SHARP, 1885
 – Punctation anteriorly distinctly denser than posteriorly; endophallus with spiral torsions
 *L. trinitatis* BLACKWELDER, 1943
38. Sternite VII of male straight or convex, without emargination or teeth 39
 – Sternite VII of male different, either with teeth or with deep emargination 42
39. Slightly larger, 4.7 mm long, endophallus different 40
 – Slightly smaller 4.5 mm long, endophallus without large teeth, with lobes in anterior part ... *L. dubiosa* spec. nov.
40. Elytra much shorter than pronotum; eyes short, postocular sides of head 4 times as long as eyes
 *L. somoleptoides* spec. nov.
 – Elytra at least as long as pronotum; eyes larger, postocular sides only 2.5 times as long as eyes 41
41. Brown, pronotum widest in anterior third; endophallus with denticulate bursa and large teeth in anterior part, paramere slender *L. surinamensis* spec. nov.
 – Black; pronotum widest at anterior third; endophallus with two denticulate strings and several spines, paramere broad *L. elegans* (SHARP, 1887)
42. Slightly lighter, dark brown; sternite VII of male with pair of teeth *L. bicornis* spec. nov.
 – Slightly darker, blackish; sternite VII of male with wide triangular emargination *L. sordida* SHARP, 1885

Discussion

According to HERMAN (2001) 19 species of the genus *Lithocharodes* were described from the Neotropical region. In the present study, 26 species are newly described. Three species described by SHARP (1885) and BLACKWELDER (1943) were found to be conspecific with *L. fusciventris* SHARP, 1885. Three species that were originally assigned to the genus *Somoleptus* were transferred to *Lithocharodes*. Two species known from the U.S.A. are also recorded from the northern Neotropics. Two species, *L. claviscapa* (CAMERON, 1922), and *L. unicolor* (CAMERON, 1922), originally described as species of the genus *Somoleptus* but transferred to *Lithocharodes* by BLACKWELDER (1943), could not be studied and, therefore, cannot be considered here. Thus, a number of 44 species is actually known from the Neotropical region, based on a total of 756 specimens. As the curve, resulted by the rarefaction analysis, approached a slow increment at this number of specimens, species richness will not increase rapidly with higher number of specimens (Fig. 52). According to the Chao-1 analysis, the total number of species for the genus *Lithocharodes* results in a species richness of 48 species (lower value 44, upper value 59). The overview on the species richness among countries found that the highest numbers of species were found in Central American countries with Guatemala (11 species) and Mexico (10 species). But, some Andean countries such as Peru (10 species), Bolivia (9 species) and Ecuador (5 species) revealed also high numbers while only one species was recorded from Argentina and two species only from Brasil in spite of their large area. From the country specific species richness a north-south gradient with decreasing number of species can be derived. The West Indian islands seem to be mostly free from species of the genus.

Few species groups have restricted regions which differ from the overall zoogeographic pattern of the genus (Fig. 52, 53). The verhaaghi-group is mainly distributed in the South-American Andean region of Bolivia, Peru, Ecuador, and Colombia, except *L. trinitatis* which seems to be endemic to Trinidad. Other endemic species may also exist, although endemisms is difficult to decide at the present state of knowledge. *Lithocharodes somoleptoides* might be endemic to a restricted area in Chiapas (Mexico) from high mountain habitats. It has reduced wings, which might exclude a wide dispersion. Another endemic species might be *L. curtipennis*, which also has reduced wings and is also restricted to high mountain areas of southern Chiapas and adjacent regions of Guatemala. Thus, northern Central America might be a source area for the genus. Here several endemic species occur, combined with a high total number of species, whereas the South American continent might have been inhabited from this region along the Andean range, with only few species immigrating into the large lowland areas. Moreover, the Atlantic rain forest, which contains many endemic

species from other genera, has no endemic *Lithocharodes* species.

Only few species have a wide distribution, such as *L. fuscipennis*, which is widely distributed in the South American lowlands. However, it seems to avoid rain forest areas as the ecological sampling informations revealed a preference for agricultural habitats (see also BUSANELLO & CARON, 2019). While *L. fuscipennis* seems to be restricted to large areas in South America, *L. fusciventris* shows a wide distribution in Central America. The species obviously used the Yucatan bridge to inhabit Cuba. In contrast to the Neotropical mainland, the West Indies are nearly devoid of species of the genus. In addition to *L. fusciventris*, only *L. floridanus* seems to have migrated from the southern U.S.A. via the Bahamas to Cuba.

References

- BLACKWELDER, R. 1943: Monograph of the West Indian beetles of the family Staphylinidae. Smithsonian Institution. – United States National Museum. Bulletin **182**: 1–658.
- BLACKWELDER, R. 1952: The generic names of the beetles family Staphylinidae with an essay on genotypy. – Washington, United States National Museum.
- BUSANELLO, D. & CARON, E. 2019: Redescription of the type species of *Lithocharodes* SHARP (Coleoptera, Staphylinidae, Staphylininae, Xantholinini) with remarks on the genus. – *Coleopterist's Bulletin* **73**: 591–598.
- CAMERON, M. 1922: Description of new species of Staphylinidae from the West Indies (Part 1 and 2). – *Annals and Magazine of Natural History* **9**: 113–128.
- ERICHSON, W. 1839a: Die Käfer der Mark Brandenburg. Berlin: Morin.
- ERICHSON, W. 1839: Genera et species Staphylinorum Insectorum Coleopterorum familiae. – Berlin, Morin.
- HADLEY, A. 2006. Combine Z5.3. – Public Domain Software.
- HAMMER, Ø.; HARPER, D. & RYAN, P. 2012: PAST: paleontological statistics software. – *Palaeontol. Electronica* **4**.
- HERMAN, L. 2001: Catalog of the Staphylinidae (Insecta: Coleoptera). VI. Staphylininae group (Part 3). – New York, American Museum of Natural History.
- LECONTE, J. 1863: New species of North American Coleoptera. – *Smithsonian Miscellaneous Collections* **6**: 1–92.
- LECONTE, J. 1880: Short studies of North American Coleoptera. – *Transactions American entomological Society* **8**: 163–218.
- NAVARRETE-HEREDIA, J.; NEWTON, A. F.; THAYER, M. K.; ASHE, J. S.; CHANDLER, D. S. 2002: Illustrated guide to the genera of Staphylinidae (Coleoptera) of Mexico. – Guadalajara, Universidad de Guadalajara.

- PECK, S. B. 2005: A checklist of the beetles of Cuba with data on distribution and bionomics (Insecta: Coleoptera). – *Arthropods of Florida and Neighboring Land Areas* **18**: 1–248.
- SCRIBA, W. 1855: Neue Staphylinidae. – *Entomologische Zeitschrift* **16**: 295–302.
- SHARP, D. 1876: Contribution to an insect fauna of the Amazon Valley. Coleoptera, Staphylinidae. – *Transactions of the Entomological Society of London*: 27–424.
- SHARP, D. 1885: Fam. Staphylinidae. – In: *Biologia Centrali-Americana. Insecta, Coleoptera. Vol. 1 (2)*: pp. 393–536. – London, Taylor & Francis.
- SMETANA, A. 1982: Revision of the subfamily Xantholininae of America North of Mexico (Coleoptera: Staphylinidae). – *Memoirs of the Entomological Society of Canada* **12**: 1–389.
- TIHELKA, S.; THAYER, M. K.; NEWTON, A. F.; CAI, C. 2020: New data, old story. Molecular data illuminate the tribal relationships among the rove beetles of the subfamily Staphylinidae (Coleoptera: Staphylinidae). *Insects* **11**: 1–22.
- ZYLA, D. & SOLODOVNIKOV, A. 2019: Multilocus phylogeny defines a new classification of Staphylininae (Coleoptera, Staphylinidae), a rove beetle group with high lineage diversity. – *Systematic Entomology*: DOI: 10.1111/syen.12382.

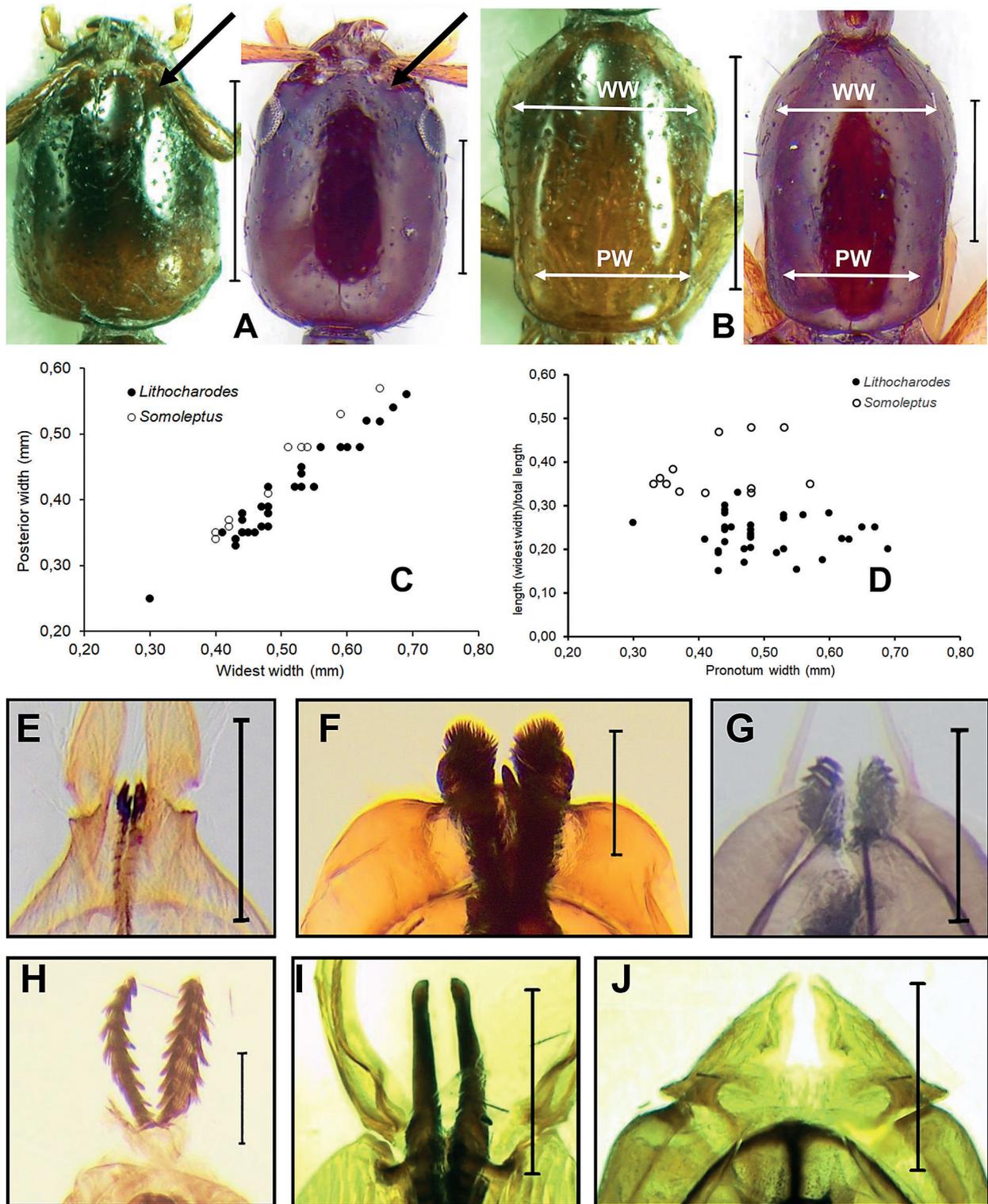


Fig. 1: Characters for separating *Lithocharodes* from *Somoleptus*; (A) antennal furrows present in *Lithocharodes* (left; *L. fuscipennis*) and absent in *Somoleptus* (right; *S. aeneszens*); (B) shape of pronotum: wide in anterior third in *Lithocharodes* (left, *L. fuscipennis*) and small in *Somoleptus* (left; *S. aeneszens*); (C) relation between widest width and width at posterior angles; (D) relation between length in front of widest width and widest width; (E–J) structure at central opening of *S. cavicola* (BLACKWELDER, 1943), *S. aeneszens* SHARP, 1885 (F), *S. longicollis* (LECONTE, 1863) (G), *S. columbiensis* BERNHAUER, 1915 (H), *S. laevis* BERNHAUER, 1908 (I), *Lithocharodes soridida* SHARP, 1885 (J).

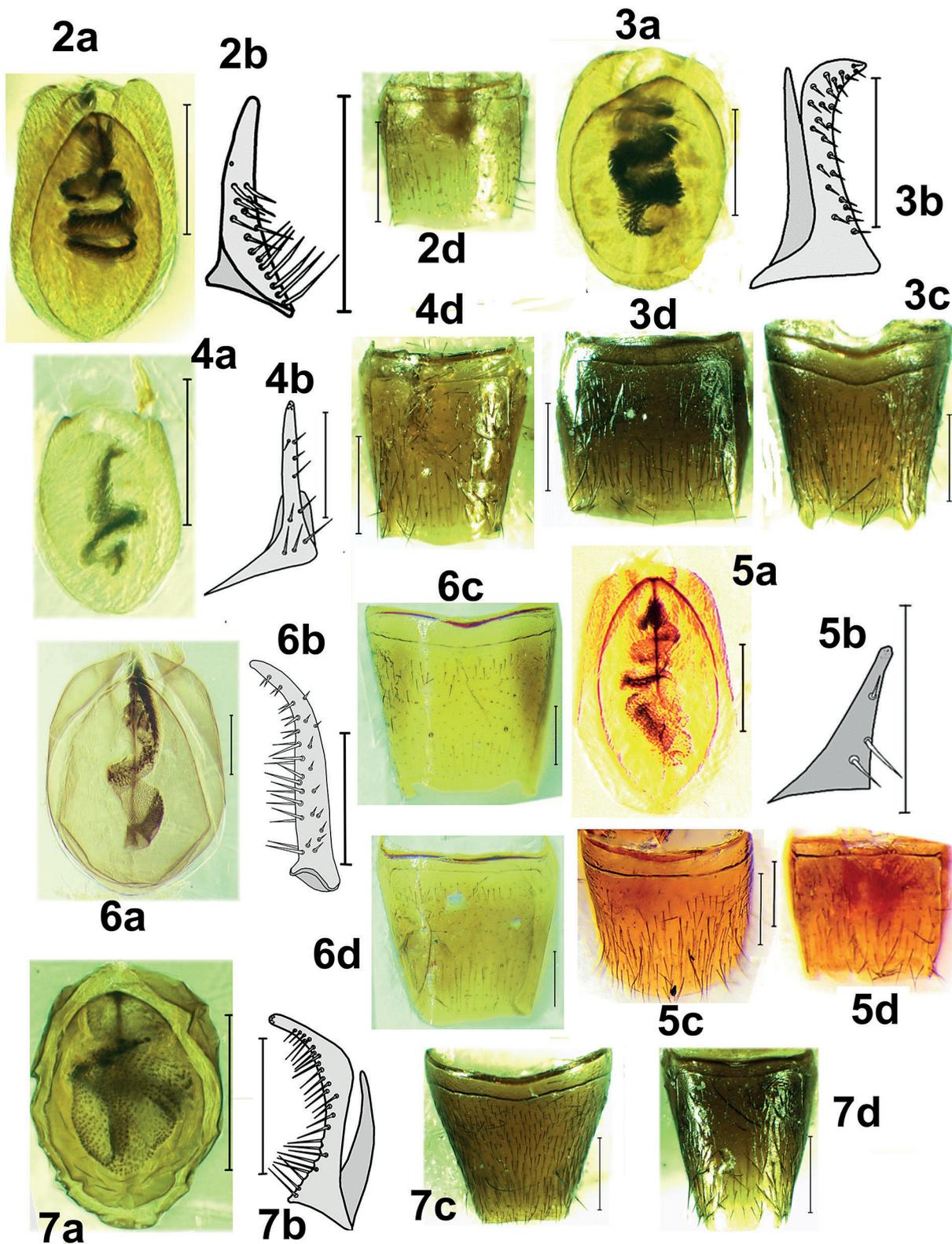


Fig. 2-7: *L.*-verhaaghi-group: *Lithocharodes verhaaghi* (2), *L. pampana* (3), *L. silvicola* (4), *L. trinitatis* (5), *L. dubiosa* (6), *L. peruana* (7); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bare: A – D: 0.2 mm; B: 0.1 mm.

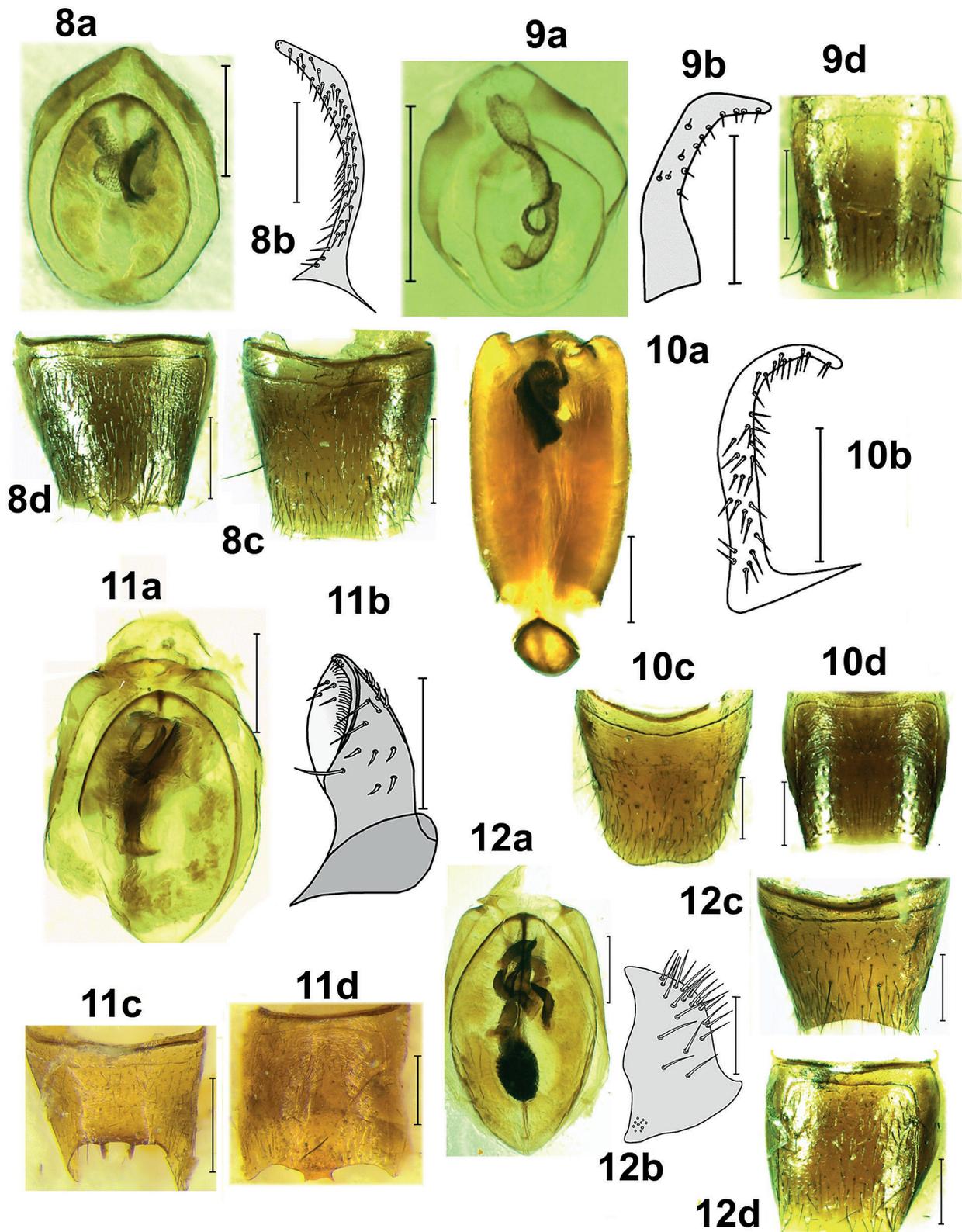


Fig. 8–12: *L. hanagarthi*-group and *L. sordida*-group: *Lithocharodes boliviana* (8), *L. hanagarthi* (9), *L. obscura* (10), *L. bicornis* (11), *L. sordida* (12); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bare: A – D: 0.2 mm; B: 0.1 mm.

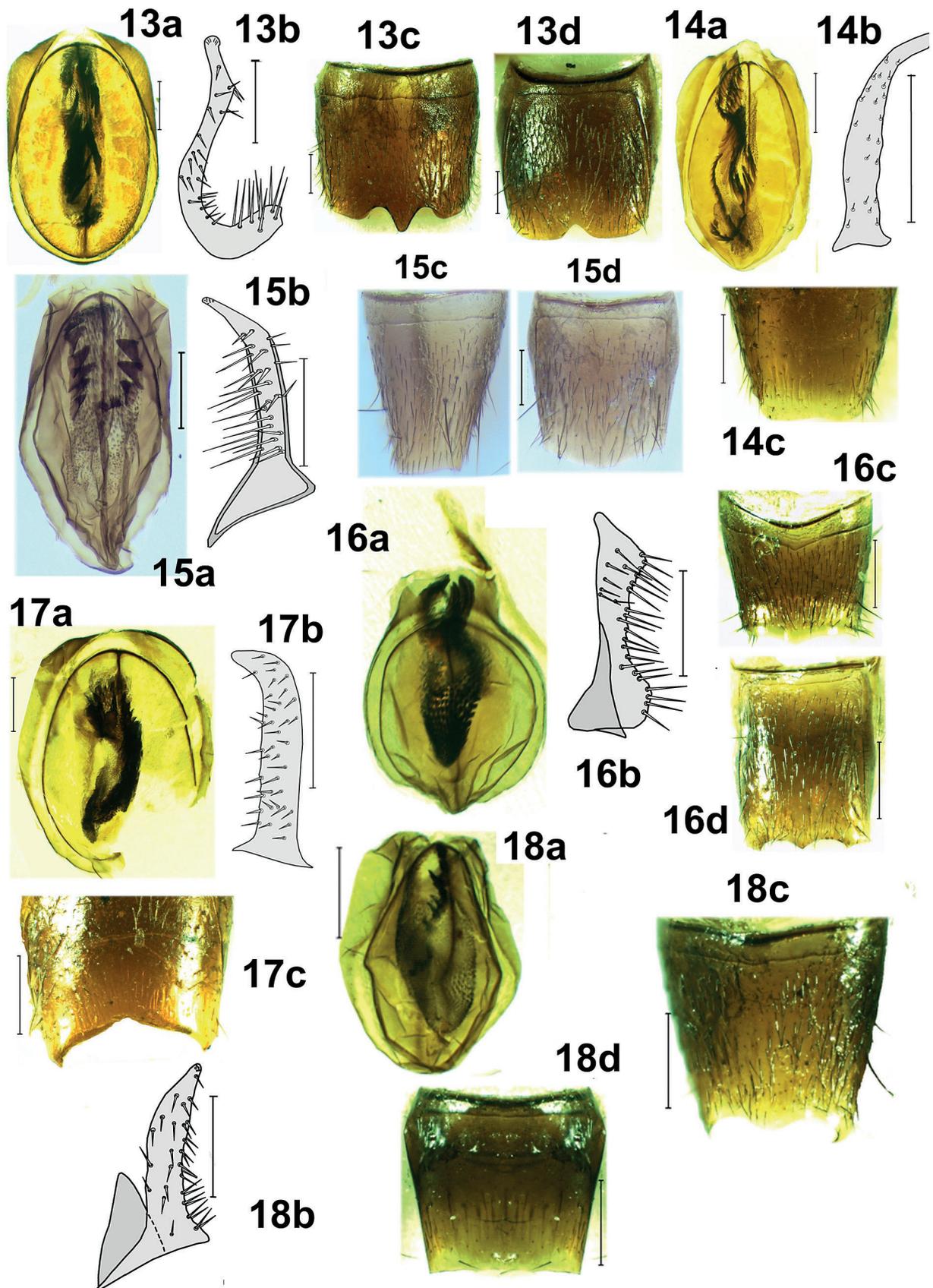


Fig. 13–18: *L.*-simillima-group: *Lithocharodes triangula* (13), *L. simillima* (14), *L. surinamensis* (15), *L. brooksi* (16), *L. germana* (17), *L. denticulata* (18); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bare: A–D: 0.2 mm; B: 0.1 mm.

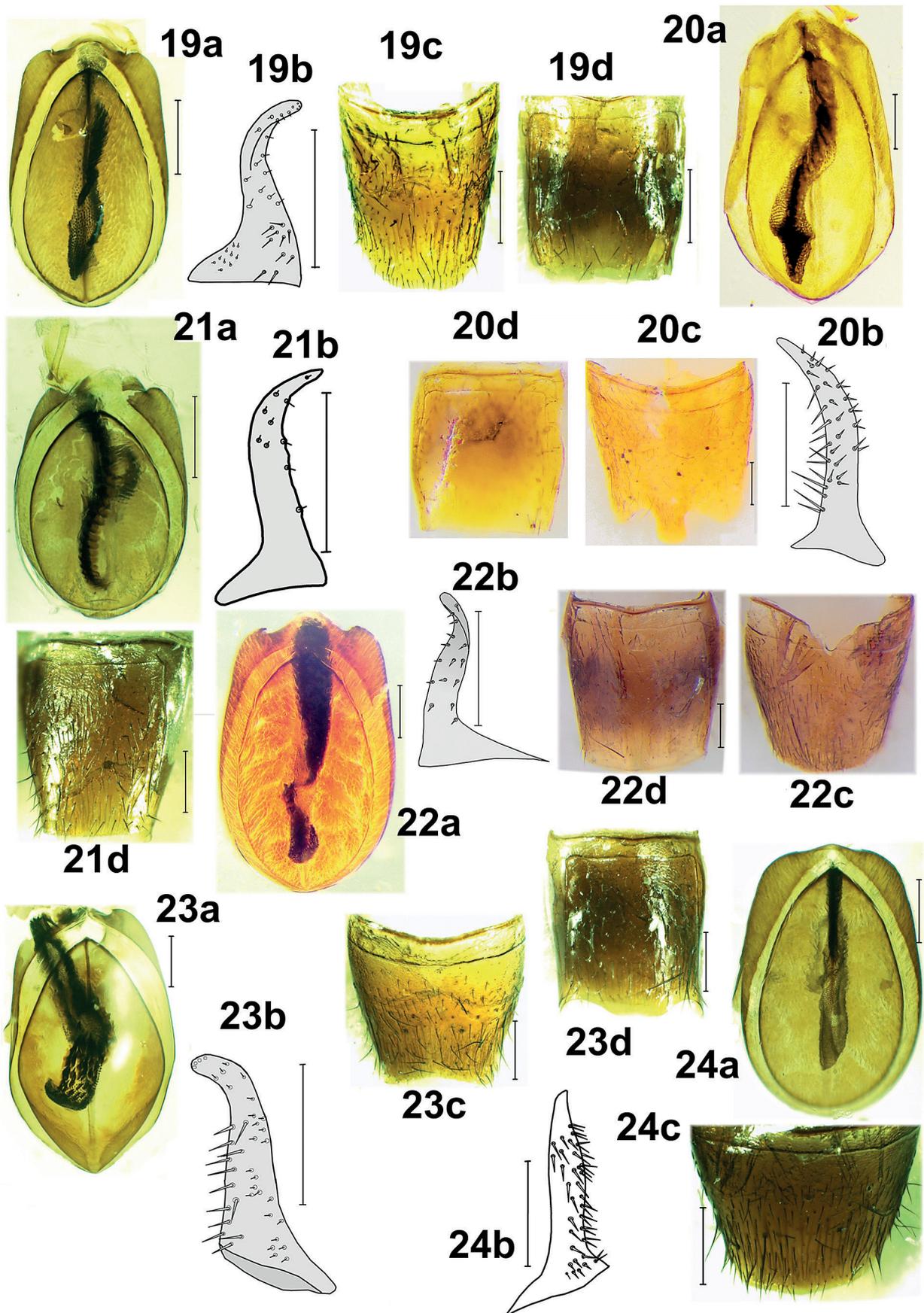


Fig. 19–24: *L.*-*fuscipennis*-group: *Lithocharodes fuscipennis* (19), *L. bierigi* (20), *L. nigripennis* (21), *L. clavicornis* (22), *L. karinae* (23), *L. katharinae* (24); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bare: A–D: 0.2 mm; B: 0.1 mm.

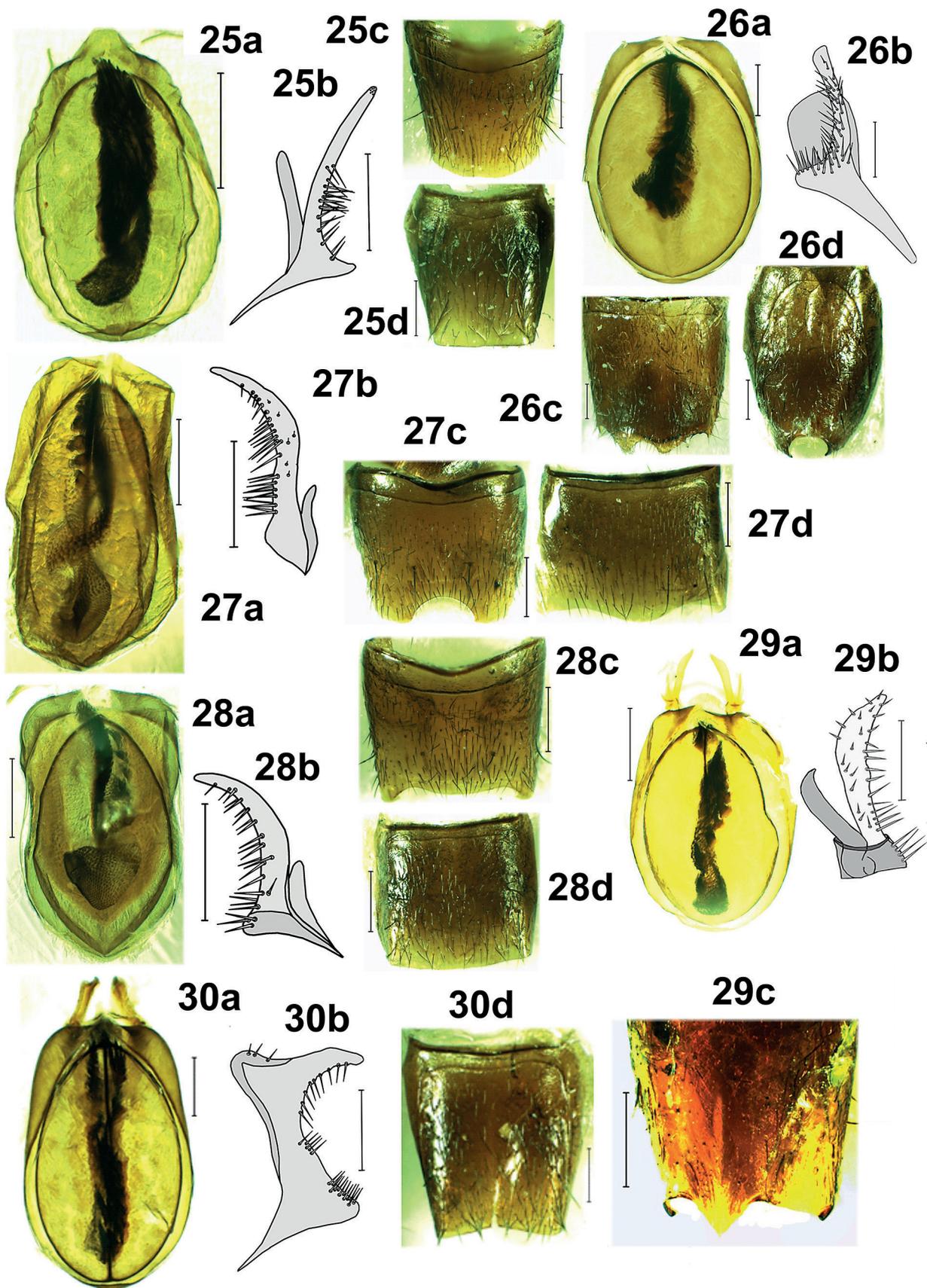


Fig. 25–30: *L.*-???-group: *Lithocharodes nigrita* (25), *L. aculeata* (26), *L. ecuadoriensis* (27), *L. lescheni* (28), *L. armata* (29), *L. ashei* (30); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bars: A–D: 0.2 mm; B: 0.1 mm.

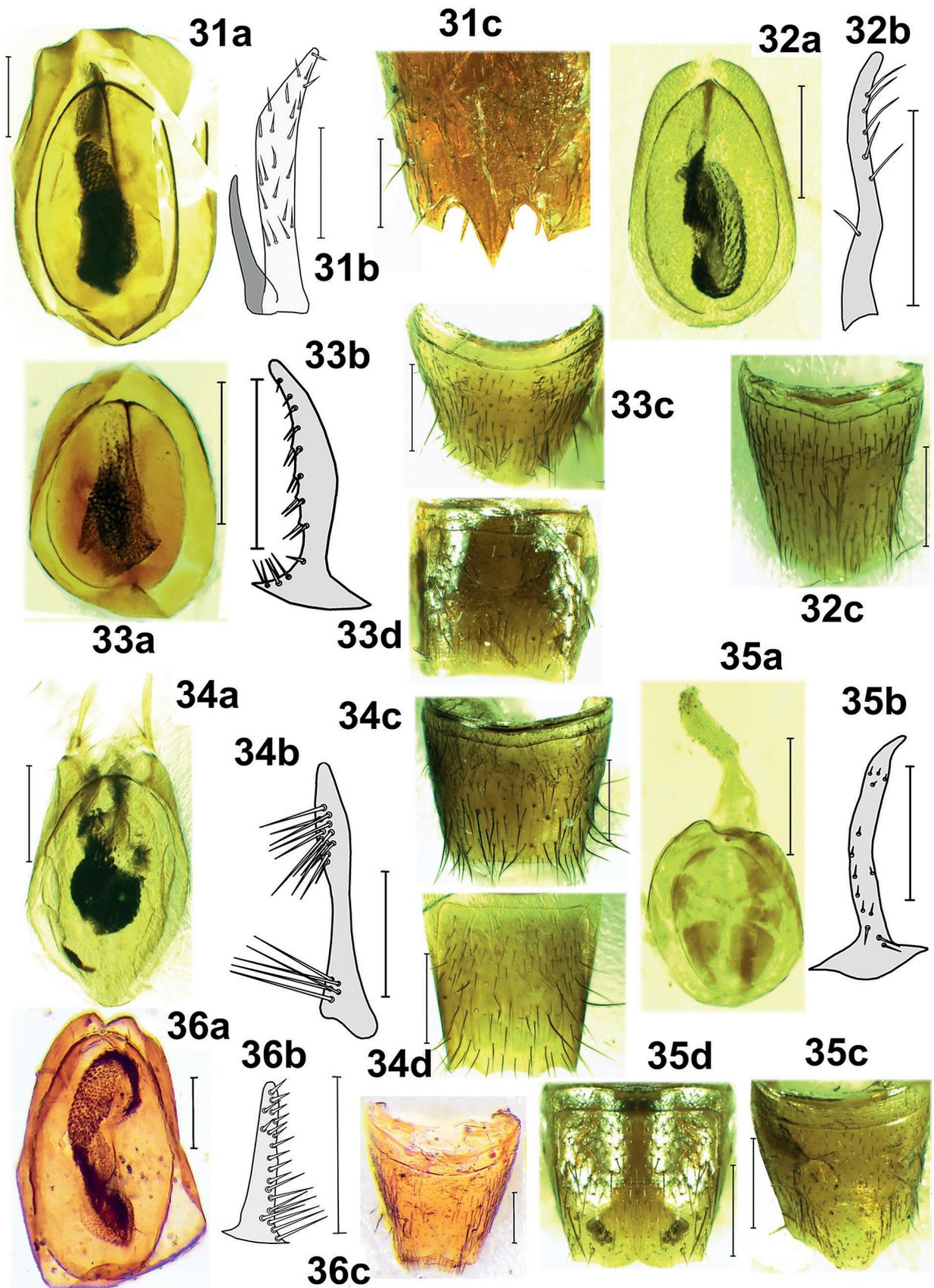


Fig. 31–36: *L.*-??-group: *Lithocharodes spinigera* (31), *L. curtipennis* (32), *L. fusciventris* (33), *L. nigerrima* (34), *L. puncticeps* (35), *L. bicolor* (36); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bars: A–D: 0.2 mm; B: 0.1 mm.

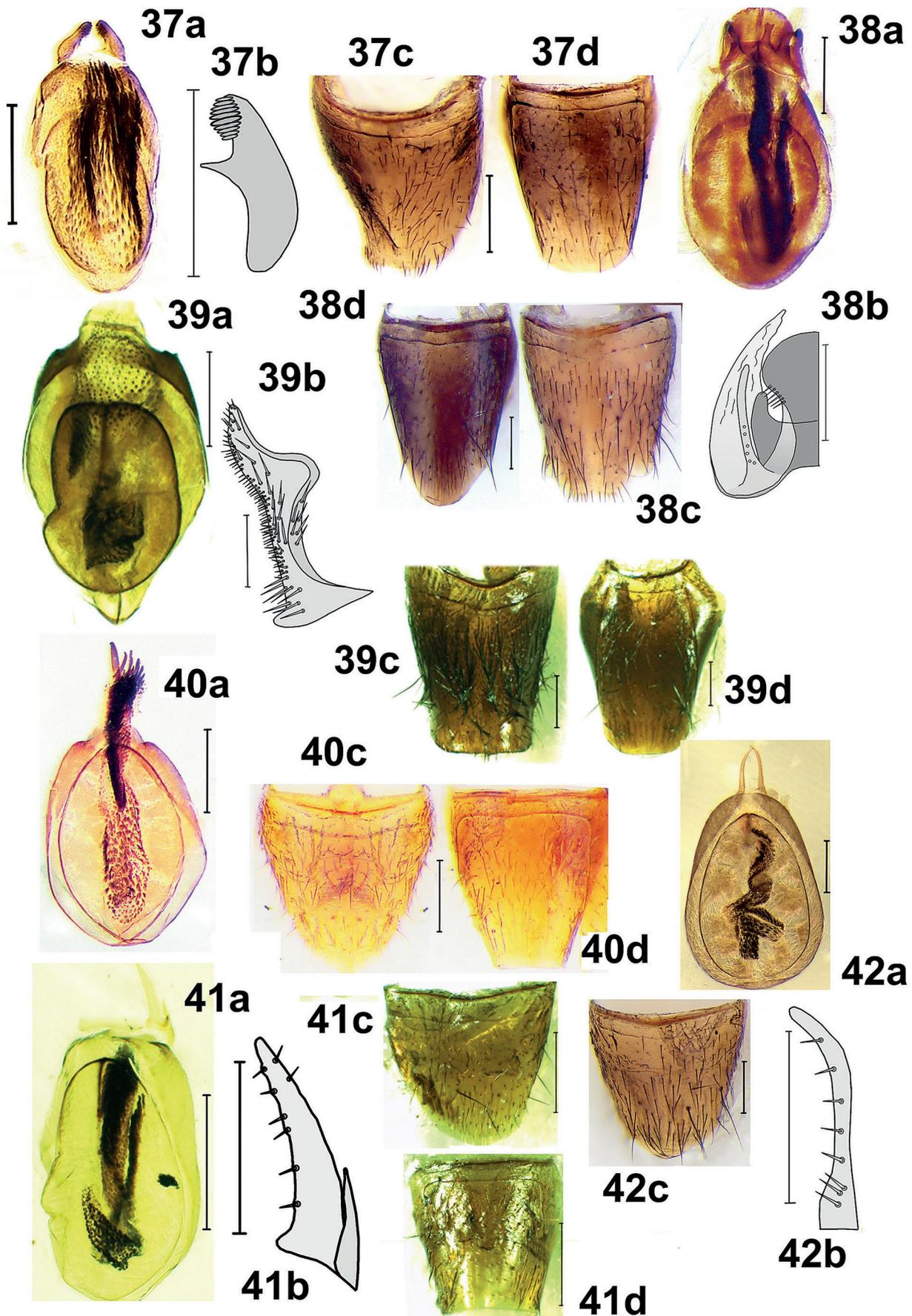


Fig. 37–42: *L.*-??-group: *Lithocharodes compacta* (37), *L. elegans* (38), *L. elongata* (39), *L. fuscula* (40), *L. rufula* (41); aedeagus (a), paramere (b), sternite VII of male (c), tergite VII of male (d); scale bare: A–D: 0.2 mm; B: 0.1 mm.

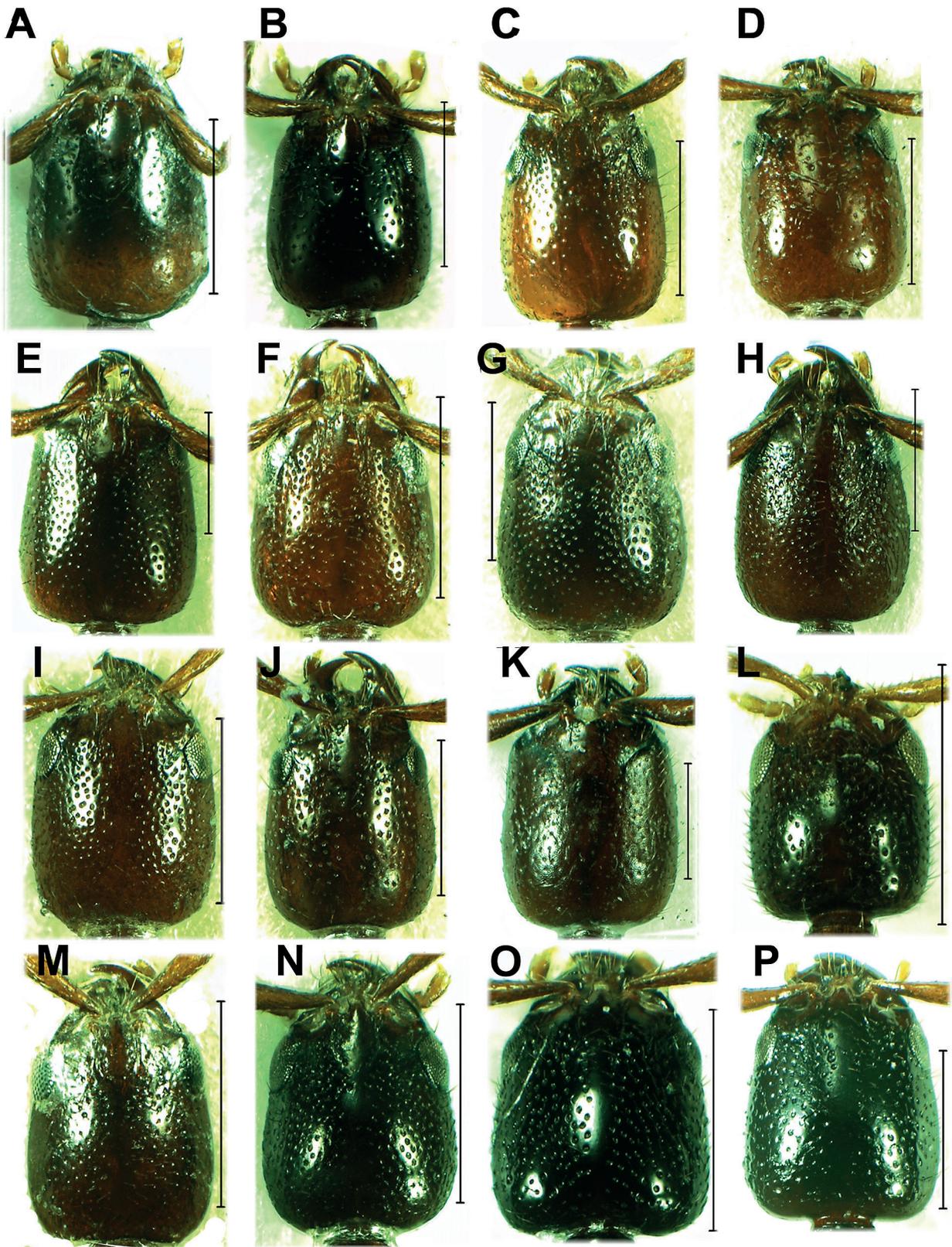


Fig. 43: Head of *L. fuscipennis* (A), *L. hanagarthi* (B), *L. armata* (C), *L. spinigera* (D), *L. germana* (E), *L. rufula* (F), *L. collaris* (G), *L. nigripennis* (H), *L. puncticeps* (I), *L. simillima* (J), *L. aculeata* (K), *L. verhaaghi* (L), *L. fuscula* (M), *L. silvicola* (N), *L. brooksi* (O), *L. obscura* (P); scale bar: 0.5 mm.

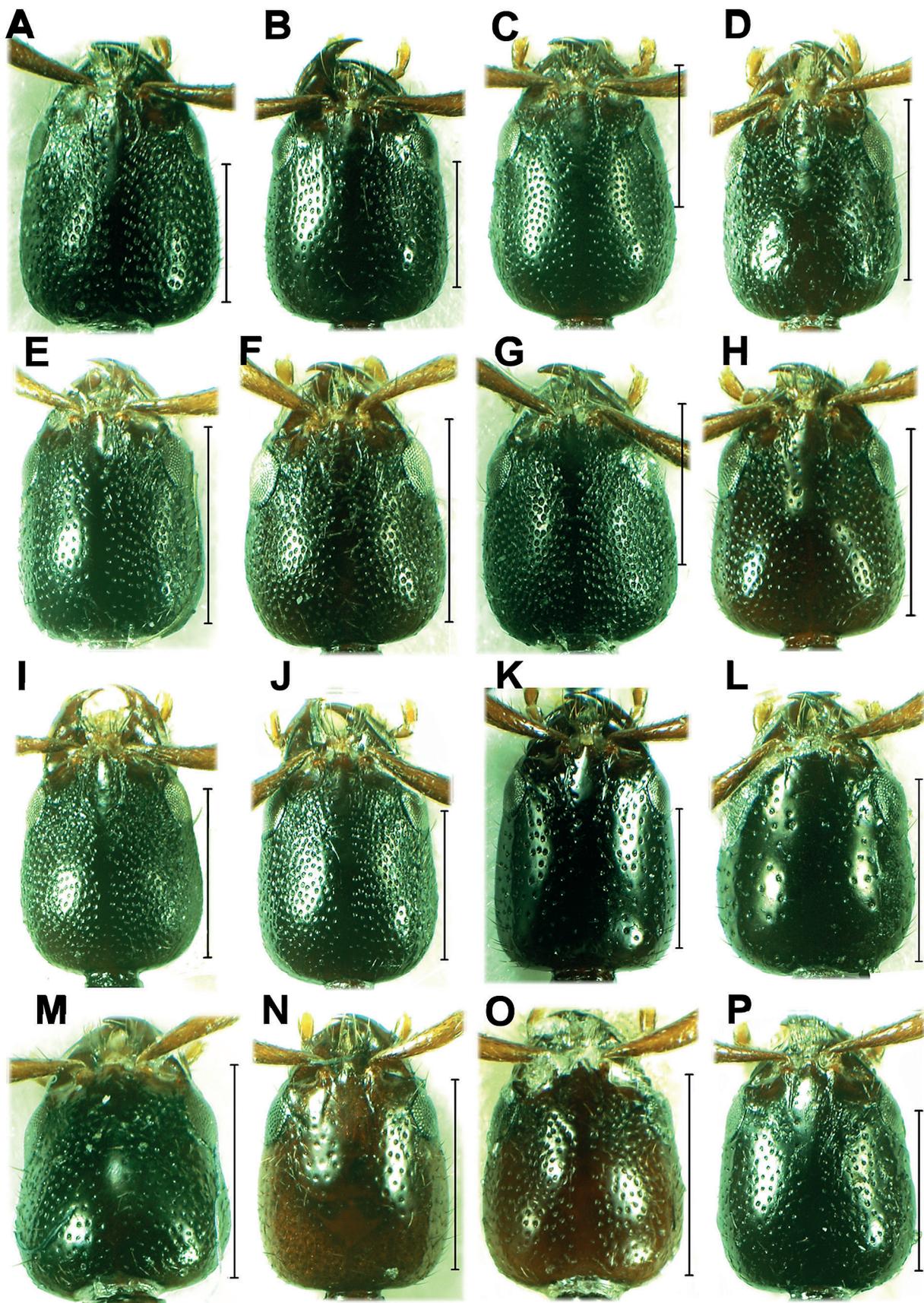


Fig. 44: Head of *L. triangula* (A), *L. ashei* (B), *L. elongata* (C), *L. lescheni* (D), *L. pampana* (E), *L. peruana* (F), *L. nigrita* (G), *L. ecuadoriensis* (H), *L. boliviana* (I), *L. katharinae* (J), *L. karinae* (K), *L. nigerrima* (L), *L. denticulata* (M), *L. fusciventris* (N), *L. bicornis* (O), *L. sordida* (P); scale bar: 0.5 mm.

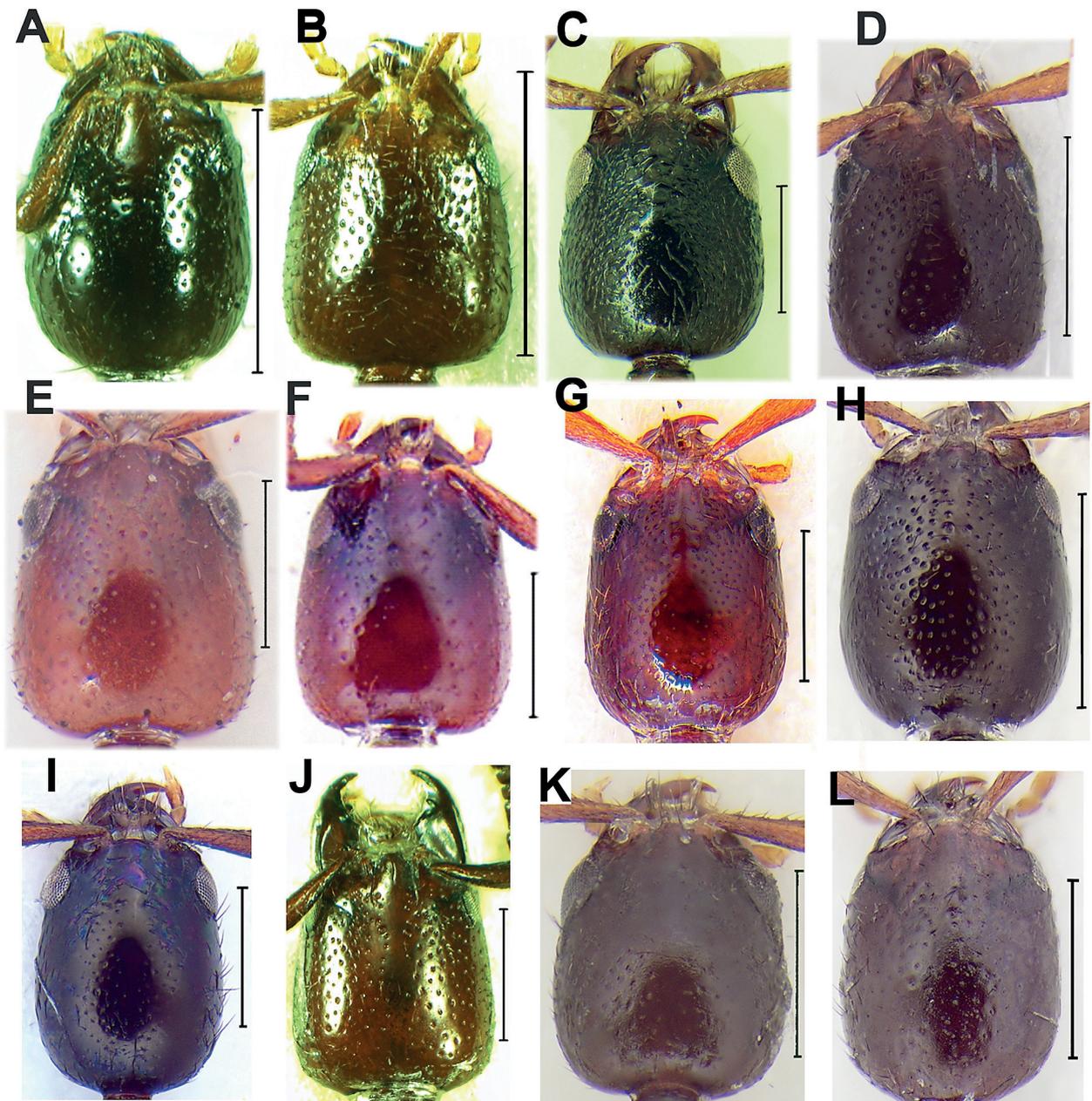


Fig. 45: Head of *L. curtipennis* (A), *L. floridanus* (B), *L. dubiosa* (C), *L. trinitatis* (D), *L. bierigi* (E), *L. clavicornis* (F), *L. bicolor* (G), *L. compacta* (H), *L. elegans* (I), *L. flohri* (J), *L. surinamensis* (K); scale bar: 0.5 mm.

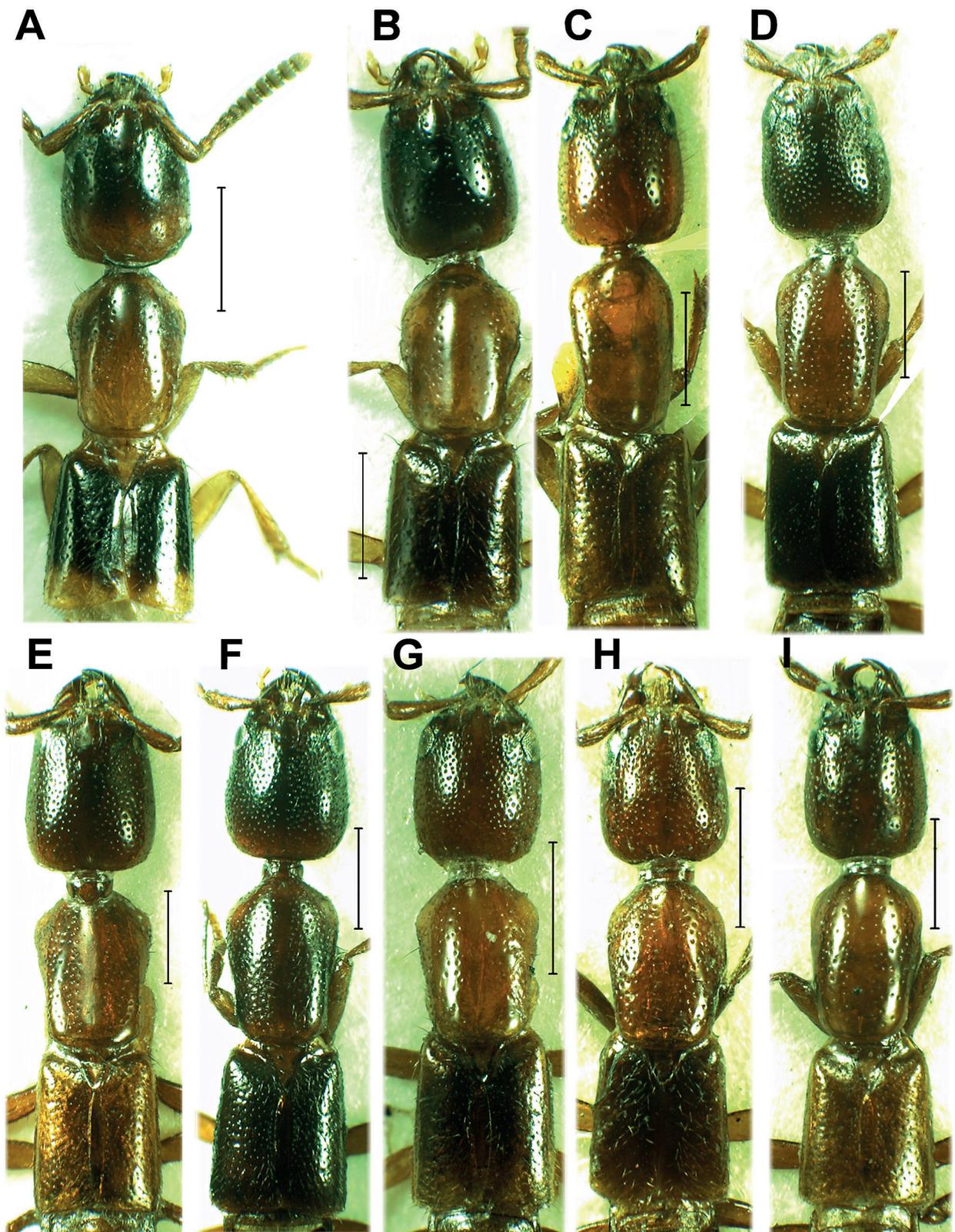


Fig. 46: Fore-body of: *Lithocharodes fuscipennis* (A), *L. hanagarthi* (B), *L. armata* (C), *L. collaris* (D), *L. germana* (E), *L. nigripennis* (F), *L. puncticeps* (G), *L. rufula* (H), *L. simillima* (I); scale bare: 0.5 mm.

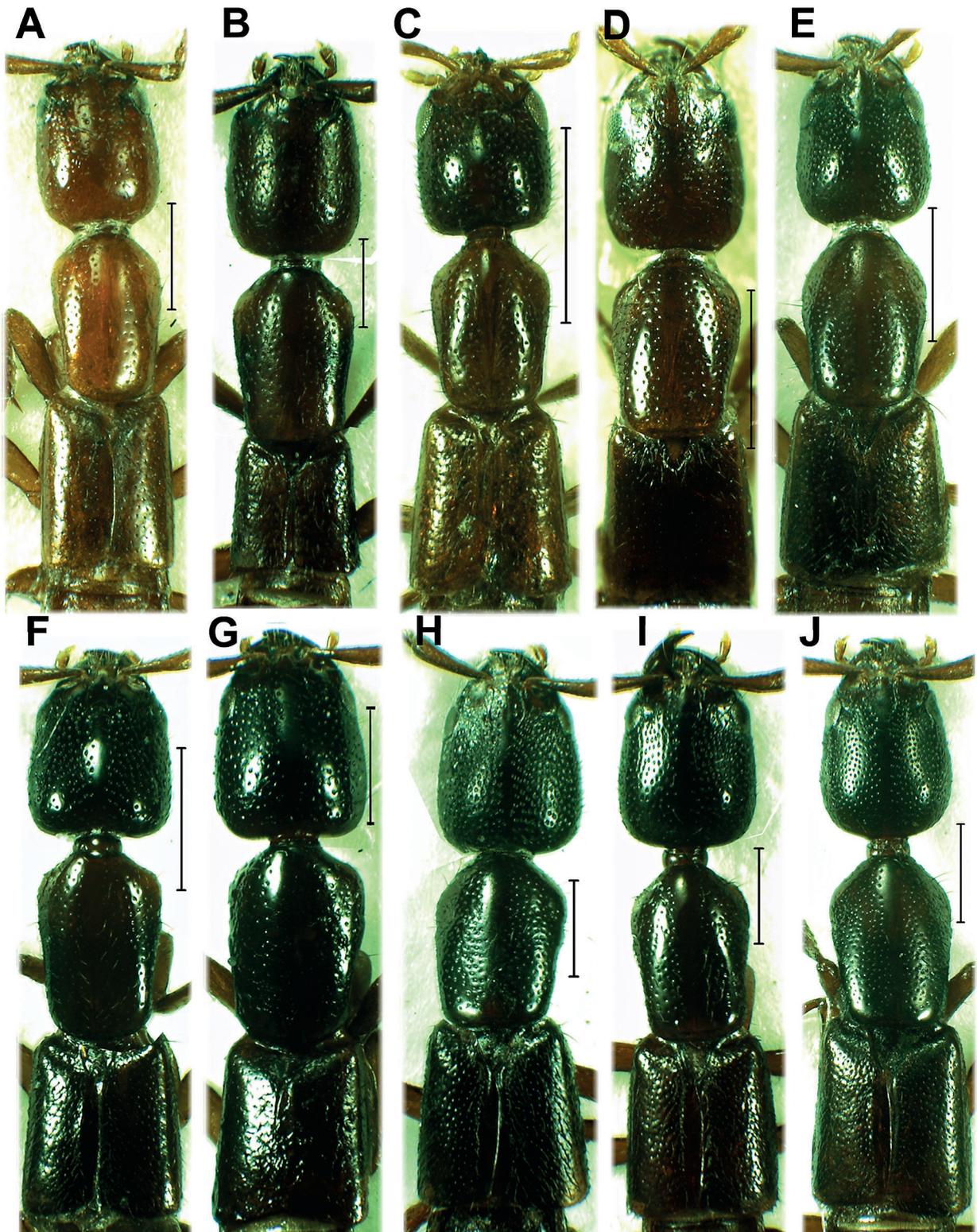


Fig. 47: Fore-body of: *Lithocharodes spinigera* (A), *L. aculeata* (B), *L. verhaagi* (C), *L. fuscula* (D), *L. silvicola* (E), *L. brooksi* (F), *L. obscura* (G), *L. triangula* (H), *L. ashei* (I), *L. elongata* (J); scale bare: 0.5 mm.

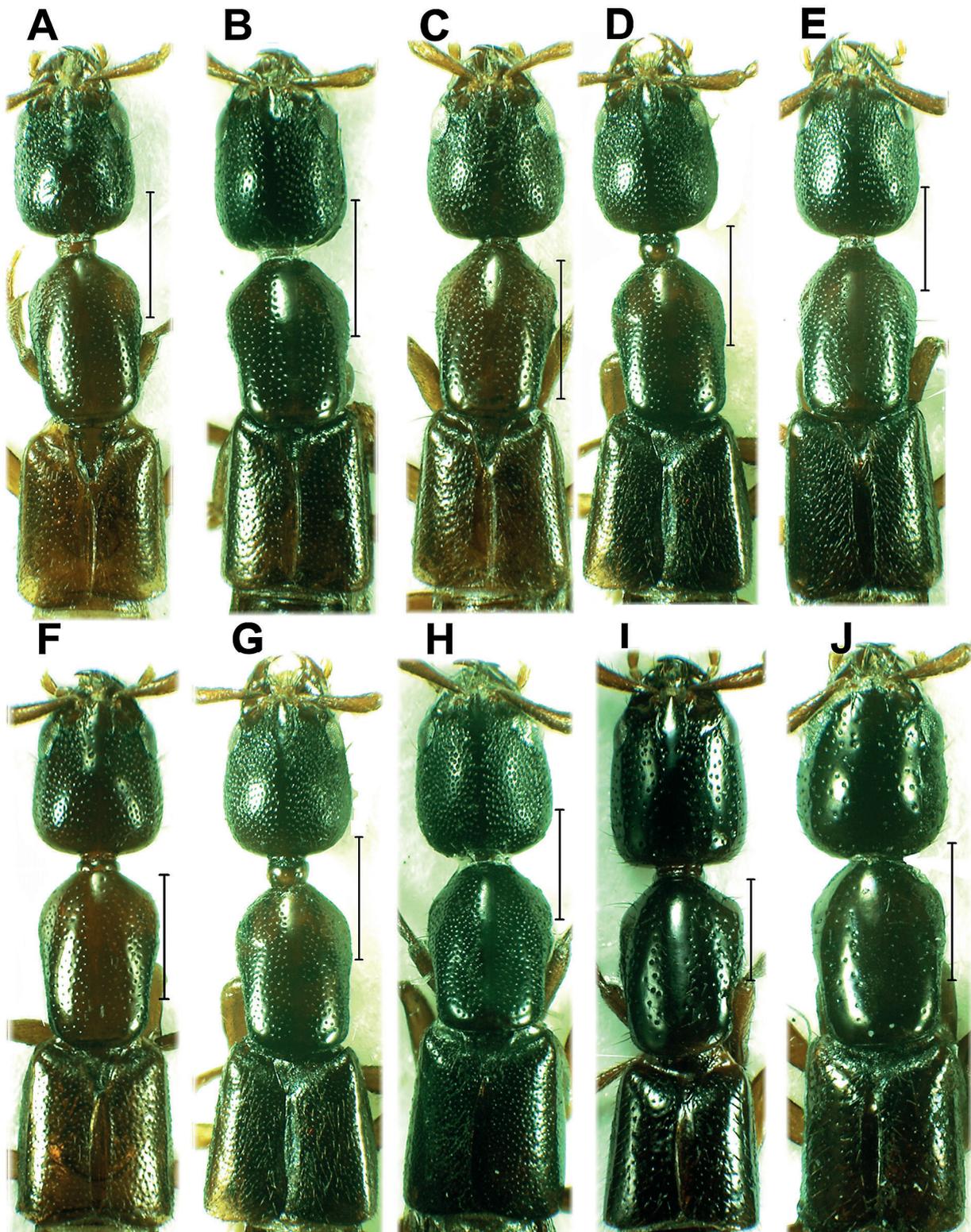


Fig. 48: Fore-body of: *Lithocharodes lescheni* (A), *L. pampana* (B), *L. peruana* (C), *L. boliviana* (D), *L. nigrita* (E), *L. ecuadoriensis* (F), *L. boliviana* (G), *L. katharinae* (H), *L. karinae* (I), *L. nigerrima* (J); scale bare: 0.5 mm.

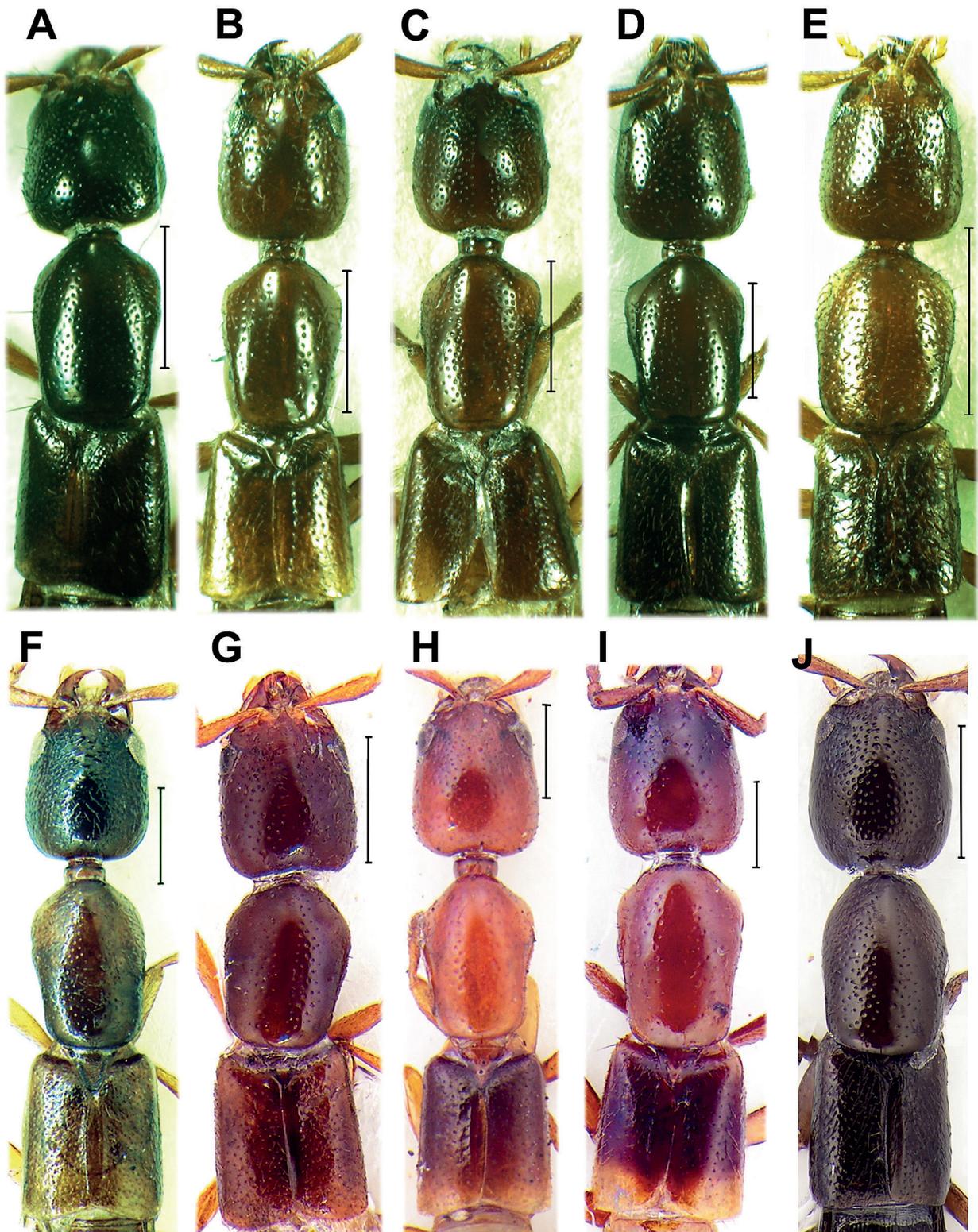


Fig. 49: Fore-body of: *Lithocharodes denticulata* (A), *L. fusciventris* (B), *L. bicornis* (C), *L. sordida* (D), *L. floridanus* (E), *L. dubiosa* (F), *L. trinitatis* (G), *L. bierigi* (H), *L. clavicornis* (I), *L. compacta* (J); scale bare: 0.5 mm.

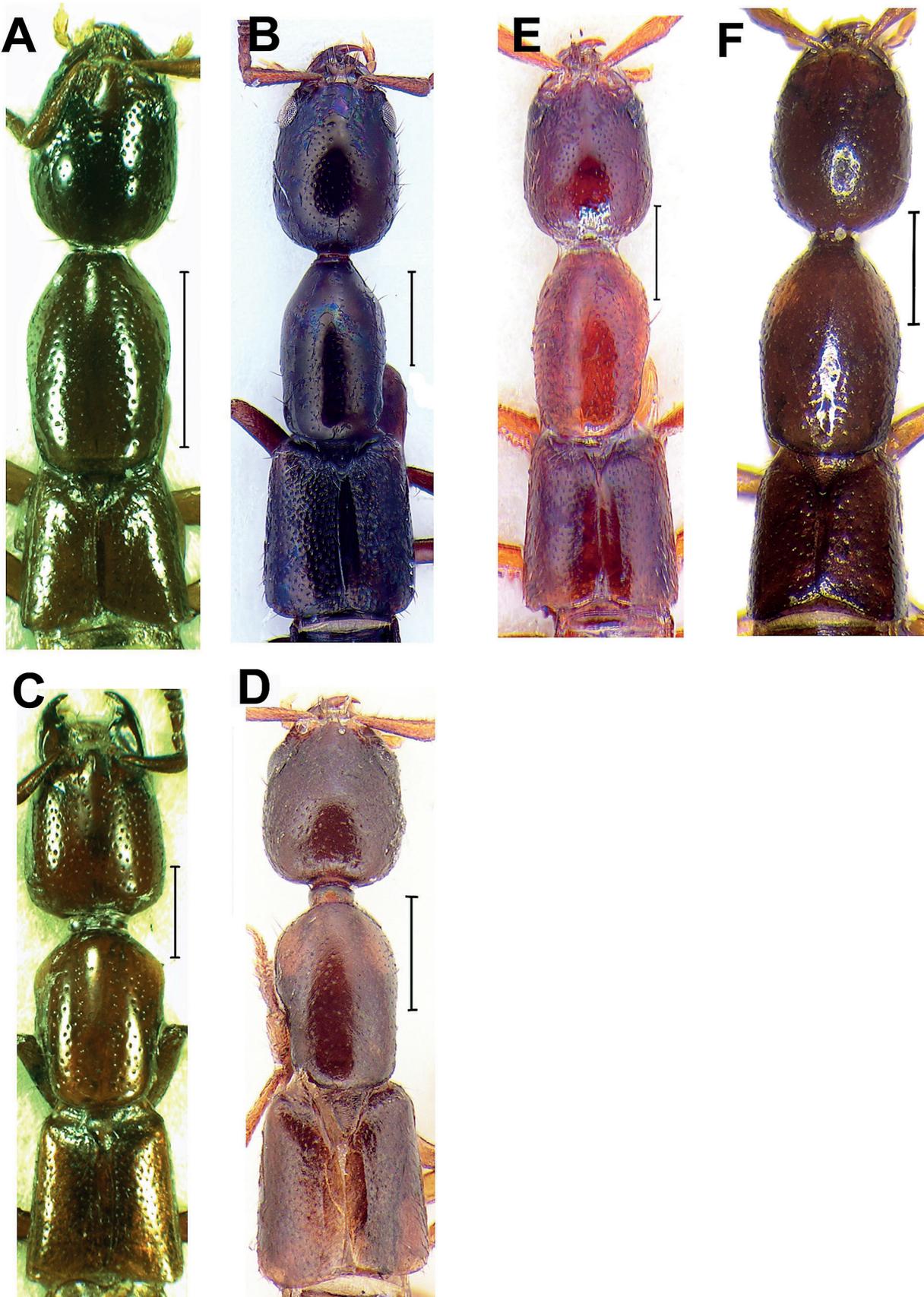


Fig. 50: Fore-body of: *Lithocharodes curtipennis* (A), *L. elegans* (B), *L. flohri* (C), *L. surinamensis* (D); *L. collaris* (E); *L. somoleptoides* (F); scale bare: 0.5 mm.

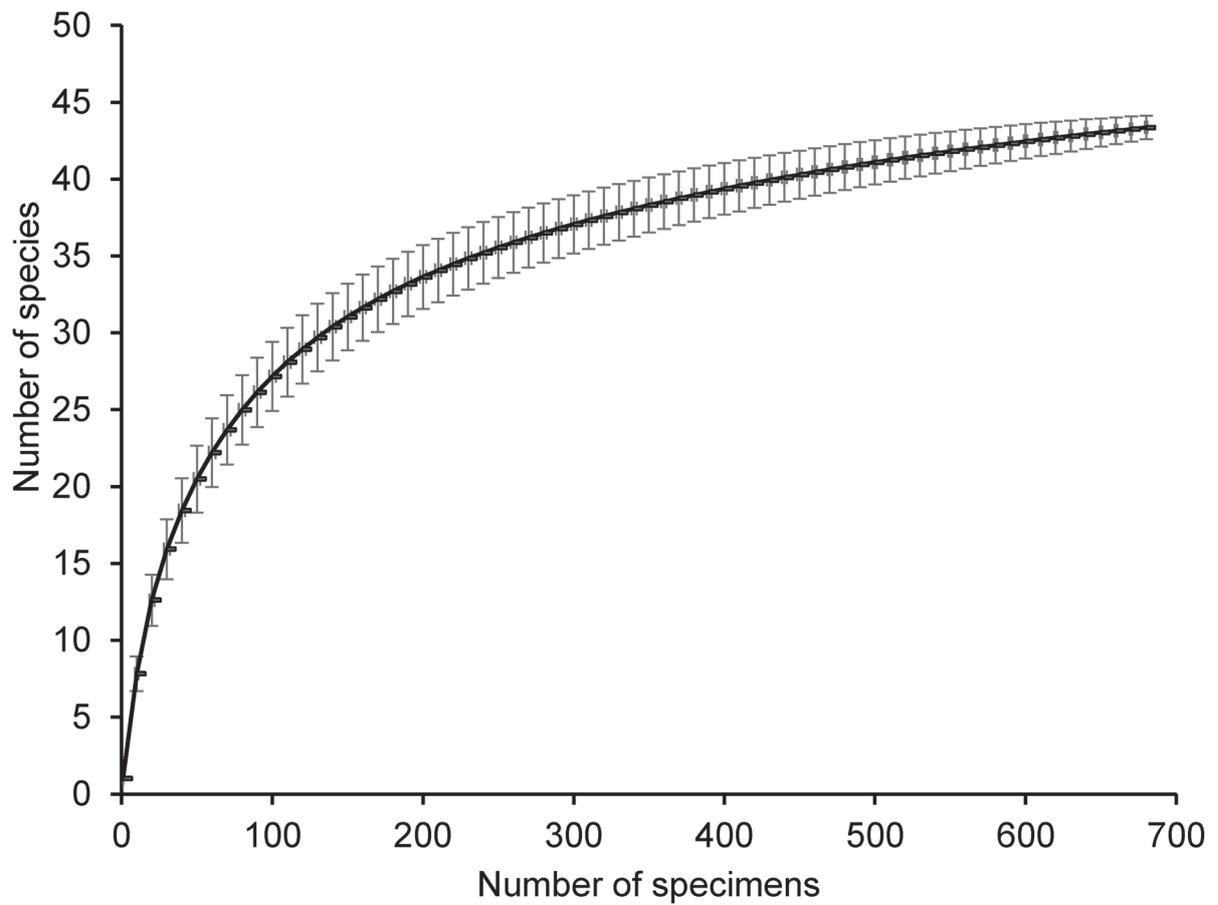


Fig. 51: Result of the rarefaction analysis with the 671 specimens studied.

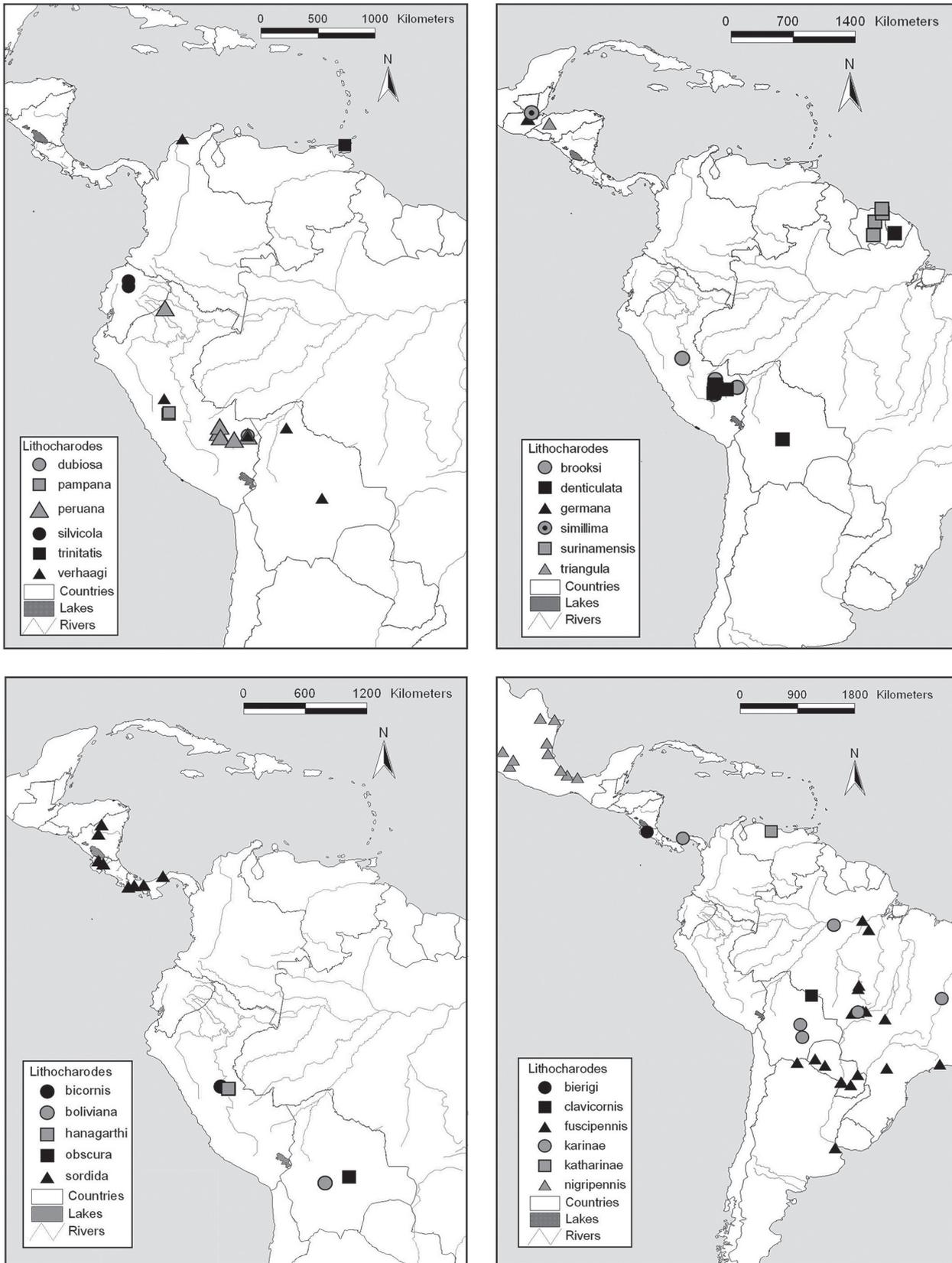


Fig. 52: Distribution of several species-groups of the genus *Lithocharodes*.

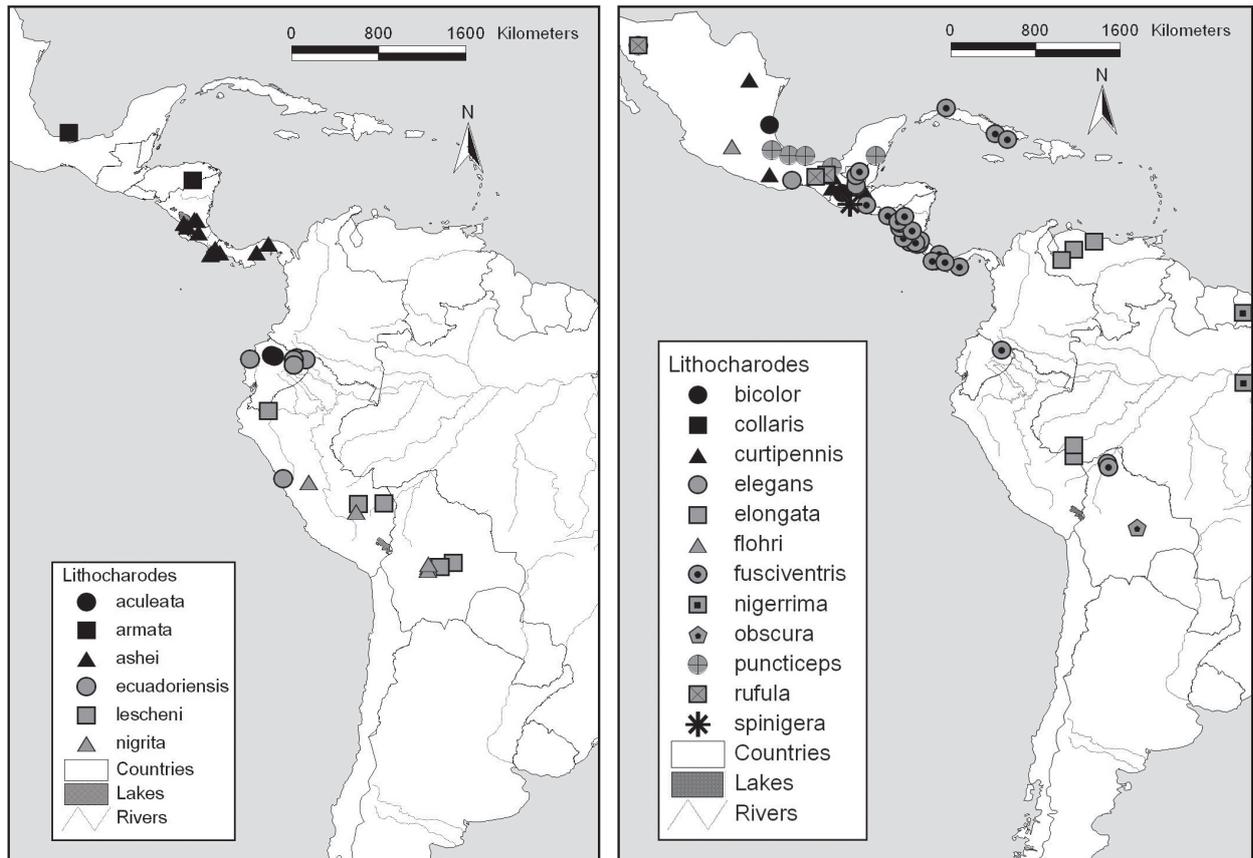


Fig. 53: Distribution of several species-groups of the genus *Lithocharodes*.