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A review of the small carrion beetle genus *Dissochaetus* Reitter (Coleoptera: Leiodidae: Cholevinae) of Central America

Sinopsis de las especies de pequeños coleópteros carroñeros del género *Dissochaetus* Reitter (Coleoptera: Leiodidae: Cholevinae) de Centroamérica

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ABSTRACT

Descriptions or diagnoses, a key to species, new records, and distribution maps are presented for 28 species of *Dissochaetus* Reitter, 1884 from the countries of Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama). An additional previously recorded species (*D. monilis* (Murray)) was not recognized. Eight new species are described: *D. ancyclostylus* Peck and Cook n. sp. of Panama and Costa Rica; *D. barrahonda* Peck and Cook n. sp. of Costa Rica; *D. carinatus* Peck and Cook n. sp. of Panama, Honduras, Nicaragua, Costa Rica and Panama; *D. cerroverde* Peck and Cook n. sp. of El Salvador; *D. chelatus* Peck and Cook n. sp. of Honduras, Costa Rica and Mexico; *D. dendrodes* Peck and Cook n. sp. of Guatemala; *D. multisetus* Peck and Cook of El Salvador and Guatemala; and *D. platyformis* Peck and Cook n. sp. of Panama and Costa Rica. New records are given for *Dissochaetus ovalis* (Kirsch) in Panama; *D. hetschkoi* Reitter in Belize, Guatemala, Honduras, Nicaragua, Costa Rica and Panama; *D. fimbriatus* (Matthews) in Costa Rica and Panama; *D. obscurus* Portevin in Guatemala, Honduras, Nicaragua and Costa Rica; *D. latitarsis* Jeannel in Costa Rica; *D. mexicanus* Jeannel in Guatemala, Honduras and Nicaragua; *D. angustilis* Salgado-Costas in Costa Rica and Panama; *D. confusus* Salgado-Costas in Costa Rica and Panama; *D. costaricensis* Salgado-Costas in Guatemala, Honduras, Nicaragua and Costa Rica; *D. forticornis* Salgado-Costas in Guatemala, Honduras, Costa Rica and Panama; *D. solisi* Salgado-Costas in Costa Rica; *D. unidentatus* Salgado-Costas in Costa Rica; *D. chiapensis* Peck and Cook in Guatemala, Costa Rica and Panama; *D. claviformis* Peck and Cook in Guatemala, El Salvador and Honduras; *D. lobatus* Peck and Cook in El Salvador and Honduras; *D. newtoni* Peck and Cook in Belize, Guatemala, Honduras, Costa Rica and Panama; and *D. reniformis* Peck and Cook in Honduras. All the species are carrion and dung scavengers in semi-arid to wet forests, from near sea-level to 2600 m in elevation, and some are known as troglophilic scavengers on bat guano in caves or in burrows of *Orthogeomys* Merriam (Geomyidae) rodents, and debris piles of *Eciton* Latreille Army ant bivouacs.

Key words: Leiodidae, Cholevinae, Anemadini, *Dissochaetus*, Central America, carrion, dung, forest litter, caves.

RESUMEN

Se presentan descripciones o diagnosis, una clave para las especies, nuevos registros y mapas de distribución para 28 especies de *Dissochaetus* Reitter, 1884 conocidas de los países de Centroamérica (Belice, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua y Panamá). Una especie adicional previamente registrada (*D. monilis* (Murray)) no fue reconocida. Se describen ocho nuevas especies: *D. ancyclostylus* Peck y Cook n. sp. en Panamá y Costa Rica; *D. barrahonda* Peck y Cook n. sp. en Costa Rica; *D. carinata* Peck y Cook n. sp. en Panamá, Honduras, Nicaragua, Costa Rica y Panamá; *D. cerroverde* Peck y Cook n. sp. en El Salvador; *D. chelatus* Peck y Cook n. sp. en Honduras, Costa Rica y México; *D. dendrodes* Peck y Cook n. sp. en Guatemala; *D. multisetus* Peck y Cook en El Salvador y Guatemala; y *D. platyformis* Peck y Cook n. sp. en Panamá y Costa Rica. Se dan nuevos registros para *D. ovalis* (Kirsch) en Panamá; *D. hetschkoi* Reitter en Belice, Guatemala, Honduras, Nicaragua, Costa Rica y Panamá; *D. fimbriatus* (Matthews) en Costa Rica y Panamá; *D. obscurus* Portevin en Guatemala, Honduras, Nicaragua y Costa Rica; *D. latitarsis* Jeannel en Costa Rica; *D. mexicanus* Jeannel en Guatemala, Honduras y Nicaragua; *D. angustilis* Salgado-Costas en Costa Rica y Panamá; *D. confusus* Salgado-Costas en Costa Rica y Panamá; *D. costaricensis* Salgado-Costas en Guatemala, Honduras, Nicaragua y Costa Rica; *D. forticornis* Salgado-Costas en Guatemala, Honduras, Costa Rica y Panamá; *D. solisi* Salgado-Costas en Costa Rica; *D. unidentatus* Salgado-Costas en Costa Rica, *D. chiapensis* Peck y Cook en Guatemala, Costa Rica y Panamá; *D. claviformis* Peck y Cook en Guatemala, El Salvador y Honduras; *D. lobatus* Peck y Cook en El Salvador y Honduras; *D. newtoni* Peck y Cook en Belice, Guatemala, Honduras, Costa Rica y Panamá; y *D. reniformis* Peck y Cook en Honduras. Todas las especies son carroñeras y coprófagas, en bosques semiáridos a húmedos, desde el nivel del mar hasta cerca de 2600 m de altitud; algunas son conocidos como carroñeras troglófilas en guano de murciélago en cuevas o en madrigueras de roedores *Orthogeomys* Merriam (Geomyidae), y pilas de escombros de *Eciton* Latreille bivouacs de la

hormiga del ejército.

Palabras clave: Leiodidae, Cholevinae, Anemadini, *Dissochaetus*, Centroamérica, carroña, estiércol, restos forestales, cuevas.

Dissochaetus Reitter 1884 (Coleoptera: Leiodidae; Cholevinae; Anemadini; Eunemadina) is a genus of mostly Neotropical carrion scavengers. Besides *Dissochaetus*, the subtribe has another 10 genera in all restricted to southern South America (Chile and Argentina), and another 12 genera distributed from Indonesia to Australia and New Zealand. Three species of *Dissochaetus* are reported from America north of Mexico (Peck 1999). From Mexico southward an additional 27 valid species were named as of 1998 (Peck et al. 1998). An additional 20 species were described, mostly by J. M. Salgado-Costas (1991, 1999, 2001, 2005, 2007, 2010a, 2010b, 2011, 2013, 2014a, 2014b), mostly from South America but with some species also from Central America and the West Indies (Peck and Cook 2014). Peck and Newton (2001) presented a summary of the Leiodidae of Costa Rica. Lastly, Mexico was recently shown to have 18 species (Peck and Cook 2016). This brings the total to 69 valid described species. This paper describes an additional eight new species from Central America.

All species seem to be scavengers at carrion and dung, feeding on the micro-organisms of decay, in semi-arid to wet forested habitats from tropical lowlands to somewhat above montane treeline. Specimens can be easily caught in carrion and dung baited pitfall traps, and the largest numbers of individuals are caught in forests at middle and upper elevations. The present study shows that the species show little affinity for particular forest types. Members of the genus are the most common of all small carrion feeding beetles caught at carrion in the Neotropics. The next most frequent habitat for the genus is in caves, on or near guano of insectivorous, frugivorous, haematophagous, and carnivorous bats, but few such habitats have been sampled in Central America. A few specimens have been collected in *Eciton* Latreille army ant (Formicidae) bivouac debris piles. The purpose of this paper is to summarize new knowledge of the 28 species of these beetles now known in the countries of Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) as a companion paper to the study of the *Dissochaetus* fauna of Mexico (Peck and Cook 2016) and part of a series of papers on the systematics of New World Leiodidae.

The beetles are typical leiodids, with antennal segment 8 being smaller than segments 7 and 9. The well-developed occipital carina along the dorsal hind margin of the head places them in the Cholevinae. The transversely striolate elytra, contiguous mesocoxae, well developed and tubular male genital segment, and hind margin of the hind tibiae with a dorsal and ventral inner spur and four shorter outer spines place them in the tribe Anemadini. They are separated from other members of the tribe by the serrate margins of the inner apical metatibial spurs, which are usually more than half the length of the first metatarsomere. The known larvae have a dorsal-medial lightly coloured spot on the head and paired thoracic and abdominal (glandular?) structures which may be an autapomorphy for the genus (Gnaspini 1993).

The 10 species previously reported from Central America have been rarely mentioned since their description. They are: *D. spinipes* (Murray, 1856) of Bolivia, Costa Rica, Ecuador, Mexico and Venezuela; *D. hetschkoi* (Reitter, 1884) of Argentina, Belize, Brazil, Costa Rica, Ecuador, Mexico, Panama and Venezuela; *D. fimbriatus* (Matthews, 1888) of Costa Rica; *D. semipiceus* (Matthews, 1888) of Guatemala; *D. obscurus* Portevin, 1903 of Costa Rica, Mexico and Peru; *D. costaricensis* Salgado-Costas, 2010b of Mexico and Panama; *D. forticornis* Salgado-Costas, 2010b of Costa Rica; *D. aequalis* Salgado-Costas, 2010b of Costa Rica; *D. confusus* Salgado-Costas, 2010b of Costa Rica and Ecuador; and *D. unidentatus* Salgado-Costas, 2011c of Costa Rica.

We have not included *D. spinipes* (Murray) in this study because after examining the holotype (genitalia missing) and the descriptions and figures of Jeannel, 1936 and Salgado-Costas, 2010a and 2010b, we do not think that the Mexican and Central America specimens are of this species.

MATERIAL AND METHODS

Over 1200 specimens were examined from the following collections or collectors:

CMNC Canadian Museum of Nature collection, Research and Collections Division, Ottawa, ON K1P 6P4, Canada (R. S. Anderson and F. Génier).

CNCI Canadian National Collection of Insects, Agriculture Canada, Ottawa, Ontario, Canada (A. Smetana, A. Davies)

FMNH Field Museum of Natural History, Chicago, Illinois, U. S. A. (A. F. Newton)

INBio Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica (Angel Solis)

MNHN Muséum National d'Histoire Naturelle, Paris, France (A. Taghavian and Th. Deuve)

SBPC Stewart B. Peck Collection, Ottawa, Ontario, Canada (to be placed in CMNC)

Supplementary identified specimens of common species are placed in FMNH, CNCI, Museum of Comparative Zoology (MCZC, Harvard University, Cambridge, MA), and Florida State Collection of Arthropods (FSCA, Gainesville, FL). The INBio collection contains many additional specimens that circumstances did not allow us to study.

Types of only some previously described species were available for study. We believe most were adequately described or illustrated for accurate identification. We did not find specimens that could be identified as *D. monilis* (Murray), *D. aequalis* Salgado-Costas and *D. semipiceu*s (Matthews). All of these were previously reported from Central America. However, we have been able to include the first two of these in the keys for identification and taxonomic listing of species. Our diagnoses for males are based on our direct study of specimens unless otherwise indicated.

For holotype specimens we report label data as they appear on the specimen labels, including collectors' field

codes (for possible reference to their field notes). We have quoted it as on the labels to aid in recognition of specimens seen by us. Where we believe there are errors on the label we follow that with the correction in brackets […]. We have not converted miles into kilometres, or elevation given in feet to meters, so as to preserve the original data on labels. Country names are given in capital letters and in bold face type. Department, Province, and State names within a country are given in non-bold capital letters. Distribution maps show localities for both new records and previously reported literature records. New records are given for countries by listing them in a general northwest to southeast geographic sequence.

To confirm identification to species it is necessary to examine the aedeagus and genital segment of male specimens. Females are difficult to place to species, unless collected with associated males. Many samples contain more than one species in the genus so simple association with males may be unreliable. Male specimens were dissected after being relaxed and removed from points or a card. Relaxing was accomplished by immersion for one day in a commercial household ammonia-based window cleaning solution. The specimen was then dissected in alcohol. The aedeagus was examined, dehydrated in alcohol, and placed in Euparal mounting medium on a small acetate-plastic micro slide. External characters were examined with a stereomicroscope from 10X to 200X magnification. Structures for illustration were photographed with a digital camera mounted on a stereomicroscope. Details were observed with a compound microscope and then added to outline illustrations made from the digital photographs. Illustrations of the aedeagus include features of the armature of the internal sac.

We have used the criteria of priority and alphabetical order to arrange the taxa in this paper. It is not possible at this time to attempt a phylogenetic understanding of the relationships for all the species in the genus considered here due to the lack of a comprehensive study of the species from outside the region under study.

Jeannel (1936) and Salgado-Costas (2010b) have proposed systems of species groups for this large genus. We have not been able to satisfactorily place our species into these groups, so do not use them at this time.

The vast majority of the specimens were collected during intensive sampling programs by the first author in the years 1969 to 2002 as follows: Belize (formerly British Honduras): 1-20 August, 1972. Costa Rica: 1 July-30 August, 1966; 2-30 June, 1997; 18-29 June, 2001. El Salvador: 29 April-15 May, 1971 (see Howden and Peck 1972 for description of field sites). Guatemala: 18-31 August, 1969; 20-28 August, 1972. Honduras: 13 August-4 September, 1994; 7-18 May, 2002. Nicaragua: 18-31 May, 2002. Panama: 16 May-14 June, 1977.

Specimens were mostly caught at pitfall traps baited with carrion (usually rotting chicken or squid) or dung (usually human dung).

RESULTS

SYSTEMATICS

Dissochaetus Reitter

Dissochaetus Reitter, 1885 [1884]: 39. Type species: *Dissochaetus hetschkoi* Reitter, 1885 [1884]. Jeannel 1922: 41; 1936: 142; Hatch 1928: 163. *Dissochaetus* Portevin, 1902: 513 (as new, for "*Dissochaetus* Reitter *in litt.*"); 1903: 156 (as new). Type species: *Catops spinipes* Murray, 1856 (monotypy). Note: Portevin (1907: 67) recognized Reitter's generic authorship. For descriptive diagnosis see Peck and Cook (2016). Distribution. Nearctic, Neotropical.

Bionomics. Carrion and dung scavengers in forests and caves.

Key to males of *Dissochaetus* species of Central America

Note: *D. semipiceus* (Matthews) and *D. spinipes* (Murray) are not included in this key.

1. Smaller species, total length usually less than 2.5 mm; parameres extending well beyond apex of median lobe of aedeagus, inwardly curved or angled apically (Fig. 5, 10, 18, 27, 34, 37, 45) 2
-- Larger species, total length usually greater than 2.5 mm; parameres shorter, not inwardly curved or angled apically . 8
2. Apices of parameres with broad flange on inner margins (Fig. 10, 34, 37) 3
-- Apices of parameres with small dentiform structure on inner margins (Fig. 5, 18, 27, 45) 5
3. Ventral lobes of pleurites of genital segment broad, triangular in shape (Fig. 33) ..... *D. newtoni* Peck and Cook
-- Ventral lobes of pleurites of genital segment narrow (Fig. 9, 38) 4
4. Apical flange of parameres obtusely angled at base (Fig. 37); median lobe of aedeagus lacking lateral setae ..... *D. ancylostylus* Peck and Cook, n.sp.
-- Apical flange of parameres more narrowly angled at base (Fig. 10); median lobe of aedeagus with 2 or more lateral setae ..... *D. obscurus* Portevin
5. Apex of median lobe of aedeagus prolonged, narrow; dentiform process of paramere apices simple, not clawlike (Fig. 5, 18, 27) 6
-- Apex of median lobe of aedeagus shorter, broader; dentiform process of paramere apices strong, clawlike (Fig. 45) ..... *D. chelatus* Peck and Cook, n.sp.
6. Inner margins of ventral lobes of pleurites of genital segment with strong, inwardly directed setae (Fig. 17) ... . *D. confusus* Salgado-Costas
-- Inner margins of ventral lobes of pleurites of genital segment lacking setae 7
7. Apex of median lobe of aedeagus elongate, needlelike, bearing one pair of lateral setae (Fig. 5) . *D. hetschkoi* Reitter
-- Apex of median lobe of aedeagus shorter, not needlelike, lacking lateral setae (Fig. 27) .. *D. chiapensis* Peck and Cook
8. Larger species, total length usually greater than 3.5 mm . 9
-- Smaller species total length usually less than 3.5 mm .. 11
9. Parameres narrower, extending well beyond apex of median lobe of aedeagus (Fig. 47); inverted internal sac of aedeagus with unique tree-shaped structure (Fig. 47); genital segment long and narrow (Fig. 48) .....

..... *D. dendrodes* Peck and Cook, n.sp.
-- Parameres broader, extending to or slightly beyond apex of median lobe of aedeagus (Fig. 8, 42); inverted internal sac otherwise; genital segment broader (Fig. 7, 41) 10
10. Posterior pronotal angles evenly rounded; parameres not extending beyond apex of median lobe of aedeagus (Fig. 8); apex of median lobe smooth dorsally, lacking carinae ..... *D. fimbriatus* (Matthews)
-- Posterior pronotal angles obtuse; parameres extending slightly beyond apex of median lobe of aedeagus (Fig. 42); narrow apical third of median lobe of aedeagus dorsally with pair of strong longitudinal carinae (Fig. 42) .... *D. carinatus* Peck and Cook, n.sp.
11. Median lobe of aedeagus about one-half length of parameres; basal lamina elongate (Fig. 24); sides of genital segment parallel (Fig. 23) .... *D. solisi* Salgado-Costas
-- Without the above combination of characters 12
12. Sides of median lobe of aedeagus parallel, not narrowed apically, apex broadly rounded (Fig. 51); parameres widened, clublike apically (Fig. 51) .... *D. platyformis* Peck and Cook, n.sp.
-- Without the above combination of characters ... 13
13. Parameres extending slightly beyond apex of median lobe, strongly constricted apically (Fig. 16) .... *D. angustilis* Salgado-Costas
-- Parameres not strongly constricted apically ... 14
14. Median lobe of aedeagus notched at apex (see Salgado-Costas, 2010b, Fig. 19) ..... *D. aequalis* Salgado-Costas
-- Median lobe of aedeagus not notched at apex ... 15
15. Parameres not extending beyond apex of median lobe of aedeagus (Figs. 2, 49) 16
-- Parameres extending beyond apex of median lobe of aedeagus 18
16. Antennomeres 7, 9 and 10 transversely asymmetrical; apex of median lobe of aedeagus drawn out, narrow, without lateral setae (see Salgado-Costas, 2014, Fig. 19–21) ..... *D. monilis* (Murray)
-- Antennomeres 7, 9 and 10 transversely symmetrical; median lobe of aedeagus with lateral setae (Fig. 2, 49) ... 17
17. Median lobe of aedeagus broad, with acute apex bearing one pair of lateral setae (Fig. 2) ..... *D. ovalis* (Kirsch)
-- Median lobe of aedeagus evenly narrowing, bearing 3 pairs of lateral setae (Fig. 49) . *D. multisetus* Peck and Cook, n.sp.
18. Median lobe of aedeagus (Fig. 11) broad, gradually narrowing in apical two-thirds, widening slightly before narrow, dorsoventrally sinuate apex; inverted internal sac with two pairs of elongate rows of scalelike spines .... *D. latitarsis* Jeannel
-- Aedeagus not as above 19
19. Inverted internal sac of aedeagus with basal pair of dark sclerites (Fig. 3, 26, 29, 32, 35, 40) 20
-- Inverted internal sac of aedeagus lacking basal pair of dark sclerites 25
20. Median lobe of aedeagus short, with distinct apical lobe (Fig. 32); basal pair of dark sclerites of inverted internal sac widened apically (Fig. 32) .... *D. lobatus* Peck and Cook
-- Aedeagus not as above 21
21. Inverted internal sac of aedeagus with basal pair of dark sclerites longitudinal in shape, and with a second, paler pair of longitudinal sclerites (Fig. 13, 26, 29, 40) 22
-- Inverted internal sac of aedeagus with basal pair of dark sclerites small, reniform (Fig. 35) .... *D. reniformis* Peck and Cook
22. Parameres broader (Fig. 13, 29); median lobe of aedeagus with one pair of lateral setae 23
-- Parameres narrower (Fig. 26, 40); median lobe of aedeagus lacking lateral setae 24
23. Antennomeres 7, 9 and 10 transversely asymmetrical; median lobe of aedeagus shorter (Fig. 29); apical pair of sclerites of inverted internal sac with outwardly angled apices (Fig. 29); genital segment shorter with rounded sides (Fig. 30) ... *D. claviformis* Peck and Cook
-- Antennomeres 7, 9 and 10 transversely symmetrical; median lobe of aedeagus longer (Fig. 13); apical pair of sclerites of inverted internal sac less well developed (Fig. 13); genital segment longer with concave sides (Fig. 14) .. .. *D. mexicanus* Jeannel
24. Antennomeres 7, 9 and 10 transversely asymmetrical; parameres elongate, narrowing apically (Fig. 26); inverted internal sac with median dentiform structure apically (Fig. 26) ..... *D. unidentatus* Salgado-Costas
-- Antennomeres 7, 9 and 10 transversely symmetrical; parameres shorter, wider, with thin lamina apically and on inner margins (Fig. 40); inverted internal sac lacking median dentiform structure ... *D. barrahonda* Peck and Cook, n.sp.
25. Median lobe of aedeagus elongate, narrower, bearing two pairs of lateral setae (Fig. 21, 43) 26
-- Median lobe of aedeagus wider, bearing one pair of lateral setae (Fig. 19) ..... *D. costaricensis* Salgado-Costas
26. Ventral lobes of pleurites of genital segment with strong, inwardly directed setae on inner margins (Fig. 44) ..... *D. cerroverde* Peck and Cook, n.sp.
-- Ventral lobes of pleurites of genital segment lacking setae on inner margins (Fig. 22) . *D. forticornis* Salgado-Costas

Dissochaetus monilis (Murray, 1856)

Fig. 53

Catops monilis Murray, 1856: 395.

Dissochaetus monilis (Murray), Reitter, 1885 [1884]: 40; Portevin, 1902: 513; Jeannel, 1936: 153; Szymczakowski, 1961: 154; 1969, 410; Peck *el al.,* 1998: 57; Salgado-Costas, 2001: 253; 2010a: 296; 2010b: 150; 2014: 96. Type, female, in MNHN, not seen. Type locality: Caracas, Venezuela.

Diagnosis of male (after Salgado-Costas, 2001, 2010a, 2014). Total length 2.8–3.5 mm; greatest width 1.4–1.5 mm. Antennal club (Salgado-Costas, 2014, Fig. 19) robust; antennomeres 7, 9 and 10 transversely asymmetrical. First protarsomere narrower than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Salgado-Costas, 2001, Fig. 9; 2014, Fig. 20, 21) broad at base, narrow in apical half; lacking lateral setae.

Internal sac with four sclerotized structures surrounded by small spines; weakly defined structure with fine filament inserted (possible flagellum). Parameres straight, broad, about as long as median lobe; each bearing two long apical setae. Genital segment (Salgado-Costas, 2001, Fig. 10) about as wide as long; apical margin of tergite broadly rounded, bearing setae; lateral lobes of pleurites with long lateral setae; ventral lobes of pleurites rounded, not prominent, with apical setae; sternite absent.

Salgado-Costas (2010b) places this species in the *ovalis* species group.

Material examined. We have seen no new specimens that could be assigned to this species.

Distribution. This species has been reported from Venezuela, Ecuador and Peru. It was reported from Costa Rica (Salgado-Costas, 2010b) on the basis of a single female specimen. The Ecuador record was later reported to be based on a misidentification (Salgado-Costas 2014a).

Dissochaetus ovalis (Kirsch, 1873)
Fig. 2–4, 53

Choleva ovalis Kirsch, 1873: 134.

Dissochaetus ovalis (Kirsch), Jeannel, 1936: 152; Szymczakowski, 1968: 19; Peck *el al.,* 1998: 57; Salgado-Costas, 2001: 253 (misidentification); 2010a: 297; 2014a 97. Type in SMTD (?), not seen. Type locality: Pozuzu (north from Cerro de Pasco), Junin, Peru.

Dissochaetus sanguinicollis Portevin, 1903: 160. Type in MNHN. Type locality: Marcapata, Peru. Jeannel, 1936: 152, synonymy.

Dissochaetus collaris Portevin, 1927: 52. Type in MNHN. Type locality: Yungas, Bolivia. Jeannel, 1936: 152, synonymy.

Dissochaetus dilutus Portevin, 1907: 70. Type in MNHN. Type locality: Bolivia. Jeannel, 1936: 152, synonymy.

Diagnosis of male. Total length 2.4–3.1 mm; greatest width 1.4–1.6 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere slightly narrower than protibial apex. Large metatibial spur clearly longer than first metatarsomere. Median lobe of aedeagus (Fig. 2) broad at base, narrowing to acute apex, curving downward, laterally compressed; bearing one pair of lateral setae. Ligula present (Fig. 3). Inverted internal sac with double row of spines anteriorly, pair of large patches of spines posterolaterally. Basal bulb with short flagellum. Parameres somewhat sinuate, reaching apex of median lobe, each bearing one pair of apical setae. Genital segment (Fig. 4) longer than wide; rather narrow tergite shallowly emarginate apically, bearing apical setae; lateral lobes of pleurites with somewhat twisted apices, each bearing pair of long setae laterally; ventral lobes of pleurites divided, with outer lobes truncate apically, with apical setae, and inner lobes rounded, each bearing a strong anteromedially directed spine; sternite absent.

Salgado-Costas (2010b) places this species in the *ovalis* species group.

Material examined. **PANAMA**: CHIRIQUI: La Fortuna Dam, 14.VI–16.VII.1982, B. Gill, wet forest, 1200 m, FIT (8, SBPC); same data except: 15–21.VI.1982 (1, SBPC); same data except: VI.1982, minicup (1, SBPC); DARIEN: Cana Biological Station, 500–550 m, 7º45'18"N, 77º41'6"W, 3.VI.1996, J. Ashe, R. Brooks, PAN1AB96 011, ex flight intercept trap (1, SBPC); same data except: Serrania de Pirre, 1250 m, 4–7.VI.1996, 106 (1, SBPC); same data except: 1380 m, 107 (4, SBPC); same data except: 7–9.VI.1996, 111 (2, SBPC); same data except: 1450 m, 112 (1, SBPC).

Distribution. This species has been previously reported from Ecuador, Peru, Bolivia, Paraguay and Argentina. It is reported here from Panama for the first time.

Bionomics. The species is reported here from tropical rain forest habitats, and from 500 to 1450 m elevation.

Dissochaetus hetschkoi Reitter, 1885
Fig. 5, 6, 54

Dissochaetus hetschkoi Reitter, 1885 [1884]: 39; Portevin, 1903: 161 (as new, "Reitt. in litt."); Jeannel, 1936: 153; Szymczakowski, 1961: 157; 1963: 680; 1969: 412; Peck, 1973: 104; 1977: 189; Gnaspini, 1991: 332; Peck *et al.*, 1998: 56; Salgado-Costas, 1991: 214; 1999: 37; 2010a: 294; 2010b: 150; 2011: 426; Peck and Cook, 2016: 82. Type in MNHN, not seen. Type locality: Blumenau, Santa Catarina State, Brazil.

Diagnosis of male. Total length 1.8–2.4 mm; greatest width 0.9–1.4 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere as wide as protibial apex. Large metatibial spur extending well beyond first metatarsomere. Median lobe of aedeagus (Fig. 5) elongate, broad; apex drawn out, narrow, with one pair of lateral setae. Inverted internal sac with paired, irregularly shaped sclerites; patches of small spines apically; flagellum short. Parameres elongate, narrow, inwardly curved apically; apices each with a small toothlike process. Genital segment (Fig. 6) slightly longer than wide; apex of tergite shallowly emarginate, with a few setae; lateral lobes of pleurites rounded apically, with apical setae; ventral lobes of pleurites narrow, inwardly curved, with apical setae; sternite present, short and broad bearing many setae apically.

Salgado-Costas (2010b) places this species in the *spinipes* species group.

Material examined. **BELIZE**: BELIZE: 39 mi W Belize City, Beaver Dam, swamp forest dung trap, 6–12. VIII.1972, S. Peck (10, SBPC); CAYO: Augustine, 1500', Rio Frio Cave B, 30.VII & 20.VIII.1972, S. Peck & J. Peck (7, SBPC); Augustine, 1–4.VIII.1972, forest dung trap, S. Peck (1, SBPC); Augustine, 20.VIII.1972, evergreen forest Ber. 247, 1500', S. Peck (1, SBPC); Augustine, 30.VII.1972, carrion, S. & J. Peck (7, SBPC); Augustine, nr. Rio Frio, 23.IV.1995, *Orthogeomys* burrow, P. Kovarik (1, SBPC); Belmopan, 20.VII–25.VIII.1972, trop. lowland seas. for., carrion trap, Ber., S. Peck (11, SBPC); 6 mi S Belmopan, 20.VII.1972, seasonal forest carrion Ber., S. Peck (9, SBPC); same data except: seasonal forest carrion (4, SBPC); same data except: seasonal forest dung (9, SBPC); Caves Branch nr St. Herman, 24.VII.1972, seasonal trop. forest, S. Peck (1, SBPC); same data except: 20.VII–25.VIII.1972, seasonal forest traps (9, SBPC);

ORANGE WALK: Rio Bravo Cons. Area, Second Logging Rd. transect, site #8, 10–16.IV.1996, carrion pitfall trap (1, SBPC); Rio Bravo Cons. Area, 15–19.IV.1996, P. Kovarik, J. Shuey, flight intercept traps (1, SBPC); Rio Bravo Cons. Area, nr. Milpa Archeol. site, 13–16.IX.1995, carrion pitfall, P. Kovarik (10, SBPC); same data except: 11–19.IV.1996 (2, SBPC); same data except: 6–13.IX.1995 (5, SBPC); STANN CREEK: 27 mi NW Stann Creek, 15.VIII.1972, for. litter Ber., S. Peck (1, SBPC). **GUATEMALA**: ALTA VERAPAZ: Lanquin, 28–30.VIII.1969, lowland forest carrion trap 591, S. & J. Peck (10, SBPC); IZABAL: 34 km W Puerto Barrios, outside Gruta El Silvino, car. tp., 20–22.VIII.1969, S. & J. Peck, lowland evergreen forest (6, SBPC); Las Escobas, I.1987, MT, J.P. Mauger; PETEN: Tikal, 24–26.VIII.1972, S. & J. Peck, lowland evergreen forest carrion tp. (1, SBPC). **HONDURAS**: FRANCISCO MORAZAN: El Zamorano, 750 m, 29.VIII–3.IX.94, gallery forest FIT I, S. & J. Peck, 94-66 (1, SBPC). **NICARAGUA**: GRANADA: Volcan Mombaco, bosque nuboso, 1115 m, malaise trap, 30.I.1998, J.M. Maes (1, SBPC); same data except: 2.III.1998 (1, SBPC); same data except: 15.II.1998 (4, SBPC); same data except: 1220 m (2, SBPC); RIO SAN JUAN: 8 km SE El Castillo, Refugio Bartola, 30 m, rainforest, N10º58.6', W84º20.4', 6 FITs, 25–31.V.02, S. Peck, 02-09 (5, SBPC). **COSTA RICA**: CARTAGO: Turrialba, Catie, Florencia Forest, 28.II.80, megatr. 2 days, 600 m, H. & A. Howden (1, SBPC); same data except: Catie ravine (1, SBPC); Turrialba, Catie, 600 m, H. & A. Howden (1, SBPC); GUANACASTE: Canas, Finca Pacifica, 14–17.VII.1966, gallery forest, carrion, S. Peck (2, SBPC); HEREDIA: Finca El Bijuco, 6 km W Puerto Viejo, 50 m, 10–16.IV.1983, T.S. Ray, fish trap (8, SBPC); same data except: 8.III–1.IV.83, hu. du. t. (8, SBPC); same data except: 1–6.VI.1983, meat trap (4, SBPC); same data except: 13–15.VI.1983, dead snake (2, SBPC); 10 km W Puerto Viejo, 170 m, 3.III.1991, FIT, H. & A. Howden (2, SBPC); same data except: 2–5.III.1991, dung traps (1, SBPC); La Selva, 17–19.II.1980, carrion, R.S. Anderson (11, SBPC); same data except: 23–28.II.1980, cup trps. (1, SBPC); Heredia, 29.VII.1966, *Phyllostoma* guano in old mine, S. Peck (1, SBPC); LIMON: Estrella Valley, Pandora, 20.II.84, carr., H.F. Howden (42, SBPC); same data except: dung & c. traps (5, SBPC); same data except: FIT (1, SBPC); same data except: 20.II.1989, carrion (3, SBPC); same data except: 19.II.1984, dung cup trap (1, SBPC); Rio Sardinas, 10 m, R.N.F.S. Barra del Colorado, 50 m, 1–12. II.1994, F.V. Araya, (2, SBPC); PUNTARENAS: Rincon de Osa, rainforest FITs, N8º41.141, W83º31.117, 22–26. VI.01, 50 m, S. & J. Peck, 01-13 (2, SBPC); same data except: 23–26.VI.01, 40 m, streamside FITs, 01-15 (2, SBPC); Osa Peninsula, 8–14.VIII.1966, rainforest carrion traps, 5 m, S. Peck (10, SBPC); same data except: 13–15. VIII.1966 (1, SBPC); same data except: 7–12.VIII.1966 (3, SBPC); Monteverde, 1520 m, FIT, 25.VI–2.VII.83, D.H. Lindeman (2, SBPC); Est. Quebrada Bonita, R.B. Carara, 50 m, I.1994, R.M. Guzman, L N 194500_469850 2572 (1, SBPC); SAN JOSE: San Jose, Nat'l Museum back court, 19.VII.1966, trap, S. Peck (2, SBPC). **PANAMA**: CHIRIQUI: Las Lagunas, 4.5 km WSW Hato del Volcan, 1360 m, 22–27.V.77, S. Peck, carrion, T11 (7, SBPC); same data except: 22.V.77, Ber. 373 u. carrion, S. & J. Peck (1, SBPC); Lagunas, 5 km SW Hato del Volcan, 1.VI.1977, 1360 m, S. Peck, for. car. tp. (7, SBPC); same data except: 6.VI.1977 (2, SBPC); same data except: 22.V–6.VI.1977 (2, SBPC); same data except: 22–27.V.1977 (1, SBPC); Hornito, Finca la Suiza, 1220 m, 29.V.2000, FIT, H. & A. Howden (1, SBPC); COCLE: El Valle, trail to Las Minas, 20.II.1959, 2400–2600', H.S. Dybas, dung (3, FMNH); COLON: 14 km N jct. Escobal & Pina Rds., 2–11.VI.1996, J. Ashe, R. Brooks, PAN1AB96 181B, ex flight intercept trap (3, SBPC); 270 m, 10 mi SE Colon, Santa Rita Ridge, 10–12.VI.77, S. Peck, carrion tps. (6, SBPC); PANAMA: Barro Colorado Isd., 09º11'N, 79º51'W, 6.VIII.1994, D. Banks, ex flight intercept trap (2, SBPC); Canal Zone, Barro Colorado Island, 15–26.II.1968, carrion trap, J.F. Lawrence 12, SBPC); same locality, 25.I.1959 *Eciton burchelli* bivouac debris, Ber. No. 149, H.S. Dybas (6, FMNH); same locality, 13.I.1959, H. Dybas (1, FMNH); same data except: woody debris, Ber. 60 (1, SBPC); Canal Zone, Madden Forest, 13.VI.1977, rainforest carrion tp., S. Peck (6, SBPC); same data except: 10–13.VI.1977 (2, SBPC); same data except: 23–26.VII.1966 (10, SBPC); El Llano-Carti Rd., VI.1982, 400 m, B. Gill, FIT (10, SBPC).

Distribution. This species is previously known from Mexico, Belize, Costa Rica, Panama, Ecuador, Venezuela, Brazil and Argentina. It is reported here from Guatemala, Honduras and Nicaragua for the first time.

Bionomics. The species is reported here from tropical deciduous and evergreen lowland forest, montane cloud forest habitats, from *Orthogeomys* Merriam (Geomyidae) rodent burrows, and *Phyllostoma* Gray bat guano, and from near sea level to 1520 m elevation.

Dissochaetus fimbriatus (Matthews, 1888)

Fig. 7, 8, 56

Choleva fimbriatus Matthews, 1888: 98.

Dissochaetus fimbriatus (Matthews), Portevin, 1902: 513; Jeannel, 1936: 152; Peck *et al.*, 1998: 56; Salgado-Costas, 2010b: 150. Type in BMNH, not seen. Type locality: Volcán Irazu, Costa Rica.

Diagnosis of male. Total length 3.4–4.6 mm; greatest width 1.8–2.6 mm. Antennomeres 7, 9 and 10 transversely asymmetrical. Posterior angles of pronotum evenly rounded. First protarsomere as wide as protibial apex. Dense golden setae on mesotibiae and mesotarsi. Large metatibial spur clearly longer than first metatarsomere. Median lobe of aedeagus (Fig. 8) narrowing in apical third to rounded, upturned apex; lacking lateral setae. Inverted internal sac basally with pair of dark, curved sclerites and pair of long, narrow sclerites; anteriorly, a long narrow structure widening apically. Parameres broad, barely reaching apex of median lobe, each bearing pair of subapical setae. Genital segment (Fig. 7) longer than wide; apical margin

of tergite broadly rounded, bearing apical setae; lateral lobes of pleurites with a single lateral seta; ventral lobes of pleurites rounded with setose apices; sternite absent.

Salgado-Costas (2010b) places this species in the *fimbriatus* species group.

Material examined. **COSTA RICA**: ALAJUELA: Poacito, Volcan Poas, VIII.1966, carrion, S. Peck (10, SBPC); CARTAGO: P.N. Tapanti, 1150 m, 9º45'41"N, 83º47'5"E, 17–20.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 192, ex flight intercept trap (1, SBPC); same data except 1480 m, 9º43'12"N, 83º46'36"E, 194 (1, SBPC); GUANACASTE: 6 km NE Sta Elena, 1640 m, Santa Elena Forest Reserve, FIT, N10º20.701, W84º47.899, 11–17. VI.01, S. & J. Peck, 01-12 (5, SBPC); HEREDIA: Cerro Chompipe, 2100 m, 10 km NNE Heredia, 12–27.VI.1997, S. 7 J. Peck, CR1P97 021, ex flight intercept trap (1, SBPC); PUNTARENAS-GUANACASTE border: Monte Verde, 1760 m, 10.V.1989, J. Ashe, R. Brooks, R. Leschen, ex flight intercept (2, SBPC); PUNTARENAS: Monteverde, 1520 m, 24–26.VII.1983, D.H. Lindeman, dung traps (1, SBPC); Monteverde Reser., 1700 m, cloud forest, 27.V.79, cup tr. 3 days, H. & A. Howden (2, SBPC); SAN JOSE: Cerro de Muerte, 6400', 30.VII–3.VIII.66, S. Peck, bait trap (1, SBPC); Cerro de la Muerte, km 106, 8200', carr., 25.II.1984, H.F. Howden (7, SBPC); PanAmerican Hwy. km 80.5, 7 km SSW Cabinas de Quetzal, 9º33'53"N, 83º48'5"W, 2150 m, 20–23.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 239, ex flight intercept trap (2, SBPC); San Juan, 14 km NE, Finca Zurqui, 10º2'57"N, 84º0'22"W, 1490 m, 4–6.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 064, ex flight intercept trap (4, SBPC); Est. Cuerici, 4.6 km E Villa Mills, 2600 m, 24–28.XI.1995, A. Picado, Carrona de Rata, L_S_389400_499600 #6427 (2, SBPC). **PANAMA**: CHIRIQUI: P. N. Amistad, Las Nubes, continental divide, 2490 m, 14–15.VI.1995, A.R. Gillogly, ex flight intercept trap (3, SBPC); 5.9 km NE Cerro Punta, 2100 m, 08º22'N, 82º24'W, Par. Nac. Volcan Baru, 14–16.VI.1995, J. Ashe, R. Brooks, #204, ex flight intercept trap (1, SBPC); 6.0 km NE Boquete, 1560 m, 8º48'0»N, 82º26'0»W, 14–19.VI.1996, J. Ashe, R. Brooks, PAN1AB96 180B (3, SBPC); 2 km E Cerro Punta, 2200 m, 1–4.VI.1977, forest carrion, S. Peck (19, SBPC); same data except: 8.VI.1977 (2, SBPC); same data except 1–8. VI.1977 (2, SBPC); same data except: 1.VI.1977, dung traps, Dh 21–23 (8, SBPC); 4.5 km ESE Cerro Punta, nr Paso de Respengo, 23–28.V.77, Dh 14, 15, 2600 m, S. & J. Peck (4, SBPC); 5 km ESE Cerro Punta, 2600 m, 23–28.V.77, S. Peck, montane forest dung traps (1, SBPC); 2 km E Cerro Pando, 1–8.VI.77, carrion traps, S. & J. Peck (1, SBPC).

Distribution. The species was previously reported from Costa Rica. It is reported here from Panama for the first time. Jeannel's Mexico record is a probable misidentification (Peck, 1977: 186).

Bionomics. The species is reported here from lowland tropical rainforest, montane cloud forest and above-treeline paramo habitats, and from 1150 to 2600 m elevation.

Dissochaetus semipiceus (Matthews, 1888)
Fig. 53

Choleva semipicea Matthews, 1888: 99.

Dissochaetus semipiceus (Matthews), Portevin, 1902: 513; Jeannel, 1936: 154; Peck *et al.*, 1998: 57. Type, female, BMNH, not seen. Type locality: San Geronimo, Baja Verapaz, Guatemala.

Dissochaetus magnicornis Portevin, 1907: 70. Type lost (Jeannel, 1936). Type locality: Guatemala. Jeannel, 1936: 153, synonymy.

Diagnosis of female (after Jeannel, 1936). Length 2.2 mm. Reddish brown, elytral apices slightly darker. Antennomere 6 very transverse, 7 symmetrical, nearly as long as wide. Pronotal punctation granulose, extremely fine and dense.

This species has been placed in the *spinipes* group by Jeannel (1936) and Salgado-Costas (2010b).

Material examined. We have seen no new specimens that could be assigned to this species.

Distribution. Guatemala.

Dissochaetus obscurus Portevin, 1903
Fig. 9, 10, 55

Dissochaetus obscurus Portevin, 1903: 162; Jeannel, 1936: 152; Peck *et al.*, 1998: 57; Salgado-Costas, 2010b: 151. Type in MNHN, seen, specimen in poor condition. Type locality: Marcapata, Quichua, Peru.

Diagnosis of male. Total length 2.1–2.4 mm; greatest width 1.1–1.4 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere narrower than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 10) elongate, broad, narrowing and slightly down-turned apically; with two or more pairs of lateral setae. Inverted internal sac with paired, uniquely shaped sclerites and two rows of spines. Parameres elongate, twisted before broad apices, each with row of closely spaced fine setae on inner margins of expanded apices. Genital segment (Fig. 9) slightly longer than wide; apex of tergite emarginate, with pair of long apical and short subapical setae; lateral lobes of pleurites rounded apically, with apical setae; ventral lobes of pleurites elongate, narrow, with apical setae; pleurites overlap slightly at midline; sternite absent.

Salgado-Costas (2010b) places this species in the *spinipes* species group.

Material examined. **GUATEMALA**: ALTA VERAPAZ: Senahu, 25–27.VIII.1969, 3600', mont. rainforest, carrion tps. 587–588, S. Peck (5, SBPC); **HONDURAS**: OLANCHO: 14 km N La Union, 1500 m, wet mont. for., FIT, 15.VIII.94, S. & J. Peck, 94-37 (1, SBPC); **NICARAGUA**: MATAGALPA: 6 km N Matagalpa, Selva Negra, 18–22.V.02, N12º59 9', W85º54 6', 1250 m, forest, 6 FITs, S. Peck, 02-06 (1, SBPC); same data except: carrion, 02-07 (1, SBPC). **COSTA RICA**: ALAJUELA: Penas Blancas River Valley, 500–1000 m,

B. Lyons, 5.IV–6.V.85 (23, SBPC); CARTAGO: Quebrada Segunda, P.N. Tapanti, 1250 m, VII.1992, G. Mora, L-N 194000, 560000 (1, SBPC); same data except: II.1993 (1. SBPC); PUNTARENAS: Monteverde, 1500 m, cld. for., FIT, 21.II–1.III.83, D. Lindeman (2, SBPC); same locality, 1450 m, 14.VIII.87, FIT, H. & A. Howden (1, SBPC); same data except: 18–20.V.87 (1, SBPC); same data except: 17.VIII.87 (2, SBPC); same data except: 21.VIII.87 (2, SBPC); same locality, 1500 m, 25.II.1991, FIT, H. & A. Howden (4, SBPC); same data except: 23–27.II.1991, dung traps (2, SBPC); same data except: 25.III.1991, FIT (2, SBPC); same locality, 1400 m, 21.V.1989, J. Ashe, R. Brooks, R. Leschen, ex flight intercept trap (1, SBPC); Monteverde, Campbell's Bull Pen, 19–29.V.1993, S. Lingafelter, ex flight intercept trap, #1 (1, SBPC); Monteverde, 4500', 28–31.V.1979, J.M. & B.A. Campbell (1, CNCI); San Luis, Monteverde, A.C. Arenal, 1000–1300 m, I.1994, Z. Fuentes, L N 449250_250850 #2609 (6, SBPC); Est. La Casona, Monteverde, 1520 m, 24.II–7.III.1995, K. Martinez, L N 253900 449300 #4426 (1, SBPC); same data except: 27.III–24.IV.1995, #4428 (2, SBPC); same data except: 3–24.IV.1995, A. Azofeifa, Foso, #5290 (1, SBPC).

Distribution. This species was previously reported from Mexico, Costa Rica, Bolivia and Peru. It is reported here from Guatemala, Honduras and Nicaragua for the first time.

Bionomics. The species is reported here from montane cloud forest habitats, and from around 1000 to 1520 m elevation.

Dissochaetus latitarsis Jeannel, 1936
Fig. 11, 12, 55

Dissochaetus latitarsis Jeannel, 1936: 151; Szymczakowski, 1968: 18; Peck *et al.*, 1998: 56. Type in MNHN, not seen. Type locality: Marcapata, Quichua, Peru.

Diagnosis of male. Total length 2.8–3.2 mm; greatest width 1.5–1.7 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere about as wide as protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 11) broad, narrowing to strongly dorsoventrally sinuate apex; bearing one pair of lateral setae. Inverted internal sac with two pairs of long single rows of broad spines and pair of small dark structures. Parameres extending slightly beyond apex of median lobe; somewhat widened apically, each bearing pair of apical setae. Genital segment (Fig. 12) longer than wide; tergite with broadly rounded apex bearing setae; lateral lobes of pleurites each bearing long seta on inner margin near apex and several lateral setae; ventral lobes of pleurites elongate, narrow, strongly setose on inner margins; sternite absent.

Salgado-Costas (2010b) places this species in the *latitarsis* species group.

Material examined. COSTA RICA: HEREDIA: Est. El Ceibo, P.N. Braulio Carrillo, 400–600 m, A.R. Aguilar, III.1990, L-N-256500, 527700 (1, SBPC). **PANAMA**: DARIEN: Cana Biological Station, Serrania de Pirre, 1200 m, 7º45'18"N, 77º41'6"W, 7–9.VI.1996, J. Ashe, R. Brooks, PAN1AB96 109, ex flight intercept trap (1, SBPC); PANAMA: Cerro Jefe, 1000 m, 22.V.1977, L.R. Davis, carrion pitfalls (1, SBPC).

Distribution. This species was previously known only from Peru. It is reported here from Costa Rica and Panama for the first time.

Bionomics. The species is reported here from tropical evergreen forest habitats, and from around 400 to 1200 m elevation.

Dissochaetus mexicanus Jeannel, 1936
Fig. 13, 14, 55

Dissochaetus mexicanus Jeannel, 1936: 152; Szymczakowski, 1968: 18; Peck, 1977: 186; 1999: 184 (misidentification); Peck *et al.*, 1998: 57; Salgado-Costas, 1999: 37. Type in MNHN, seen (aedeagus missing). Type locality: Mexico.

Diagnosis of male. Total length 2.0–3.3 mm; greatest width 1.1–1.7 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere slightly wider than protibial apex. Large metatibial spur slightly longer than first metatarsomere. Median lobe of aedeagus (Fig. 13) elongate, drawn out to narrow apex, bearing one pair of lateral setae; apex strongly curved ventrally. Inverted internal sac with patches of small spines medially and apically; poorly defined pair of elongate sclerites medially; one pair of large, dark sclerites basally; flagellum short. Parameres extending beyond apex of median lobe, widened in apical half. Genital segment (Fig. 14) longer than wide, sides contracted at apical two-fifths; apical margin of tergite truncate, sparsely setose; lateral lobes of pleurites sparsely setose; ventral lobes of pleurites broadly rounded, bearing strong setae apically and laterally; sternite absent.

Salgado-Costas (2010b) places this species in the *arizonensis* species group.

Material examined. **GUATEMALA**: ALTA VERAPAZ: Senahu, 25–27.VIII.69, 3600', mont. rainforest carrion tps. 587–588, S. Peck (4, SBPC); 3.7 mi S Coban, 4500', 28–30.VIII.69, cloud forest car. tps., S. & J. Peck (1, SBPC). **HONDURAS**: FRANCISCO MORAZAN: Zamorano, Cerro Uyuca, 22.VIII–2.IX.94, 1400 m, moist pine ravine, FIT II, S. & J. Peck, 94-54 (1, SBPC); YORO: P.N. Pico Pijol, 1300 m, N15º09.4', W87º37.6', 11.V.02, forest carrion, S. Peck, 02-04 (1, SBPC). **NICARAGUA**: MATAGALPA: 6 km N Matagalpa, Selva Negra, 18–22.V.02, N12º59.9', W85º54.6', 1250 m, forest, 6 FITs, S. Peck, 02-06 (3, SBPC); same data except: forest carrion, 02-07 (1, SBPC).

Distribution. This species was previously reported only from Mexico. It is reported here from Guatemala, Honduras and Nicaragua for the first time.

Bionomics. The species is reported here from montane cloud forest and pine forest habitats, and from 1100 to 1400 m elevation.

Dissochaetus aequalis Salgado-Costas, 2010
Fig. 53

Dissochaetus aequalis Salgado-Costas, 2010b: 156. Holotype in INBIO, not seen. Type locality: Quebrado Segunda, Parque Nacional Tapandi, Cartago, Costa Rica.

Diagnosis of male (after Salgado-Costas, 2010b). Total length 2.65 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere wider than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Salgado-Costas, 2010b, Fig. 19) quite wide, with evenly curved sides narrowing to notched apex; bearing one pair of lateral setae. Inverted internal sac apically with two groups of small spines, medially with patch of robust spines and paired groups of elongate spines; basal bulb and short flagellum present. Parameres sinuate, extending beyond apex of median lobe; each bearing pair of adjacent apical setae. Genital segment (Salgado-Costas, 2010b, Fig. 18) about as wide as long; tergite ot extending beyond lateral lobes of pleurites, apex broad, bearing eight setae; lateral lobes of pleurites bearing a few setae near apices; ventral lobes of pleurites acute apically, bearing many setae on inner margins; sternite absent.

Salgado-Costas (2010b) places this species in the *portoricensis* species group.

Material examined. We have seen no new specimens of this species.

Distribution. Known only from the type locality in Costa Rica.

Dissochaetus angustilis Salgado-Costas, 2010
Fig. 15, 16, 57

Dissochaetus angustilis Salgado-Costas, 2010b: 152. Holotype in QCAZ, not seen. Type locality: Reserva Natural de Otongachi, Unión de Toachi, Pichincha, Ecuador.

Diagnosis of male. Total length 2.7–2.85 mm; greatest width 1.3–1.4 mm. Antennal club robust; antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere slightly wider than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 16) gradually tapering to apex; lacking lateral setae. Internal sac with inwardly directed spines anteriorly; two rows of inwardly directed spines medially; basally with short flagellum inserted in cuplike structure. Parameres extending slightly beyond apex of median lobe; broad with narrowly constricted apices each bearing two short setae. Genital segment (Fig. 15) broad with evenly rounded sides; apical margin of tergite broadly rounded, bearing setae; lateral lobes of pleurites short, each bearing a few lateral setae; ventral lobes of pleurites with acute apices reaching apex of tergite, each with row of inwardly directed, strong setae and low, rounded medial extension; sternite absent.

Salgado-Costas (2010b) places this species in the *angustilis* species group.

Material examined. **COSTA RICA:** HEREDIA: Est. El Ceibo, Braulio Carrillo N.P., 400–600 m., II.1990, C. Chavez & R. Aguilar (1, SBPC). **PANAMA**: CHIRIQUI: 10 km NW Cerro Pando, 24.V.1977, carrion traps, S. & J. Peck (2, SBPC); 1.5 km NW H[ato el] Volcan, Hartmann Finca, 31.V.1977, 1500 m, S. Peck, carrion tp. 3+16 (1, SBPC).

Distribution. This species was previously known from Ecuador and Costa Rica. It is reported here from Panama for the first time.

Bionomics. The species is reported here from tropical rainforest habitats, and from 400 to 1500 m elevation.

Dissochaetus confusus Salgado-Costas, 2010
Fig. 17, 18, 57

Dissochaetus confusus Salgado-Costas, 2010b: 154. Holotype in QCAZ, not seen. Type locality: Reserva Natural de Otongachi, Unión de Toachi, Pichincha, Ecuador.

Diagnosis of male. Total length 2.05–2.5 mm; greatest width 1.1–1.3 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere narrower than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 18) triangular with long, narrow apex; bearing one pair of lateral setae. Internal sac anteriorly with patches of small spines; medially and basally with sclerotized structures. Parameres extending far beyond apex of median lobe, curved basally and in apical third; small dentiform structure medially at apex; two elongate apical setae; apical two-fifths widened by membranous apex and inner margin. Genital segment (Fig. 17) longer than wide; apex of tergite rounded, with apical setae; lateral lobes of pleurites with long apical setae; ventral lobes of pleurites bearing long apical seta and row of inwardly directed setae on inner margins; sternite short, bearing apical setae.

Salgado-Costas (2010b) places this species in the *spinipes* species group.

Material examined. **COSTA RICA**: ALAJUELA: Penas Blancas, XII.1986, E. Cruz, M.T. (1, SBPC); HEREDIA: La Selva, 17–19.II.1980, carrion, R.S. Anderson (5, SBPC); PUNTARENAS: Monteverde, 1400 m, 27.V.1979, H. & A. Howden, 2 carrion traps (1, SBPC); Monteverde, 1520 m, cld. for., FIT, 2–9.VII.1983, D. Lindeman (1, SBPC); Monteverde, 4500', 28–31.V.1979 (1, CNCI); San Vito de C.B., Las Cruces, 1200 m, VII.82, FIT, B. Gill (2, SBPC); same data except: 7–14. VIII.82 (2, SBPC); same data except: 17.VIII–12.IX.82 (3, SBPC). **PANAMA**: CHIRIQUI: La Fortuna Dam, 14.VI–16.VII.1982, B. Gill, wet forest, 1200 m, FIT (6, SBPC); same data except 15–21.VI.1982 (1, SBPC); Cerro Hornito, 15 km NE Gualaca, VIII.82, B. Gill, 1200 m, FIT (2, SBPC); 10 km NW Cerro Pando, 1300 m, 24.V.1977, carrion, S. Peck (1, SBPC); Cerro Pelota, 4 km N Sta. Clara, VIII.1982, B. Gill, 1500 m (1, SBPC); 15 km NW Hato Volcan, Hartmann Finca, 30.V.1977, S. Peck, forest dung traps, 1500 m (9, SBPC); same data except 1560 m, carrion tp., 31.V.1977 (1, SBPC); COCLE: El Valle, trail to Las Minas, 23.II.1959, *Eciton* bivouac debris Ber., H.S. Dybas, 331 (2, FMNH); PANAMA: Cerro Jefe, c. 1000 m, 22.V.1977, L.R. Davis, carrion pitfalls (1, SBPC); El Llano - Carti Road, VI.1982, 400 m, B. Gill, FIT (4, SBPC).

Distribution. This species was previously known from Ecuador and Costa Rica. It is reported here from Panama for the first time.

Bionomics. The species is reported here from tropical lowland and montane cloud forest habitats, from *Eciton* Latreille army ant bivouacs and from 1000 to 1520 m elevation.

Dissochaetus costaricensis Salgado-Costas, 2010
Fig. 19, 20, 58

Dissochaetus costaricensis Salgado-Costas, 2010b: 159; Peck and Cook, 2016: 88. Holotype in INBIO, not seen. Type locality: Estación La Casona, R.B. Monteverde, Puntarenas, Costa Rica.

Diagnosis of male. Total length 2.6–3.0 mm; greatest width 1.4–1.6 mm. Antennomeres 7, 9 and 10 about transversely symmetrical. First protarsomere clearly wider than protibial apex. Large metatibial spur distinctly longer than first metatarsomere. Median lobe of aedeagus (Fig. 19) triangular with rounded apex, weakly curved ventrally; bearing one pair of lateral setae. Inverted internal sac apically with pair of elongate patches of strong spines, subtended basad by pair of small round structures, and with scattered small, short, broad spines; basally with median patch of small spines; flagellum short. Parameres elongate, outwardly curved apically, extending well beyond apex of median lobe. Genital segment (Fig. 20) longer than wide; apex of tergite truncate and bearing setae; lateral lobes of pleurites triangular, bearing a few setae; ventral lobes of pleurites triangular, bearing row of strong setae on inner margins; sternite absent.

Salgado-Costas (2010b) places this species in the *maculatus* species group.

Material examined. **GUATEMALA**: ALTA VERAPAZ: 3.7 mi S Coban, 4500', 28–30.VIII.69, cloud forest, car. tps., S. & J. Peck (1, SBPC); BAJA VERAPAZ: 8 km S Puruhla, 1660 m, 29.V.1991, H. & A. Howden (1, SBPC); same data except: 1600 m, 27.V.1997, FIT (2, SBPC). **HONDURAS**: CORTES: 25 km N Cofradia, P.N. Cusuco, 1550 m, FIT I, cloud for., 26.VIII–15.IX.94, S. & J. Peck, 94-59 (3, SBPC); same data except: 15.IX–7.X.94, 94-60 (2, SBPC); same data except: FIT II, 26.VIII–15.IX.94, 94-61 (3, SBPC); same data except: 15.IX–7.X.94, 94-62 (2, SBPC); same data except: 15.IX–22.XI.94 (2, SBPC); P.N. Cerro Cosuco [sic.], San Pedro Sula, 5.I.1995, FIT, R. Cordero (2, SBPC); FRANCISCO MORAZAN: 10 km W Zamorano, Cerro Uyuca, wet cloud for., 1950 m, 18.VIII–2.IX.94, FIT, S. & J. Peck, 94-41 (4, SBPC); same data except: 1800 m, 94-42 (1, SBPC); same data except: 1500 m, sweetgum ravine, 94-55 (2, SBPC); 30 km E Tegucigalpa, Cerro Uyuca, 30.V.1994, 1800 m, H. & A. Howden, dung trap, wet forest (1, SBPC); 23 km N Tegucigalpa, P.N. La Tigra, 2000 m, Esperanza Tr., moss forest, FIT, 15.VIII–12.IX.94, S. & J. Peck, 94-32 (2, SBPC); 21.5 km N Tegucigalpa, P.N. La Tigra, 1950 m, ridge oak forest, FIT, 15.VIII–2.IX.94, S. & J. Peck, 94-34; OLANCHO: 14 km N La Union, P.N. La Muralla, 1450 m, wet mont. for., FIT, 16.VIII–1.IX.94, S. & J. Peck, 94-35 (4, SBPC); same data except: 16.VIII.94, 94-37 (2, SBPC); EL PARAISO: Yuscaran, Cerro Monserrat, 1750 m, cloud forest, 18.VIII–3.IX.94, S. & J. Peck, 94-43 (1, SBPC); YORO: P.N. Pico Pijol, 1300 m, N15º09 4' W87º37 6', 11.V.02, forest carrion, S. Peck, 02-04 (3, SBPC). **NICARAGUA**: MATAGALPA: 6 km N Matagalpa, Selva Negra, 18–22.V.02, N12º59 9' W85º54 6', 1250 m, forest, 6 FITs, S. Peck, 02-06 (1, SBPC); same data except: carrion, 02-07 (2, SBPC). **COSTA RICA**: ALAJUELA: Poacito, Volcan Poas, VIII.1966, carrion, S. Peck (9, SBPC); Penas Blancas River Valley, 500–1000 m, B. Lyon, 5.IV–6.V.85 (30, SBPC); same locality except: 1700 m, 16.IV.85 (14, SBPC); CARTAGO: P.N. Tapanti, 1350 m, 9º43'55"N, 83º46'45"E, 17–20.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 193, ex flight intercept trap (1, SBPC); Tapanti, Quebrada Segunda, 1150 m, IV.1995; R. Delgado, (1, SBPC); PUNTARENAS: MonteVerde, 1500 m, cld. for., FIT, 21.II–1.III.83, D. Lindeman (11, SBPC); same data except: 1520 m, 11–18.VI.1983 (3, SBPC); same data except: 25.VI–2.VII (4, SBPC); same data except: 2–9.VII.1983 (8, SBPC); same data except: 6 dung traps, 13–18.VI.1983 (1, SBPC); MonteVerde Biol. Sta., N10º19 672, W84º49 141, 10–17.VI.01, 1540 m, cloud forest FITs, S. & J. Peck, 01-9 (4, SBPC); same data except: 1515 m, 01-10 (5, SBPC); same data except: N10º18 762, W84º48 734, 12–17.VI.01, 01-11 (4, SBPC); Monteverde, 1400 m, 27.V.1979, H. & A. Howden, 2 carrion traps (6, SBPC); same data except: 1500 m, 1.VI.1979, 1 megadung (3, SBPC); same data except: 23–27.II.1991, dung tps. 91, (1, SBPC); same data except: 25.II.1991, FIT (1, SBPC); same data except: 1700 m, 24.V.1979, carrion (2, SBPC); same data except: cloud forest, 27.V.79, cup tr 3 days (4, SBPC); Monteverde, 3–4.VI.1979, 4500', J.M. & B.A. Campbell (1, CNCI); Monteverde, Boehme house, 7.V.1989, 1570 m, J. Ashe, R. Leschen, R. Brooks, #047 (1, SBPC); Monteverde, Campbell's Woods, 21.V.1989, 1520 m, J. Ashe, R. Leschen, R. Brooks, #316, ex flight intercept (1, SBPC); Monteverde, 24.V.1989, 1520 m, J. Ashe, R. Leschen, R. Brooks, #453, ex pitfall trap (1, SBPC); Monteverde, 9.VII.1989, 1630 m, S.E. Roberts, ex flight intercept (1, SBPC); Monteverde Reserve (trail near lab), 26–28.V.1993, C. Michalski, ex flight intercept trap (1, SBPC); Monteverde, Est. La Casona, 1520 m, 27.III–24.IV.1995, K. Martinez, Amarilla, (18, SBPC); same data except: 3–24.IV.1995, (7, SBPC); Sendero Chomogo, 1680 m, 19.VII.1983, 6 hr. dung traps, D.H. Lindeman (1, SBPC); Rincon de Osa, rain forest, FITs, N8º41 141, W83º11 117, 22–26.VI.01, 50 m, S. & J. Peck, 01-13 (1, SBPC); SAN JOSE: Cerro de la Muerte, 6400', 30.VII–3.VIII.1966, S. Peck, bait trap (1, SBPC); San Juan, 14 km NE, Finca Zurqui, 10º2'57"N, 84º0'22"W, 1490 m, 4–6.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 064, ex flight intercept trap (1, SBPC); Est. Cuerici, 4.6 km E Villa Mills, 2600 m, 24–28.XI.1995, A. Picado, carrona de rata. **PANAMA**: CHIRIQUI: 2 km W Cerro Punta, 1700 m, 24–

28.V.1977, Ber. 375, litter u. carrion, S. Peck (5, SBPC); 15 km NW Hato Volcan, Hartmann Finca, 20–31.V.1977, S. Peck, forest carrion traps, 1500 m (4, SBPC); same data except: 1550 m, 31.V.77 (3, SBPC); Baldwins Woods, 1760 m, 2.VI.1977, S. Peck, dung tp. (5, SBPC); same data except: 8.VI.1977, for carrion tp. (2, SBPC); 2 km W Cerro Punta, N8º52', W82º36', 1720 m, 29.V.77, H. Howden (2, SBPC); same data except: 30.V.77 (2, SBPC); Cerro Pelota, 1–14.VII.82, 1500 m, B. Gill (3, SBPC); 6.0 km NE Boquete, 1550 m, 8º48'0"N, 82º26'0"W, 14–19.VI.1996, J. Ashe, R. Brooks, PAN1AB96 179B, ex flight intercept trap (5, SBPC); same data except: 1650 m, 180B (1, SBPC); same data except: 1875 m, 8º54'42"N, 82º43'18", 17–10. VI.1996, 185A (1, SBPC).

Distribution. This species is previously known from Mexico, Costa Rica and Panama. It is reported here from Guatemala, Honduras and Nicaragua for the first time.

Bionomics. The species is reported here from tropical evergreen forest, montane cloud forest, oak forest, sweetgum (*Liquidambar* L.) forest habitats, and from around 1000 to 2600 m elevation.

Dissochaetus forticornis Salgado-Costas, 2010
Fig. 21, 22, 59

Dissochaetus forticornis Salgado-Costas, 2010b: 158. Holotype in INBIO, not seen. Estación La Casona, R.B. Monteverde, Puntarenas, Costa Rica.

Diagnosis of male. Total length 2.6–3.25 mm; greatest width 1.4–1.7 mm. Antennal club robust; antennomeres 7, 9 and 10 longer than wide, transversely symmetrical; antennomere 7 distinctly longer than 9 and 10. First protarsomere narrower than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig.21) elongate, triangular, evenly narrowing to rounded apex; bearing two pairs of lateral setae. Inverted internal sac apically with small spines, medially with larger spines; lacking sclerotized structures; short flagellum inserted in basal bulb. Parameres extending beyond apex of median lobe; straight; each bearing pair of exceptionally long setae apically. Genital segment (Fig. 22) nearly as wide as long; apical margin of tergite bearing setae; lateral lobes of pleurites with a few lateral setae near apex; ventral lobes of pleurites acute with long apical setae; sternite absent.

Salgado-Costas (2010b) places this species in the *maculatus* species group.

Material examined. **GUATEMALA**: ALTA VERAPAZ: Patal, 5 km S Tactic, 4500', 24–27.VIII.1969, carrion traps 680–683, S. & J. Peck (6, SBPC); BAJA VERAPAZ: 8 km S Purulha, 1600 m, 25.V.1991, H. & A. Howden, dung (1, SBPC); same data except: 23–25.V.1997, FIT (2, SBPC); same data except: 29.V.1997 (3, SBPC); GUATEMALA: Fraijanes, Finca San Antonio, 1800 m, IV.87, MT, J.P. Mauger (1, SBPC). **HONDURAS**: CORTES: 25 km N Cofradia, P.N. Cusuco, 1550 m, FIT I, cloud for., 26.VIII–15.IX.94, S. & J. Peck, 94-59 (1, SBPC); same data except: FIT II, 94-61 (1, SBPC); same data except: 15.IX–7.X.94, FIT I, 94-60 (3, SBPC); same data except: FIT II, 94-62 (3, SBPC); same data except: 15.IX–22.XI.94 (2, SBPC); same locality, San Pedro Sula, FIT, 5.I.95, R. Codero (1, SBPC); same data except: 15.II.95 (3, SBPC); same data except: 2.III.95 (5, SBPC); FRANCISCO MORAZAN: Tegucigalpa, P.N. La Tigra, 2000 m, Esperanza Tr., moss forest FIT, 15.VIII–12. IX.94, S. & J. Peck, 94-32 (3, SBPC); same data excpet 1950 m, ridge oak forest FIT, 94-34 (3, SBPC); 10 km W Zamorano, Cerro Uyuca, wet cloud for., 1950 m, 18.VIII–2.IX.94, FIT, S. & J. Peck, 94-41 (1, SBPC); same data except: 1800 m, 94-42 (2, SBPC); Cerro Uyuca, 3.VI.94, 1800 m, FIT, A. Howden (3, SBPC); OLANCHO: 14 km N La Union, P.N. La Muralla, 1500 m, wet. mont. for., FIT, 16.VIII.94, S. & J. Peck, 94-37 (2, SBPC). **COSTA RICA**: ALAJUELA: Poacito, Volcan Poas, VIII.1966, carrion, S. Peck (2, SBPC); Penas Blancas River Valley, 500–1000 m, B. Lyons, 5.IV–6.V.1985 (3, SBPC); CARTAGO: P.N. Tapanti, 1150 m, 9º45'41"N, 83º47'5"E, 17–20.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 192, ex flight intercept trap (1, SBPC); GUANACASTE: 6 km NE Santa Elena, 1640 m, Santa Elena Forest Reserve, FIT, N10º20.701,W84º47.899, 11–17.VI.01, S. & J. Peck, 01-12 (1, SBPC); PUNTARENAS: MonteVerde Biol. Sta., N10º19.672, W84º49.141, 10–17.VI.01, 1540 m, cloud forest FITs, S. & J. Peck, 01-9 (4, SBPC); same data except: 1515 m, 01-10 (1, SBPC); MonteVerde, 1400 m, 27.V.1979, H. & A. Howden, carrion trap (1, SBPC); same data except: 1500 m, 25.II.1991, FIT (1, SBPC); same data except: 23–27.II.1991, dung tps. (1, SBPC); MonteVerde, 1500 m, cld. for. FIT, 21.II–1.III.83, D. Lindeman (3, SBPC); same data except: 1520 m, 11–18.VI.83 (1, SBPC); same data except: 2–9.VII.83 (3, SBPC); same data except: 15–23.VII.1983 (1, SBPC); Monteverde, Campbell's Woods, 21.V.1989, 1520 m, J. Ashe, R. Leschen, R. Brooks, #316, ex flight intercept (1, SBPC); R.B. Monteverde, A.C. Arenal, Estacion La Casona, 1520 m, XII.1993, N.G. Obando (1, SBPC); same data except: 11–17.II.1993, (1, SBPC); same data except: 27.III–24.IV.1995, K. Martinez, (2, SBPC); same data except: 3–24.IV.1995, A. Azofeifa, (2, SBPC); SAN JOSE: Zurqui de Moravia, 1600 m, 10º03'N, 84º01'W, VIII.1995, P. Hansen, ex malaise trap on hwy. E from San Jose to Limon before Braulio Carillo N.P. in cloud forest area (1, SBPC); Pan American Hwy. km 80.5, 9 km SSW Albergue de Montana Savegre, 9º32'58"N, 83º48'9"W, 2200 m, 21–23.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 240, ex flight intercept trap (4, SBPC); SAN JOSE/CARTEGO: km 45, Int. Amer. Hwy., 6 km NE El Empalme, 1975 m, 9º45'0"N, 83º58'30"W, 8–26.VI.1997, S. & J. Peck, CR1P97 019. ex flight intercept trap (1, SBPC). **PANAMA**: CHIRIQUI: Baldwins Woods, 1760 m, 2.VI.1977, dung tp., S. Peck (5, SBPC); same data except: 5.VI.1977 (6, SBPC); same data except: carrion traps (8, SBPC); same data except: 8.VI.1977, dung trap (6, SBPC); same data except: carrion tp. (7, SBPC); 15 km NW Hato Volcano, Hartmann Finca, 20–25.V.1977, S. Peck, forest dung traps,

1500 m (1, SBPC); same data except: 30.V.1977 (1, SBPC); same data except: 20–31.V.1977, forest carrion traps (1, SBPC); same data except: 1550 m, carrion tp., 31.V.1977 (1, SBPC); 2 km W Cerro Punta, 1700 m, 24–28.V.1977, Ber. 375, litter u. carrion, S. Peck (3, SBPC); same data except: 1–8.VI.1977, even[ening]. sweeps, 1700 m, S. & J. Peck (2, SBPC); 2 km E Cerro Punta, Baldwin Forest, 30.V–8.VI.1977, S. Peck, carrion tps. (1, SBPC); 2 km E Cerro Punta, 2200 m, 1–4.VI.1977, forest carrion, S. Peck (1, SBPC); same data except: 8.VI.1977 (4, SBPC); same data except: 1.VI.1977, dung tps., S. & J. Peck (1, SBPC); 2 km W Cerro Punta, Audubon For., 1700 m, 19.V.77, S. & J. Peck, Ber. 366 (1, SBPC); Finca Lerida, near Boquete, 18.III.1959, 6900', debris in damp ravine, H.S. Dybas (1. FMNH); La Fortuna Dam, 14.VI–16.VII.1982, wet forest FIT, B. Gill (1, SBPC).

Distribution. This species was previously known only from Costa Rica. It is reported here from Guatemala, Honduras and Panama for the first time.

Bionomics. The species is reported here from tropical montane rainforest and cloud forest habitats, and from 1500 to 2200 m elevation.

Dissochaetus solisi Salgado-Costas, 2010
Fig. 23, 24, 53

Dissochaetus solisi Salgado-Costas, 2010b: 156. Holotype in INBIO, not seen. Type locality: Alvaro Ruiz, Zarcero, Alajuela, Costa Rica.

Diagnosis of male. Total length 3.2–3.7 mm; greatest width 1.6–1.8 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere wider than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 24) evenly narrowing to rounded apex; much shorter than basal lamina; lacking lateral setae. Inverted internal sac with apical and median patches of small spines; lacking sclerotized pieces; at base, short flagellum attached to basal bulb. Parameres about twice length of median lobe, moderately broad, sinuate, each bearing a pair of apical setae. Genital segment (Fig. 23) longer than wide, sides subparallel; lateral lobes of pleurites with setae near apices and at base; ventral lobes of pleurites short, narrow, with setae on both lateral and medial margins; sternite absent.

Salgado-Costas (2010b) places this species in the *solisi* species group.

Material examined. **COSTA RICA**: PUNTARENAS: Monteverde, 1400 m, 4.VI.1979, H. & A. Howden (1, SBPC); same locality, 1570 m, 9.V.1989, J. Ashe, R. Brooks, R. Leschen, ex flight intercept trap (1, SBPC); same locality, 4500', 28–31.V.1979, J.M. & B.A. Campbell (1, CNCI).

Distribution. This species is known only from Costa Rica.

Bionomics. The species is reported here from montane cloud forest habitats, and from 1370 to 1570 m elevation.

Dissochaetus unidentatus Salgado-Costas, 2011
Fig. 25, 26, 61

Dissochaetus unidentatus Salgado-Costas, 2011: 423. Holotype in INBIO, not seen. Type locality: Tapandi, Fauna Silvestre P.N., Cartago, Costa Rica.

Diagnosis of male. Total length 2.58–3.1 mm; greatest width 1.33–1.6 mm. Antennal club robust; antennomeres 7, 9 and 10 transversely asymmetrical. First protarsomere wider than protibial apex. Mesotarsomeres bearing fine, yellowish setae. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 26) elongate, evenly narrowing to narrowly rounded apex; lacking lateral setae. Inverted internal sac with patches of small spines and a median dentiform structure apically; pair of elongate sclerotized structures medially; pair of more heavily sclerotized structures basally. Parameres narrow in dorsal view; extending well beyond apex of median lobe; each bearing a pair of short setae. Genital segment (Fig. 25) somewhat longer than wide; tergite narrow, truncate apically, bearing six apical setae; lateral lobes of pleurites with 1 or 2 lateral setae and 2 or 3 elongate setae basally; ventral lobes of pleurites not produced apically, bearing several apically directed setae; sternite absent.

Salgado-Costas (2010b) places this species in the *unidentatus* species group.

Material examined. **COSTA RICA**: CARTAGO: P.N. Tapanti, 1150 m, 9º45'41"N, 83º47'5"E, 17–20.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 192, ex flight intercept trap (2, SBPC); PUNTARENAS: Monteverde Biol. Sta., N10º19.672, W84º49.141, 10–17.VI.01, 1515 m, cloud forest FITs, S. & J. Peck, 01-10 (1, SBPC); Monteverde, 1500 m, 23–27.II.1991, dung tps., H. & A. Howden (1, SBPC); same data except: 25.III.1991, FIT (1, SBPC); Monteverde, 1520 m, 11–17.II.1993, N. Obando, G. Barbosa, A. Pound, (1, SBPC); Monteverde, Est. La Casona, 1520 m, 3–24.IV.1995, A. Azofeifa Foso, (1, SBPC).

Distribution. This species is known only from Costa Rica.

Bionomics. The species is reported here from montane cloud forest habitats, and from 1150 to 1520 m elevation.

Dissochaetus chiapensis Peck and Cook, 2016
Fig. 27, 28, 61

Dissochaetus chiapensis Peck and Cook, 2016: 91. Holotype in SBPC, seen. Type locality: 4 mi. S Palenque, Chiapas, Mexico.

Diagnosis of male. Total length 2.3–2.8 mm; greatest width 1.2–1.5 mm. Antennomeres 7, 9 and 10 transversely weakly asymmetrical. First protarsomere about as wide as protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 27) elongate, triangular, narrowing apically; lacking lateral setae. Inverted internal sac with two pairs of elongate sclerites and apical patches of small spines; flagellum not seen. Parameres elongate, inwardly curved apically, apices

each with toothlike process. Genital segment (Fig. 28) longer than wide; apex of tergite rounded, setose; lateral lobes of pleurites rounded apically, each with pair of setae; ventral lobes of pleurites inwardly curved, with truncate apices bearing a number of setae; sternite present, reduced to short, broad sclerite bearing two apical setae.

This species has not been placed in a species group.

Material examined. **GUATEMALA**: IZABAL: 34 km W Puerto Barrios, outside Gruta El Silvino, car. tp., 20–22.VIII.1969, S. & J. Peck, lowland evergreen forest (1, SBPC); ALTA VERAPAZ: Lanquin, 28–30.VIII.1969, lowland rainforest, car. tp., S. & J. Peck (1, SBPC). **COSTA RICA**: La Selva, 17–19.II.1980, carrion, R.S. Anderson (1, SBPC); ALAJUELA: Penas Blancas, 2.II.1987, E. Cruz (1, SBPC); Estrella Valley, Pandora Road, 20.II.1989, carrion, H. & A. Howden (1, SBPC). **PANAMA**: CANAL ZONE: Madden Forest, 13.VI.1977, rainforest, carrion tp., S. Peck (1, SBPC); PANAMA: El Llano–Carti Rd., VI.1982, 400 m, B. Gill, FIT (1, SBPC).

Distribution. The species was previously know only from the Mexican state of Chiapas. It is reported here from Guatemala, Costa Rica and Panama for the first time.

Bionomics. The species is reported here from tropical lowland evergreen forest and rianforest habitats, and from near sea level to 400 m elevation.

Dissochaetus claviformis Peck and Cook, 2016

Fig. 29, 30, 57

Dissochaetus claviformis Peck and Cook, 2016: 92. Holotype in SBPC, seen. Type locality: 43 km SW Huejutla, Tlanchinol, Hidalgo, Mexico.

Diagnosis of male. Total length 2.7–3.4 mm; greatest width 1.4–1.7 mm. Antennal club robust, antennomeres 7, 9 and 10 strongly transversely asymmetrical. First protarsomere slightly wider than protibial apex. Large metatibial spur slightly longer than first metatarsomere. Median lobe of aedeagus (Fig. 29) triangular, evenly narrowing to apex; bearing one pair of lateral setae; apex weakly curved ventrally. Inverted internal sac with two pairs of large sclerites; basal pair dark; apical pair longer, paler, with narrow, outwardly curved apices. Parameres extending well beyond apex of median lobe; broad in dorsal view, outer margin inwardly curved in apical fourth. Genital segment (Fig. 30) longer than wide, sides evenly rounded; apical margin of tergite setose on each side of median emargination; lateral lobes of pleurites bear a few setae; ventral lobes of pleurites triangular, each with a row of strong setae on outer margin; sternite absent.

This species has not been placed in a species group.

Material examined. **GUATEMALA**: ALTA VERAPAZ: Senahu, 25–27.VIII.1969, 3600', mont. rainforest, carrion tps. 587–588, S. Peck (1, SBPC); 3.7 mi. S Coban, 4500', 28–30.VIII.69, cloud forest, car. tps., S. & J. Peck (1, SBPC); BAJA VERAPAZ: 8 km S Purulha, 1600 m, 21.V.1991, H. & A. Howden (1, SBPC); same data except: 1660 m, 23–25.V.1991, FIT (1, SBPC); same data except: 27.V.1991 (2, SBPC); same data except: 31.V.1991 (1, SBPC); CHIMALTENAGO: S.P. Yepocapa, 25.IV.48, 4800', R.D. Mitchell (1, SBPC). **EL SALVADOR**: Cerro Verde, 1900 m, 1–4.V.71, S. Peck, carrion T693–4 (1. SBPC). **HONDURAS**: COMAYAGUA: 18 km ENE Comayagua, 1950 m, wet oak-pine forest, FIT, 20–31. VIII.94, S. & J. Peck, 94-51 (4, SBPC); CORTES: 25 km N Cofradia, P.N. Cusuco, 1550 m, FIT I, cloud for., 26.VIII–15.IX.94, S. & J. Peck, 94-59 (1, SBPC); same data except: 15.IX–7.X.94, 94-60 (1, SBPC); same data except: FIT II, 26.VIII–15.IX.94, 94-61 (1, SBPC); same data except: 15.IX–22.XI.94 (1, SBPC); P.N. Cerro Cosuco [sic.], San Pedro Sula, 5.I.1995, FIT, R. Codero (2, SBPC); same data except: 1–15.II.1995 (1, SBPC); same data except: 2.III.1995, 94-73 (1, SBPC); EL PARAISO: Yuscaran, Cerro Monserrat, 1750 m, cloud forest, 18.VIII–3.IX.94, FIT, S. & J. Peck, 94-43 (4, SBPC); FRANCISCO MORAZAN: Cerro Uyuca, 27.V.94, 1800 m, malaise, H. Howden (1, SBPC); same data except: 3.VI.94, 1800 m, FIT (2, SBPC); same data except: 6.VI.94 (4, SBPC); 30 km E Tegucigalpa, Cerro Uyuca, 10.VI.94, 1800 m, H. & A. Howden, FIT (1, SBPC); 23 km N Tegucigalpa, P.N. La Tigra, 2000 m, Esperanza Tr., moss forest, FIT, 15.VIII–12. IX.94, S. & J. Peck, 94-32 (1, SBPC); OLANCHO: 14 km N La Union, P.N. La Muralla, 1450 m, wet mont. forest, FIT, 16.VIII–1.IX.94, S. & J. Peck, 94-35 (1, SBPC); same data except: liquidambar forest, 1350 m, 17.VIII–1.IX.94, 94-38 (2, SBPC); MORAZAN: 10 km W Zamorano, Cerro Uyuca, wet cloud for., 1800 m, 18.VIII–2.IX.94, FIT, S. & J. Peck, 94-42 (1, SBPC).

Distribution. The species was previously known only from Mexico. It is reported here from El Salvador, Guatemala and Honduras for the first time.

Bionomics. The species is reported here from montane rainforest, cloud forest, *Liquidambar* L. forest, and oak-pine forest habitats, and from 1450 to 2000 m elevation.

Dissochaetus lobatus Peck and Cook, 2016

Fig. 31, 32, 54

Dissochaetus lobatus Peck and Cook, 2016: 93. Holotype in SBPC. Type locality: 36 mi. N Concordia, Sinaloa, Mexico.

Diagnosis of male. Total length 2.6–3.3 mm; greatest width 1.4–1.6 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere wider than protibial apex; Large metatibial spur shorter than first metatarsomere. Median lobe of aedeagus (Fig. 32) short, narrowing before sharply down-turned, lobed apex; with one pair of lateral setae. Inverted internal sac with two pairs of patches of small spines apically; medially with biramous patch of small spines and pair of patches of larger spines; basally with pair of dark, curved sclerites with widened apices; flagellum reaching middle of dark sclerites. Parameres elongate, straight, reaching well beyond apex of median lobe. Genital segment (Fig. 31) longer than wide, sides contracted at middle, widest basally; apex of tergite truncate, bearing a few setae; lateral lobes of pleurites strongly setose; ventral lobes of pleurites short, triangular,

setose; sternite absent.

This species has not been placed in a species group.

Material examined. **EL SALVADOR**: Cerro Verde, 1900 m, 1–4.V.71, S. Peck, dung T691–2 (8, SBPC); same data except: carrion T693–4 (4, SBPC). **HONDURAS**: FRANCISCO MORAZAN: 30 km E Tegucigalpa, Cerro Uyuca, 10.VI.1994, 1800 m, H. & A. Howden (1, SBPC).

Distribution. The species was previously known only from Mexico. It is reported here from El Salvador and Honduras for the first time.

Bionomics. The species is reported here from montane rainforest habitats, and from 1800 to 1900 m elevation.

Dissochaetus newtoni Peck and Cook, 2016
Fig. 33, 34, 60

Dissochaetus newtoni Peck and Cook, 2016: 93. Holotype in SBPC. Type locality: 8 mi. NNW Sontecomapan, Veracruz, Mexico.

Diagnosis of male. Total length 1.8–2.4 mm; greatest width 1.0–1.4 mm. Antennomeres 7, 9 and 10 transversely symmetrical. First protarsomere as wide as protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 34) broad, narrowing apically, with three pairs of lateral setae. Inverted internal sac with patches of small spines and irregularly shaped structures; basal bulb and flagellum well defined. Parameres elongate, reaching well beyond apex of median lobe, twisted before expanded apices. Genital segment (Fig. 33) as wide as long; apex of tergite with a few setae on each side of median emargination; lateral lobes of pleurites low, rounded, with apical setae; ventral lobes broadly triangular with apical setae; sternite present, reduced to small Y-shaped sclerite.

This species has not been placed in a species group.

Material examined. **BELIZE**: CAYO: Caves Branch, nr. St. Hermans Cave, 20.VII–25.VIII.1972, seasonal forest traps, S. & J. Peck (1, SBPC); Augustine, nr. Rio Frio, 23.IV.1995, *Orthogeomys* burrow (1, SBPC). **GUATEMALA**: IZABAL: Las Escobas, 350 m, 14.XII.87, J.P. Mauger (2, SBPC); Las Escobas, I.1987, M.T., J.P. Mauger (2, SBPC). **HONDURAS**: ATLANTIDA: 15 km W La Ceiba, 175 m, 20.VI–20.VII.96, R. Lehman, FIT, trop. rain for. (1, SBPC). **COSTA RICA**: CARTAGO: Turrialba, Catie, ravine, 1 megatrap 2 days, 28.II.80, 600 m, H. & A. Howden (1, SBPC); same locality, 600 m, 16–20.V.1979, J.M. & B.A. Campbell (1, CNCI). GUANACASTE: Maritza Biol. Stn., 550 m, 22.V.1993, J. & A. Ashe, ex flight intercept trap #036 (1, SBPC); Patilla Biological Station, 610 m, 10º59'22"N, 85º25'33"W, 13–15.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 135, ex flight intercept trap (1, SBPC); Est. Pitilla, 9 km S Sta. Cecilia, P.N. Guanacaste, C. Moraga, IX.1991, (1, SBPC); HEREDIA: La Selva, 17–19.II.1980, carrion, R.S. Anderson (4, SBPC); Finca El Bejuco, 6 km W Puerto Viejo, 50 m, 1–6.VI.1983, T.S. Ray, meat trap (1, SBPC); Est. Magsasay, P.N. Braulio Carrillo, 200 m, R. Aguilar, I.1991, (1, SBPC); LIMON: Estrella Valley, Pandora, 19.II.84, dung & c. traps, H.F. Howden (3, SBPC); same data except: carrion traps (8, SBPC); same locality, 20.II.1984, H. & A. Howden (1, SBPC); same locality, 1–16.III.84, FIT, H. Howden & G. Manley (1, SBPC); Sector Cerro Cocori, Fca. de E. Rojas, 150 m, 12–31.VIII.1992, E. Rojas, (1, SBPC); PUNTARENAS: Osa Peninsula, Rincon de Osa, 7–12.VIII.1966, rainforest carrion traps, S. Peck (1, SBPC); Osa Peninsula, 13–15. VIII.1966, rainforest carrion traps, S. Peck (1, SBPC); Rincon de Osa, rainforest, N8º41 141, W83º31 117, 22–26. VI.01, 150 m, FITs, S. & J. Peck, 01-14 (2, SBPC); same data except: 23–26.VI.01, 40 m, streamside FITs, 01-15 (2, SBPC). **PANAMA**: COCLE: El Valle, trail to Las Minas, 23.II.1959, *Eciton* bivouac debris Ber., H.S. Dybas, 331 (1, FMNH); DARIEN: Cana Biological Station, 530 m, 7º45'18"N, 77º41'6"W, 7–9.VI.1996, J. Ashe, R. Brooks, PAN1AB96 113, ex flight intercept trap (1, SBPC); Cerro Jefe, c 1000 m, 22.V.1977, L.R. Davis, carrion pitfalls (1, SBPC); El Llano-Carti Rd., VI.1982, 400 m, B. Gill, FIT (22, SBPC).

Distribution. The species was previously known only from Mexico. It is reported here from Belize, Guatemala, Honduras, Costa Rica and Panama for the first time.

Bionomics. The species is reported here from lowland tropical seasonal forest, rainforest, *Orthogeomys* Merrriam (Geomyidae) rodent burrow, and *Eciton* Latreille army ant bivouac debris habitats, and from 40 to 1000 m elevation.

Dissochaetus reniformis Peck and Cook, 2016
Fig. 35, 36, 60

Dissochaetus reniformis Peck and Cook, 2016: 95. Holotype in SBPC. Type locality: 8 mi. N Pueblo Nuevo, Chiapas, Mexico.

Diagnosis of male. Total length 2.4–3.2 mm; greatest width 1.3–1.7 mm. Antennomeres 7, 9 and 10 nearly transversely symmetrical. First protarsomere about as wide as protibial apex. Large metatibial spur about as long as first metatarsomere. Median lobe of aedeagus (Fig. 35) elongate, narrowing in apical third; apex curved ventrally, not distinctly lobed, bearing two pairs of lateral setae. Inverted internal sac with elongate pair of patches of small spines; pair of dark sclerites at base. Parameres narrow, weakly sinuate, extending beyond apex of median lobe. Genital segment (Fig. 36) longer than wide, sides evenly rounded; apex of tergite rounded, bearing a few setae; lateral lobes of pleurites with a few setae laterally; ventral lobes of pleurites triangular, densely setose; sternite absent.

This species has not been placed in a species group.

Material examined. **HONDURAS**: CORTES: 25 mi N Cofradia, P.N. Cusuco, 1550 m, FIT I, cloud for., 15.IX–7.X.94, S. & J. Peck, 94-60 (1, SBPC); same data except: FIT II, 15.IX–22.XI.94 (1, SBPC); P.N. Cusuco, San Pedro Sula, FIT, Danto Trail, 2.III.95, R. Cordero, 94-74 (2, SBPC); same data except: 5.I.95, 94-71 (4, SBPC).

Distribution. The species was previously known only from the Mexican state of Chiapas. It is reported here from Honduras for the first time.

Bionomics. The species is reported here from tropical cloud forest habitats, and from 1550 m elevation.

Dissochaetus ancylostylus Peck and Cook, n.sp.
Fig. 37, 38, 62
http://zoobank.org/3C37A47B-2295-4F04-893F-D65986243948

Diagnostic description of male. Total length 2.3–2.7 mm; greatest width 1.2–1.4 mm. Color medium brown; head and elytral apices darker; mouthparts, antennomeres 1–6 and apical half of 11, and tarsi paler. Moderately shining. Vestiture yellowish. Head densely punctate, punctures separated by less than 1 diameter. Antennae reaching base of elytra; antennomere 4 about one-half length of 3; 6 shorter than 4 and 5; 7 slightly longer than 9 and 10; 7, 9 and 10 transversely symmetrical. Pronotum widest at basal fourth; basal angles obtuse. First protarsomere as wide as protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 37) broad, narrowing apically, lacking lateral setae. Inverted internal sac with rows and patches of spines and one pair of curved sclerites; basal bulb surrounded by U-shaped sclerite, flagellum not seen. Parameres extending well beyond apex of median lobe; inner margins angulate before expanded apices; apices each bearing row of minute setae in addition to pair of elongate setae. Genital segment (Fig. 38) longer than wide; tergite extending well beyond lateral lobes of pleurites, with shallowly emarginate apex bearing 2 pairs of setae; lateral lobes of pleurites not produced apically, bearing a few marginal setae; ventral sections of pleurites bilobed; outer lobes elongate, narrow, with apical setae; inner lobes rounded, without setae; sternite absent.

This species is most easily identified by the angled inner margins of the parameres and the widened, setose paramere apices.

Type material. Holotype, male, with the following label data: "**PANAMA**: Chir.[iqui] Prov. / 15km NW Hato Volcan / Hartmann Finca, 1550 m / Carrion tp, 31.V.77 / S. Peck" (SBPC). Paratypes (35): with same data as holotype (5, SBPC); same data except: 30.V.1977, forest dung traps, 1500 m (4, SBPC); same data except: 20–25.V.1977 (3, SBPC); same data except: 20–31.V.1977, forest carrion traps (2, SBPC); **PANAMA**: CHIRIQUI: 10 km NW Cerro Pando, 24.VI.1977, carrion traps, S. & J. Peck (3, SBPC); Cerro Hornito, 15 km NE Gualaca, VIII.1982, B. Gill, 1200 m, FIT (10, SBPC); Cerro Pelota, 1–14.VII.1982, 1500 m, B. Gill (4, SBPC); La Fortuna Dam, mini cup, VI.1982, B. Gill, 1200 m (1, SBPC); La Fortuna Dam, 14.VI–16. VII.1982, B. Gill, wet forest (3, SBPC).

Additional material examined. **COSTA RICA**: ALAJUELA: Cord. Tilaran, Penas Blancas, IX–X.1986, E. Cruz, MT (2, SBPC); same locality, X.1986, 700 m, E. Cruz (1, SBPC); same locality, 2.II.1987, E. Cruz (1, SBPC); same data except: 1–10.I.1987 (1, SBPC); same data except: II.1987 (1. SBPC); Penas Blancas, 1420 m, 20.V.1989, J. Ashe, R. Leschen, R. Brooks, ex flight intercept trap (1, SBPC); HEREDIA: 16 km SSE La Virgen, N10º16', W84º05', 1050–1150 m, 9–14.III.2001, primary forest FIT, E.G. Riley (3, SBPC); PUNTARENAS: San Vito de C.B., Las Cruces, 1200 m, VII.82, FIT, B. Gill (1, SBPC); same data except: 17.VIII–12.IX.82 (7, SBPC); same data except: 22–25.II.1983 (4, SBPC); Monteverde, 1500 m, cld. for., FIT, 21.II–1.III.83, D. Lindeman (2, SBPC); same data except: 1520 m, 11–18.VI.83 (1, SBPC); same data except: 2–9.VII.83 (3, SBPC); Las Alturas, Stanford Biol. Sta., ca 25 km NE San Vito, 1500 m, 27.V.1993, J.S. & A.K. Ashe, #063, ex flight intercept trap (5, SBPC); Est. Altamira, 1 km S del Cerro Biolley, Buenos Aires, PILA-ACLA, 1300–1450 m, XI.1994, M. Segura, L S 331700_572100, #3298 (1, SBPC); same locality, 1450 m, 1–28.I.1996, R. Villalobos, Foso, L_S_331700_572100, #6881 (1, SBPC). **PANAMA**: CHIRIQUI: Cerro Hornito, 15 km NE Gualaca, VIII.1982, B. Gill, 1200 m, FIT (9, SBPC); Cerro Pelota, 4 km N Sta. Clara, VIII.82, B. Gill, 1500 m (2, SBPC); same data except: 1–14.VII.82 (13, SBPC); 4 km N Santa Clara, Hartmann's Finca, 27.VI–3. VII.1981, B. Gill, 1500 m (4, SBPC); La Fortuna Dam, 14.VI–16.VII.1982, B. Gill, wet forest, 1200 m, FIT (13, SBPC); La Fortuna Dam, 15–21.VI.1982, B. Gill, 1200 m (1. SBPC); same data except VI.1982, mini cup (1, SBPC); La Fortuna, Hydro Trail, 08º42'N, 82º14'W, 1150 m, 21–23.V.1995, J. & A. Ashe, #051, ex flight intercept trap (1, SBPC); same data except: 23.V–9.VI.1995, J. Ashe, R. Brooks, #156 (1, SBPC); 20 km N Gualaca, Finca La Suiza, 1350 m, 08º39'N, 82º12'W, 24.V–9.VI.1995, #154, J. Ashe & R. Brooks, ex flight intercept trap (1, SBPC); Hornito, Finca La Suiza, 1220 m, 29.V.2000, FIT, H. & A. Howden (3, SBPC); PANAMA: El Llano-Carti Rd., VI.1982, 400 m, B. Gill, FIT (2, SBPC).

Distribution. This species is known from Costa Rica (Alajuela, Heredia and Puntarenas) and Panama (Chiriqui and Panama).

Bionomics. The species is reported here from tropical montane forest and cloud forest habitats, and from 400 to 1520 m elevation.

Etymology. The epithet *ancylostylus* (Greek *ancylo-*, angled; *stylus*, paramere) refers to the angled inner margins of the parameres, a diagnostic character of this species.

Dissochaetus barrahonda Peck and Cook, n.sp.
Fig. 39, 40, 62
http://zoobank.org/10C9A7CE-5DF5-4FF6-A611-4430A7B0721D

Diagnostic description of male. Total length 2.6 mm; greatest width 1.5 mm. Color reddish brown; head and elytral apices darker; mouthparts, antennomeres 1–3 and 11, and tarsi paler. Moderately shining. Vestiture pale. Head finely punctate, punctures separated by 1–2 diameters. Antennae barely reaching base of elytra; antennomere 4 more than one half length of 3; 6 distinctly shorter than 4 and 5; 7 clearly longer than 9 and 10; 7, 9 and 10 transversely symmetrical. Pronotum widest at base; basal angles obtuse. First protarsomere as wide as protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 40) narrowing in apical

half, lacking lateral setae. Inverted internal sac with two pairs of elongate sclerotized structures, basal pair darker; basal bulb with short flagellum. Parameres extending well beyond apex of median lobe, with thin lamina apically and on inner margin; each bearing pair of apical setae. Genital segment (Fig. 39) broad at base, narrowing apically; tergite with rounded apex bearing setae; lateral lobes of pleurites each bearing long subapical seta; ventral lobes of pleurites low, rounded, strongly setose; sternite absent.

This species resembles *D. unidentatus* in the paired sclerites of the internal sac but lacks the single triangular sclerite of that species. It differs also in shape of median lobe of aedeagus, shorter and broader parameres, and absence of dense setation of mesotarsi.

Type material. Holotype, male, with the following label data: **COSTA RICA**: Guenucrute [Guanacaste] / PN Barra Handa [Honda], 22 km NE / de Nicoya caverna Terciopel / 25 m,. 25.VI.2000 / W. Forras ex carrion (INBio). Paratypes (5) with same data as holotype (2 INBio, 3 SBPC).

Distribution. Known only from the type locality in Guanacaste Province, Costa Rica.

Bionomics. The species is reported here from lowland seasonal tropical forest habitats, and from an unknown elevation.

Etymology. The epithet *barrahonda*, Latin noun in apposition, refers to Barra Honda National Park in Costa Rica where all known specimens of this species were collected.

Dissochaetus carinatus Peck and Cook, n.sp.
Fig. 41, 42, 63
http://zoobank.org/7BC15098-E4FE-4068-A572-F7955B113B28

Diagnostic description of male. Total length 3.7–4.0 mm; greatest width 1.7–2.0 mm. Color reddish brown; elytral apices and antennomeres 6–10 darker. Weakly shining. Vestiture pale. Head finely, closely punctate. Antennae reaching base of elytra; antennomere 1 distinctly larger than 2 and 3; 4 more than one half length of 3; 6 wider and slightly shorter than 4 and 5; 7, 9 and 10 transversely asymmetrical. Pronotum widest at basal third; basal angles obtuse. First protarsomere wider than protibial apex. Mesotibia and mesotarsus bearing dense golden setae. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 42) narrowing in apical third, with a pair of strong longitudinal carinae dorsally; lacking lateral setae. Inverted internal sac with pair of narrow, sinuate sclerites. Flagellum not seen. Parameres broad, widest before apex, extending beyond apex of median lobe; each bearing dorsal row of dense, small punctures and pair of apical setae. Genital segment (Fig. 41) elongate, with evenly rounded sides; tergite extending beyond lateral lobes of pleurites, bearing numerous apical setae; lateral lobes of pleurites each bearing single subapical seta; ventral lobes of pleurites acute, not setose; sternite absent.

This species is most easily identified by large size, pronotum with obtuse posterior angles, broad parameres widest before apex, and longitudinally carinate median lobe of aedeagus.

Type material. Holotype, male, with the following label data: "**PANAMA**: Chiriqui / Cerro Hornito / .VIII.1982 / B. Gill, 1200 m, FIT" (SBPC). Paratypes (65): with same data as holotype (34, SBPC); **HONDURAS**: CORTEZ: P.N. Cerro Azul-Meambar, Los Pinos, N14º52.4', W87º54.7, 800 m, 10–16.V.02, FIT, 2nd forest, S. Peck, 02-3 (4, SBPC); OLANCHO: 14 km N La Union, P.N. La Muralla, liquidambar for. FIT, 1350 m, S. & J. Peck, 94-38 (1, SBPC). **NICARAGUA**: MATAGALPA: Selva Negra, 18–22.V.02, N12º59.9', W85º54.6', 1250 m, forest, 6 FITs, S. Peck, 02-06 (1, SBPC). **COSTA RICA**: ALAJUELA: E.B. San Ramon, R.B. San Ramon, 20 km N & 8 km W San Ramon, 810 m, 10º13'4"N, 84º35'46"W, 8.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 084, ex flight intercept trap (1, SBPC); GUANACASTE: Patilla Biological Station, 610 m, 10º59'22"N, 85º25'33"W, 13–15.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 135, ex flight intercept trap (3, SBPC); Cacao Biological Station, 1050 m, 10º55'38"N, 85º27'7"W, 10–11.VII.2000, J. Ashe, R. Brooks, Z. Falin, CR1ABF00 097, ex flight intercept trap (1, SBPC); HEREDIA: 16 km SSE La Virgen, 1050–1150 m, 10º16'N, 84º05'W, 9–14.III.2001, E.G. Riley, primary forest, FIT (1, SBPC). **PANAMA**: CHIRIQUI: La Fortuna, Hydro Trail, 08º42'N, 82º14'W, 1150 m, 23.V–9.VI.1995, J. Ashe, R. Brooks, #156, ex flight intercept trap (3, SBPC); La Fortuna, Cont. Divide Trail, 08º46'N, 82º12'W, 1080 m, 21–25.V.1995, J. & A. Ashe, #043, ex flight intercept trap (1, SBPC); 20 km N Gualaca, Finca La Suiza, 1350 m, 08º39'N, 82º12'W, 22–24.V.1995, J. & A. Ashe, #054, ex flight intercept trap (1, SBPC); 27.7 km W Volcan, Hartmann's Finca, 08º45'N, 82º45'W, J. Ashe & R. Brooks, #231, ex flight intercept trap (1, SBPC); Cerro Hornito, 15 km NE Gualaca, 1200 m, VIII.1982, B. Gill (1, SBPC); Cerro Pelota, 4 km N Santa Clara, 5–15.VII.1982, B. Gill, 1500 m (4, SBPC); La Fortuna Dam, 14.VI–16.VII.1982, B. Gill, wet forest, 1200 m, FIT (4, SBPC); DARIEN: Cana Biological, Cana Biological Station, 500–550 m, 7º45'18»N, 77º41'6»W, 03.VI.1996, J. Ashe, R. Brooks, PAN1AB96 011, ex flight intercept trap (1, SBPC); PANAMA: El Llano-Carti Rd., VI.1982, 400 m, B. Gill, FIT (2, SBPC).

Distribution. This species is known from Honduras, Nicaragua, Costa Rica and Panama.

Bionomics. The species is reported here from tropical wet forest and *Liquidambar* L. cloud forest habitats, and from 400 to 1500 m elevation.

Etymology. The epithet *carinatus* (Latin: *carina*, keel) refers to the presence of carinae dorsally on the apex of the median lobe of the aedeagus of this species.

Dissochaetus cerroverde Peck and Cook, n.sp.
Fig. 43, 44, 63
http://zoobank.org/BDE02119-B416-4E1D-BABE-028B8105D5AC

Diagnostic description of male. Total length 2.6–3.0 mm; greatest width 1.4–1.6 mm. Color dark brown; head darker; mouthparts, antennomeres 1–5 and tarsi paler. Weakly shining. Vestiture pale. Head densely punctate, punctures separated by less than one diameter. Antennae reaching base of elytra; antennomere 4 slightly more than one-half length of 3; 6 shorter than 4 and 5; 7 slightly longer than 9 and 10; 7, 9 and 10 transversely symmetrical. Pronotum widest at basal fourth; basal angles obtuse. First protarsomere as wide as protibial apex. Large metatibial spur as long as first metatarsomere. Median lobe of aedeagus (Fig. 43) narrowing in apical three-fifths to small apical lobe; bearing two pairs of lateral setae. Inverted internal sac with distinct patches of small spines; lacking sclerites; basal bulb and short flagellum present. Parameres narrow, straight, weakly outwardly curved apically, extending beyond apex of median lobe, each baring pair of apical setae. Genital segment (Fig. 44) about as wide as long; tergite truncate, bearing apical setae; lateral lobes of pleurites bearing lateral setae; ventral lobes of pleurites low, rounded, each bearing one apically directed seta and row of four inwardly directed setae on inner margin; sternite absent.

This species is most easily identified by the absence of sclerites in the internal sac combined with a relatively short antennomere 7 (which distinguished this species from *D. forticornis*).

Type material. Holotype, male, with the following label data: "EL SAL [**EL SALVADOR**]: Cerro / Verde, 1900 m / 1–4.V.71 S. Peck / carrion T693–4" (SBPC). Paratypes (6): with same data as holotype (4, SBPC); same data except: dung T691–2 (2, SBPC).

Distribution. This species is known only from the type locality in El Salvador

Bionomics. The species is reported here from a tropical montane forest habitat, and from 1900 m elevation.

Etymology. The epithet *cerroverde*, Latin noun in apposition, refers to the type locality of this species, Cerro Verde, El Salvador.

Dissochaetus chelatus Peck and Cook, n.sp.
Fig. 45, 46, 63
http://zoobank.org/4C84DAFE-F591-4C3D-BD96-68554E8F5315

Diagnostic description of male. Total length 2.3–2.5 mm; greatest width 1.2–1.3 mm. Color dark brown; ventral surface, legs, mouthparts, antennomeres 1–6 and 11 paler. Moderately shining. Vestiture pale, appressed; elytra each with five longitudinal rows of minute erect setae. Head densely punctate, punctures separated by less than one diameter. Antennae reaching base of elytra; antennomere 4 more than one-half length of 3; 6 shorter than 4 and 5; 7 slightly longer than 9 and 10; 7, 9 and 10 transversely symmetrical. Pronotum widest at basal fourth; basal angles obtuse. First protarsomere narrower than protibial apex. Large metatibial spur about as long as first metatarsomere. Median lobe of aedeagus (Fig. 45) broad with narrow apex, with one pair of lateral setae. Inverted internal sac with a complex of large sclerotized structures, some bearing dense patches of small spines. Parameres extending far beyond apex of median lobe; strongly sinuate before apices; apices each bearing clawlike hook on inner margin and two subapical setae. Genital segment (Fig. 46) broad, slightly longer than wide; apical margin of tergite rounded, with a few setae; lateral lobes of pleurites each bearing three setae; ventral lobes of pleurites narrow, each with two apical setae. Sternite absent.

This species is most easily identified by the sinuate, hooked apices of the parameres and the complex structures of the internal sac.

Type material. Holotype, male, with the following label data: "**HONDURAS** ATLANTIDA Dept / 15 km W La Ceiba, 175 m / 20.VI–20.VII.1996, trop. Rain / forest FIT, R. Lehman" (SBPC). Paratypes (3): with same data as holotype (1, SBPC). **COSTA RICA**: HEREDIA: Est. El Ceibo, Braulio Carrillo N.P., 400–600 m, II.1990, C. Chavez & R. Aguilar, (1, SBPC). **MEXICO**: VERACRUZ: 8 mi NNW Sontecomapan, 420', Univ. Biol. Sta. Forest, 3–5.VIII.1971, A. Newton, 325 Dh (1, SBPC) [this locality not shown on map].

Distribution. The species occurs in Honduras and Costa Rica and is also reported here for the first time from Mexico.

Bionomics. The species is reported here from tropical rainforest habitats, and from 128 to around 600 m elevation.

Etymology. The epithet *chelatus* (Greek: clawed) refers to the clawlike hooks on the inner margins of the paramere apices of this species.

Dissochaetus dendrodes Peck and Cook, n.sp.
Fig. 47, 48, 63
http://zoobank.org/7A46228E-B41E-4FFA-AE19-6B421E7295DB

Diagnostic description of male. Total length 4.4 mm; greatest width 2.0 mm. Color reddish brown; head, elytral apices, metafemora, antennomeres 7–10 darker; weakly shining, vestiture pale. Head punctures nearly contiguous. Antennae reaching base of elytra; antennomere 1 wider than 2 and 3; 4 about one-half length of 3; 6 short, about one-half length of 5; 7 larger than 9 and 10; 7, 9 and 10 transversely asymmetrical. Pronotum widest at basal third; basal angles obtuse. First protarsomere wider than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 47) narrowing to narrow, rounded apex; lacking lateral setae. Inverted internal sac with small spines apically and tree-shaped structure with broad lateral branches. Parameres broad, extending well beyond apex of median lobe, each bearing a pair of closely spaced apical

setae. Genital segment (Fig. 48) long and narrow; apical margin of tergite rounded, bearing setae; lateral lobes of pleurites bearing long lateral setae; ventral area of pleurites not lobed, bearing setae on apical margin. Sternite absent.

This species is characterized by large size, short antennomere 6, distinctive tree-like structure in internal sac, and elongate shape of genital segment lacking pleurite ventral lobes.

Type material. Holotype, male, with the following label data: "GUAT. [**GUATEMALA**] Zacapa / 5km. NW San Lorenzo / IV.1987 / 2200m. Sharkey" (SBPC). Paratypes (3) with same data as holotype (2, SBPC); same data except: II.1987 (1, SBPC).

Distribution. This species is known only from the type locality in Zacapa Department, Guatemala.

Bionomics. The species is reported here from an unknown but probably tropical montane forest habitat, and from 2200 m elevation.

Etymology. The epithet *dendrodes* (Greek: *dendro,* tree; *-odes*, suffix denoting resemblance) refers to the treelike sclerotized structure in the internal sac of this species.

Dissochaetus multisetus Peck and Cook, n.sp.
Fig. 49, 50, 63
http://zoobank.org/4418DF01-55E0-4B92-8997-6DF2899F8B41

Diagnostic description of male. Total length 3.0–3.1 mm; greatest width 1.6 mm. Color dark brown; mouthparts, antennomeres 1–4 and apical half of 11, and tarsi paler. Weakly shining. Vestiture pale. Head densely punctate, punctures separated by less than one diameter. Antennae reaching base of elytra; antennomere 4 more than one-half length of 3; 6 shorter than 4 and 5; 7 slightly longer than 9 and 10; 7, 9 and 10 transversely symmetrical. Pronotum widest at basal third; posterior angles obtuse. First protarsomere as wide as protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 49) evenly narrowing to narrow, rounded apex; bearing 3 pairs of lateral setae. Inverted internal sac with patches of small spines, basal bulb and short flagellum. Parameres reaching apex of median lobe; narrow, weakly outwardly curved apically; apices bearing pair of closely spaced setae. Genital segment (Fig. 50) longer than wide; tergite strongly rounded apically, bearing several setae; lateral lobes of pleurites each with several lateral setae; ventral lobes of pleurites acute, bearing one lateral and several medial setae. Sternite absent.

This species is characterized by the long, evenly narrowed median lobe of the aedeagus bearing three pairs of lateral setae, and parameres not extending beyond apex of median lobe.

Type material. Holotype, male, with the following label data: "EL SAL. [**EL SALVADOR**]: 23 km N / Metapan, Montecristo / 2300 m, 8–10.V.71 / S. Peck, carrion T706–7 / cloud forest" (SBPC). Paratypes (3): with same data as holotype (2, SBPC). **GUATEMALA**: Zacapa, 5 km NW San Lorenzo, 2200 m, IV.87, Sharkey (1, SBPC).

Distribution. The species is known from El Salvador and Guatemala.

Bionomics. The species is reported here from cloud forest habitats, and from 2200 to 2300 m elevation.

Etymology. The epithet *multisetus* (Latin *multi*, many; *setus*, bristles) refers to the three pairs of lateral setae on the median lobe of the aedeagus of this species.

Dissochaetus platyformis Peck and Cook, n.sp.
Fig. 51, 52, 61
http://zoobank.org/6E2FC08B-66F0-4489-AAA5-AFA045D3D031

Diagnostic description of male. Total length 3.2–3.5 mm; greatest width 1.5–1.7 mm. Color dark brown; mouthparts, antennomeres 1–3, tarsi paler. Weakly shining. Vestiture pale. Head densely punctate; punctures nearly contiguous. Antennae reaching base of elytra; antennomere 1 longer than 2 and 3; 4 more than one-half length of 3; 6 distinctly shorter than 4 and 5; 7 about equal to 9 and 10; 7, 9 and 10 transversely symmetrical. Pronotum widest at middle; posterior angles weakly obtuse. First protarsomere wider than protibial apex. Large metatibial spur longer than first metatarsomere. Median lobe of aedeagus (Fig. 51) broad, with broadly rounded apex; lacking lateral setae. Inverted internal sac with sclerotized structure partly enclosing basal bulb; flagellum short. Parameres club-shaped, extending beyond apex of median lobe, bearing a pair of apical setae. Genital segment (Fig. 52) elongate; tergite apex rounded, bearing long and short setae; lateral lobes of pleurites with lateral setae; ventral lobes not prominent, each bearing two long setae; sternite absent.

This species is distinguished by the broadly rounded apex of the median lobe of the aedeagus and the club-shaped parameres.

Type material. Holotype, male, with the following label data: "PAN [**PANAMA**]: Chiri. [Chiriqui]; 4.5 km / ESE Cerro Punta / nr. Paso de Respengo / 23–28.V.77, Dh 14,15. / 2600 m, S. & J. Peck" (SBPC). Paratype (1): **COSTA RICA**: 74 km S San Jose, carr., 25.II.1984, H.F. Howden (SBPC).

Distribution. The species is known to occur in Costa Rica and Panama.

Bionomics. The species is reported here from tropical montane forest habitats, and at 2600 m elevation.

Etymology. The epithet *platyformis* (Greek: *platy*, wide; *formis*, shape) refers to the shape of the median lobe of the aedeagus of this species.

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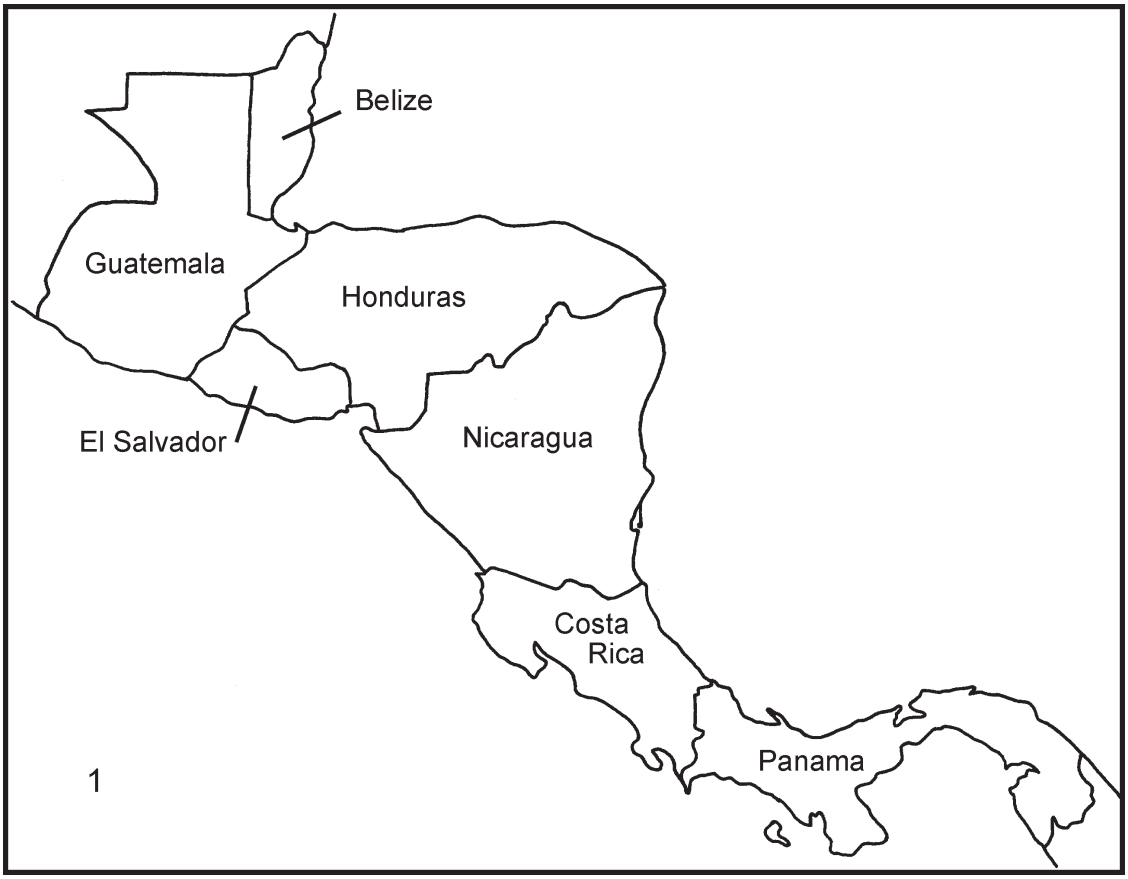


Figure 1. Map of the countries of Central America.

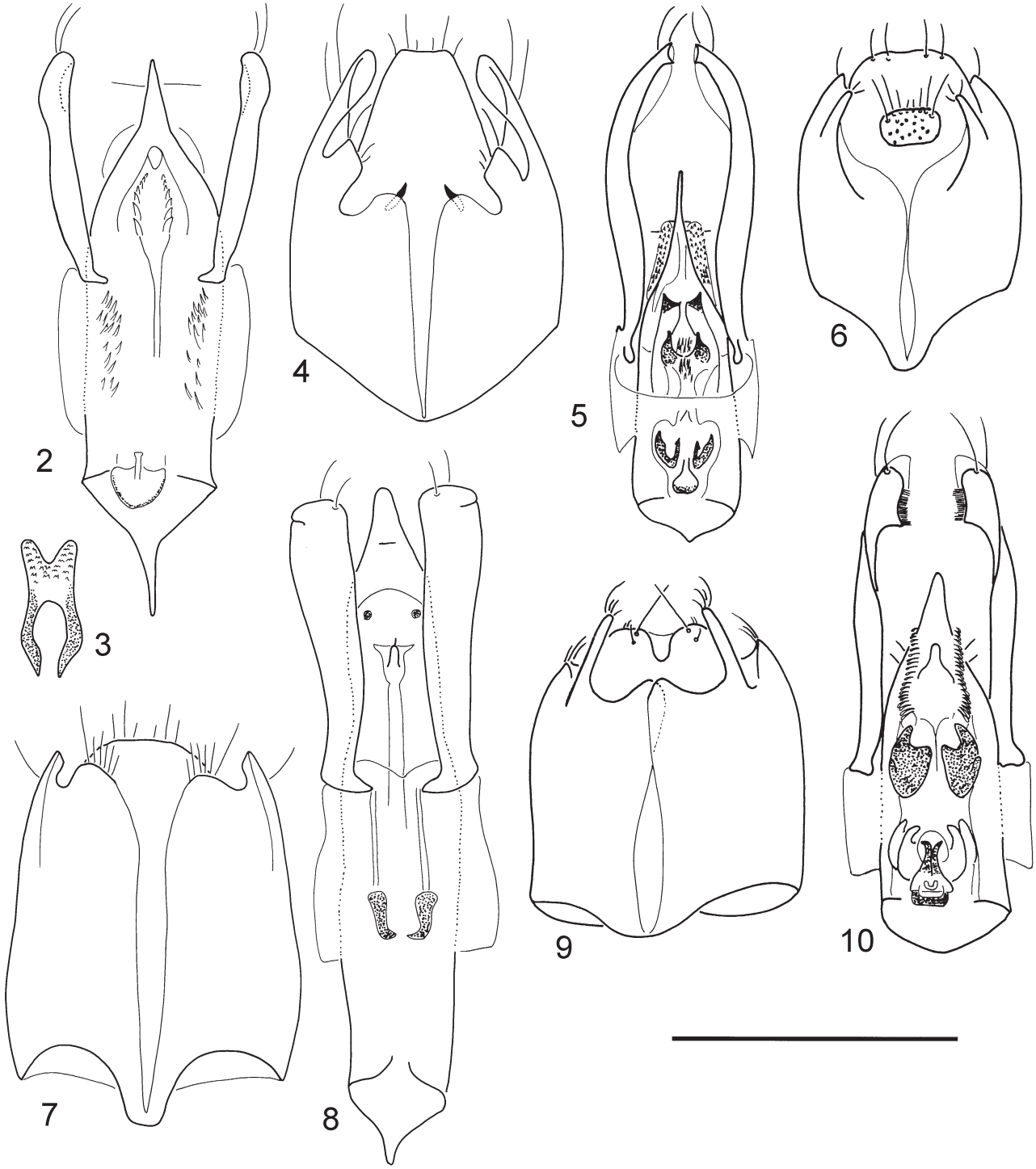


Figure 2–10. Male genitalic structures of *Dissochaetus.* 2) Aedeagus, dorsal, with inverted internal sac, of *D. ovalis.* 3) Ligule, ventral, of *D. ovalis*. 4) Genital segment, ventral, of *D. ovalis.* 5) Aedeagus, dorsal, with inverted internal sac, of *D. hetschkoi.* 6) Genital segment, ventral, of *D. hetschkoi.* 7) Genital segment, ventral, of *D. fimbriatus*. 8) Aedeagus, dorsal, with inverted internal sac, of *D. fimbriatus*. 9) Genital segment, ventral, of *D. obscurus*. 10) Aedeagus, dorsal, with inverted internal sac, of *D. obscurus*. Scale line = 0.35 mm, Fig. 2–6, 9 and 10; 0.60 mm, Fig. 7 and 8. Figures 5, 6, 9 and 10 were previously published (Peck and Cook, 2016).

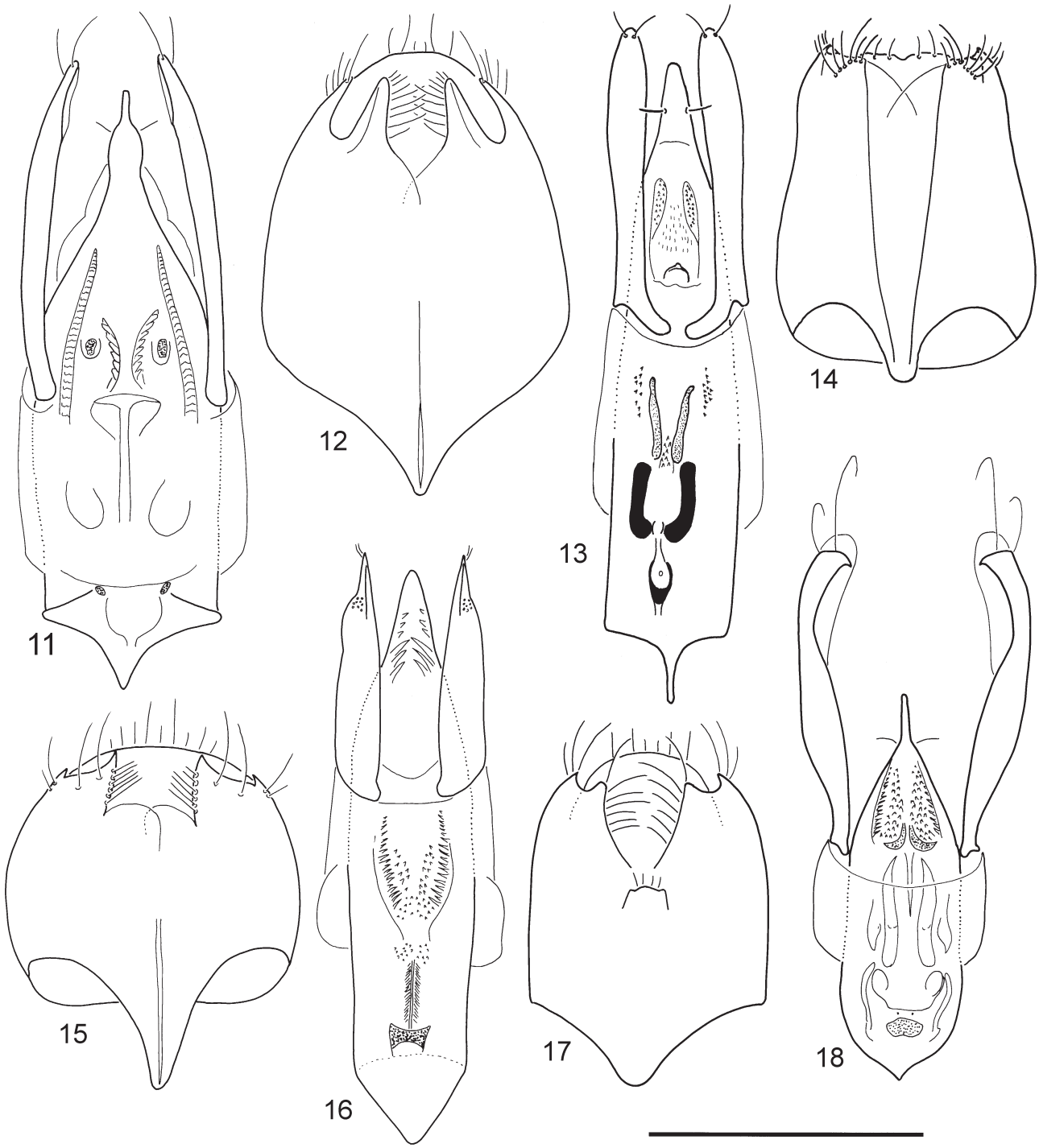


Figure 11–18. Male genitalic structures of *Dissochaetus*. 11) Aedeagus, dorsal, with inverted internal sac, of *D. latitarsus*. 12) Genital segment, ventral, of *D. latitarsus*. 13) Aedeagus, dorsal, with inverted internal sac, of *D. mexicanus*. 14) Genital segment, ventral, of *D. mexicanus.* 15) Genital segment, ventral, of *D. angustilis*. 16) Aedeagus, dorsal, with inverted internal sac, of *D. angustilis*. 17) Genital segment, ventral, of *D. confusus*. 18) Aedeagus, dorsal, with inverted internal sac, of *D. confusus.* Scale line = 0.35 mm. Figures 13 and 14 were previously published (Peck and Cook, 2016).

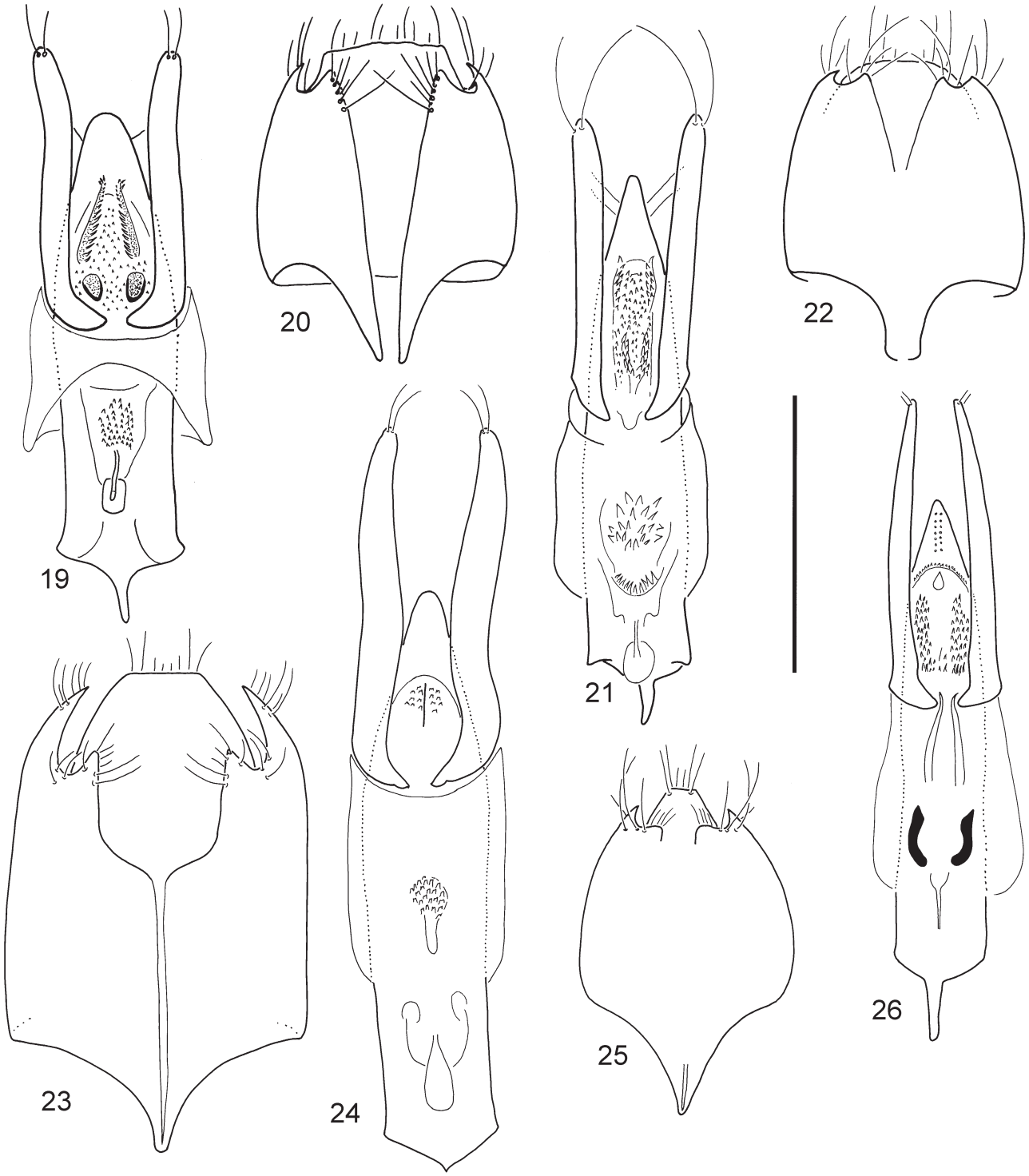


Figure 19–26. Male genitalic structures of *Dissochaetus*. 19) Aedeagus, dorsal, with inverted internal sac, of *D. costaricensis*. 20) Genital segment, ventral of *D. costaricensis*. 21) Aedeagus, dorsal, with inverted internal sac, of *D. forticornis*. 22) Genital segment, ventral, of *D. forticornis*. 23) Genital segment, ventral, of *D. solisi.* 24) Aedeagus, dorsal, with inverted internal sac, of *D. solisi*. 25) Genital segment, ventral, of *D. unidentatus.* 26) Aedeagus, dorsal, with inverted internal sac, of *D. unidentatus*. Scale line = 0.35 mm, Fig. 19–24; 0.50 mm, Fig. 25 and 26. Figures 19 and 20 were previously published (Peck and Cook, 2016).

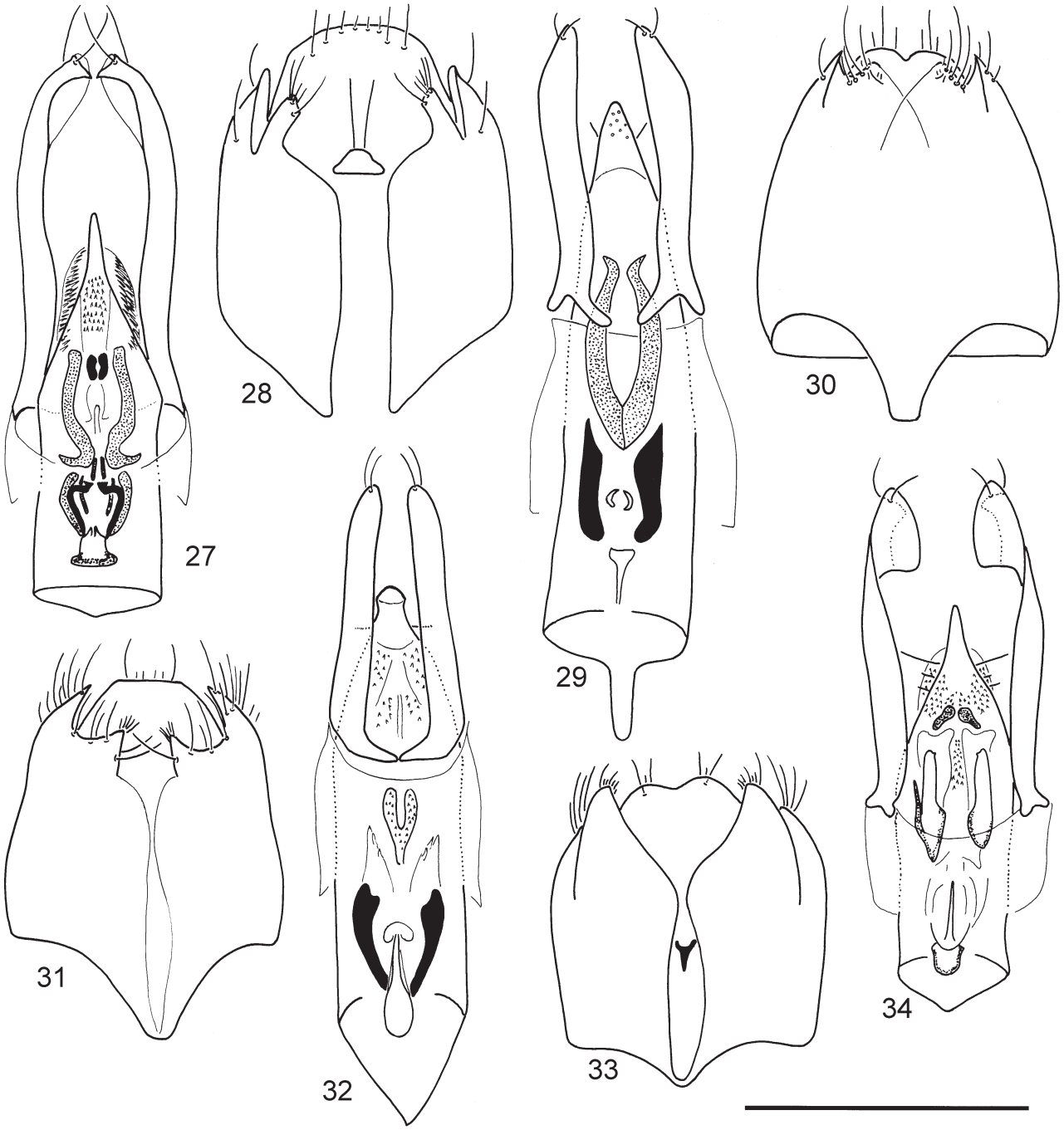


Figure 27–34. Male genitalic structures of *Dissochaetus*. 27) Aedeagus, dorsal, with inverted internal sac, of *D. chiapensis*. 28) Genital segment, ventral, of *D. chiapensis*. 29) Aedeagus, dorsal, with inverted internal sac, of *D. claviformis*. 30) Genital segment, ventral, of *D. claviformis*. 31) Genital segment, ventral, of *D. lobatus*. 32) Aedeagus, dorsal, with inverted internal sac, of *D. lobatus*. 33) Genital segment, ventral, of *D. newtoni*. 34) Aedeagus, dorsal, with inverted internal sac, of *D. newtoni*. Scale line = 0.35 mm. Fig. 27–34 were previously published (Peck and Cook, 2016).

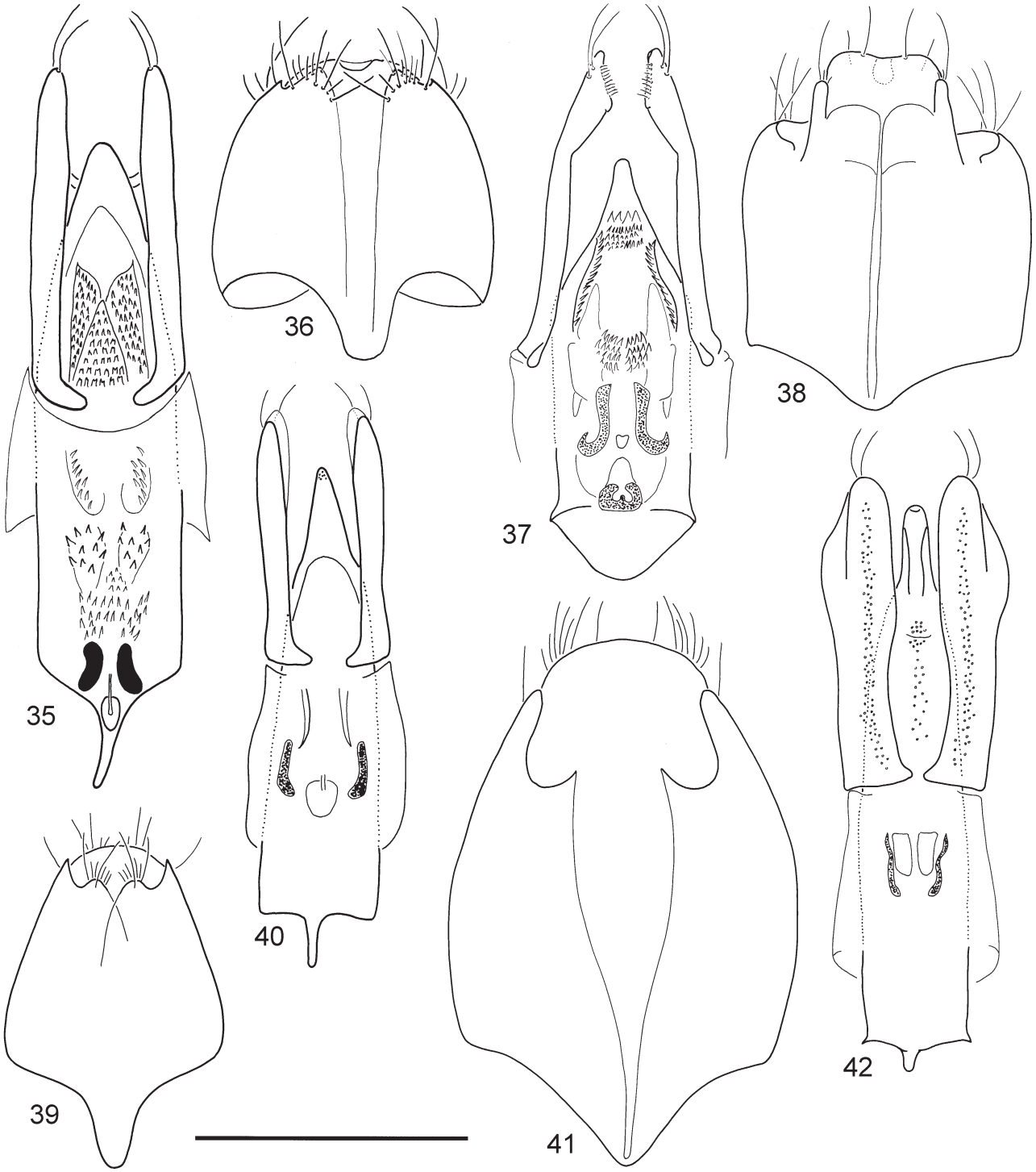


Figure 35–42. Male genitalic structures of *Dissochaetus*. 35) Aedeagus, dorsal, with inverted internal sac, of *D. reniformis*. 36) Genital segment, ventral, of *D. reniformis*. 37) Aedeagus, dorsal, with inverted internal sac, of *D. ancylostylus*. 38) Genital segment, ventral, of *D. ancylostylus*. 39) Genital segment, ventral, of *D. barrahonda.* 40) Aedeagus, dorsal, with inverted internal sac, of *D. barrahonda*. 41) Genital segment, ventral, of *D. carinatus.* 42) Aedeagus, dorsal, with inverted internal sac, of *D. carinatus*. Scale line = 35 mm, Fig. 35–40; 0.50 mm, Fig. 41 and 42. Fig. 35 and 36 were previously published (Peck and Cook, 2016).

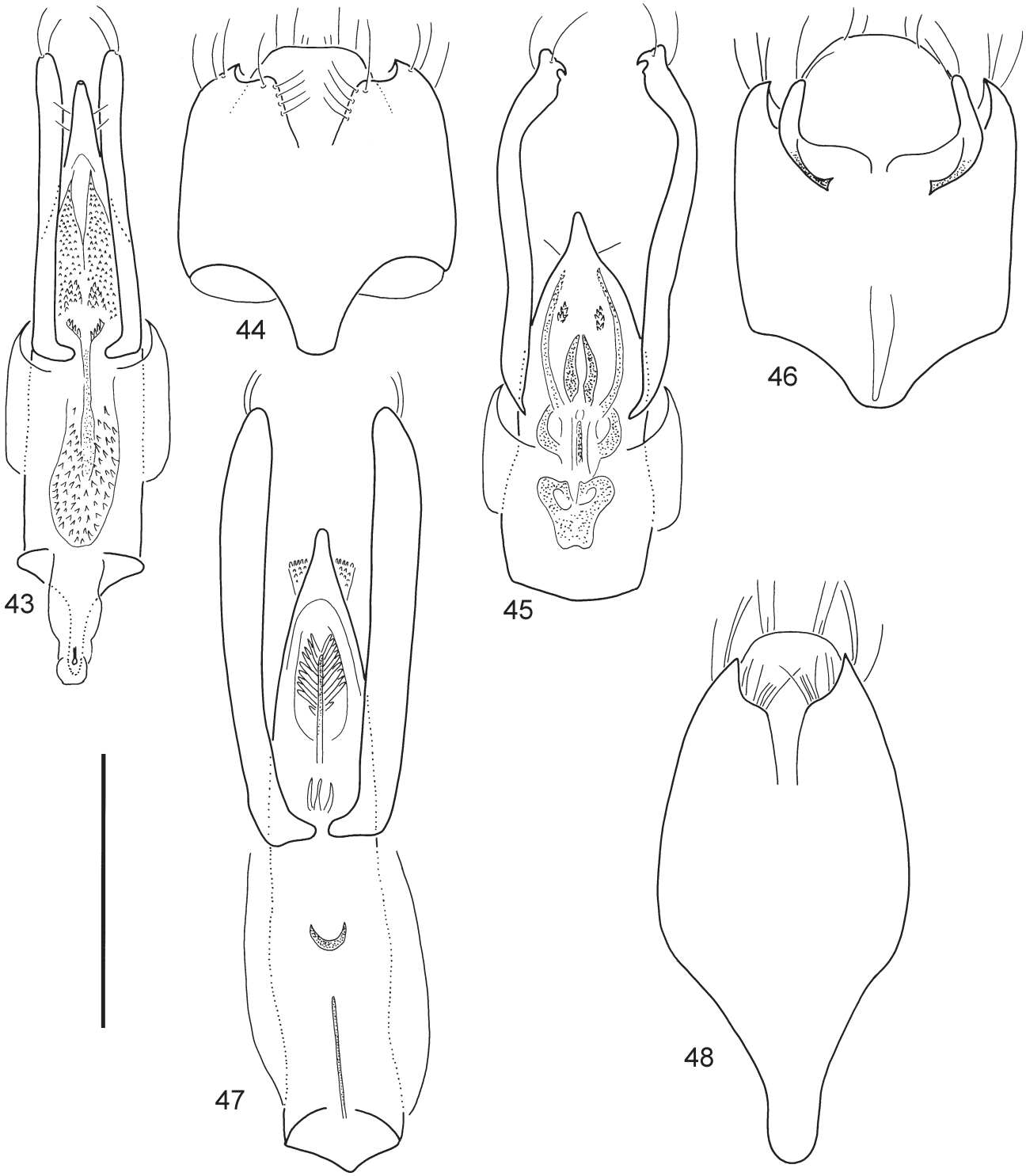


Figure 43–48. Male genitalic structures of *Dissochaetus*. 43) Aedeagus, dorsal, with inverted internal sac, of *D. cerroverde*. 44) Genital segment, ventral, of *D. cerroverde*. 45) Aedeagus, dorsal, with inverted internal sac, of *D. chelatus*. 46) Genital segment, ventral, of *D. chelatus*. 47) Aedeagus, dorsal, with inverted internal sac, of *D. dendrodes.* 48) Genital segment, ventral, of *D. dendrodes.* Scale line = 0.35 mm, Fig. 43–46; 0.50 mm, Fig. 47 and 48.

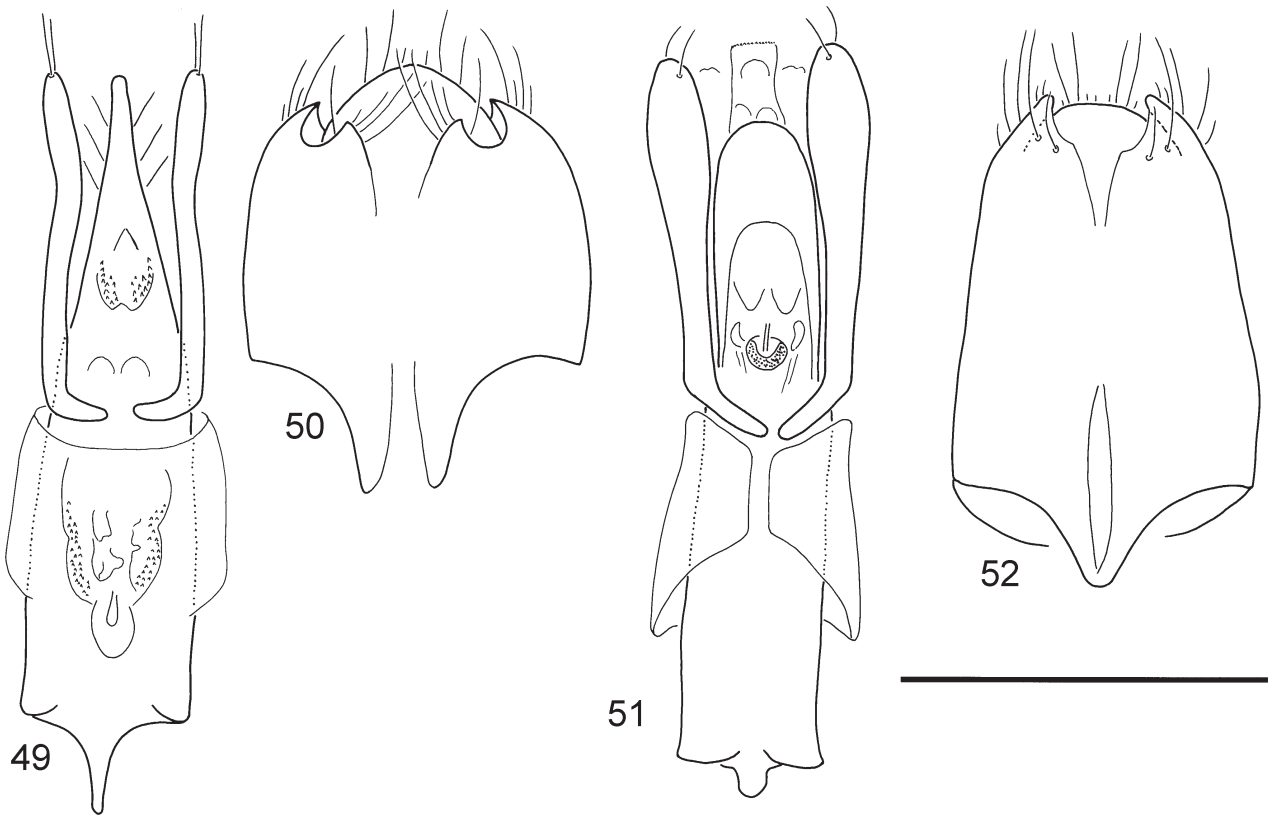


Figure 49–52. Male genitalic structures of *Dissochaetus*. 49) Aedeagus, dorsal, with inverted internal sac, of *D. multisetus*. 50) Genital segment, ventral, of *D. multisetus.* 51) Aedeagus, dorsal, with inverted internal sac, of *D. platyformis*. 52) Genital segment, ventral, of *D. platyformis*. Scale line = 0.35 mm, Fig. 49 and 50; 0.50 mm, Fig. 51 and 52.

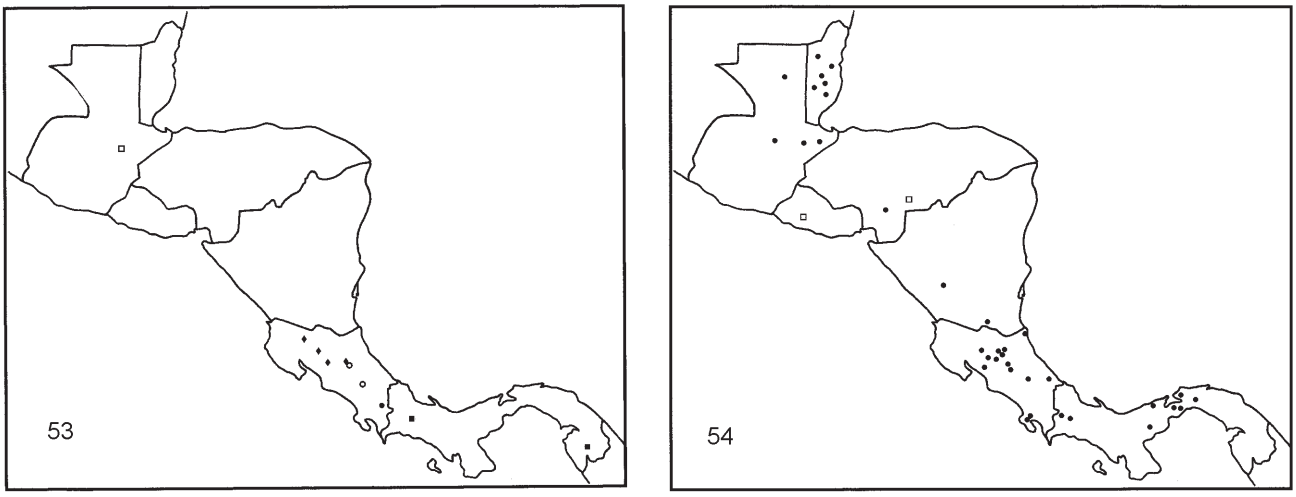


Figure 53. Distribution of *Dissochaetus monilis* (●), *D. ovalis* (■), *D. semipiceus* (□), *D. aequalis* (❍) and *D. solisi* (♦) in Central America. Figure 54. Distribution of *Dissochaetus hetschkoi* (●) and *D. lobatus* (□) in Central America.

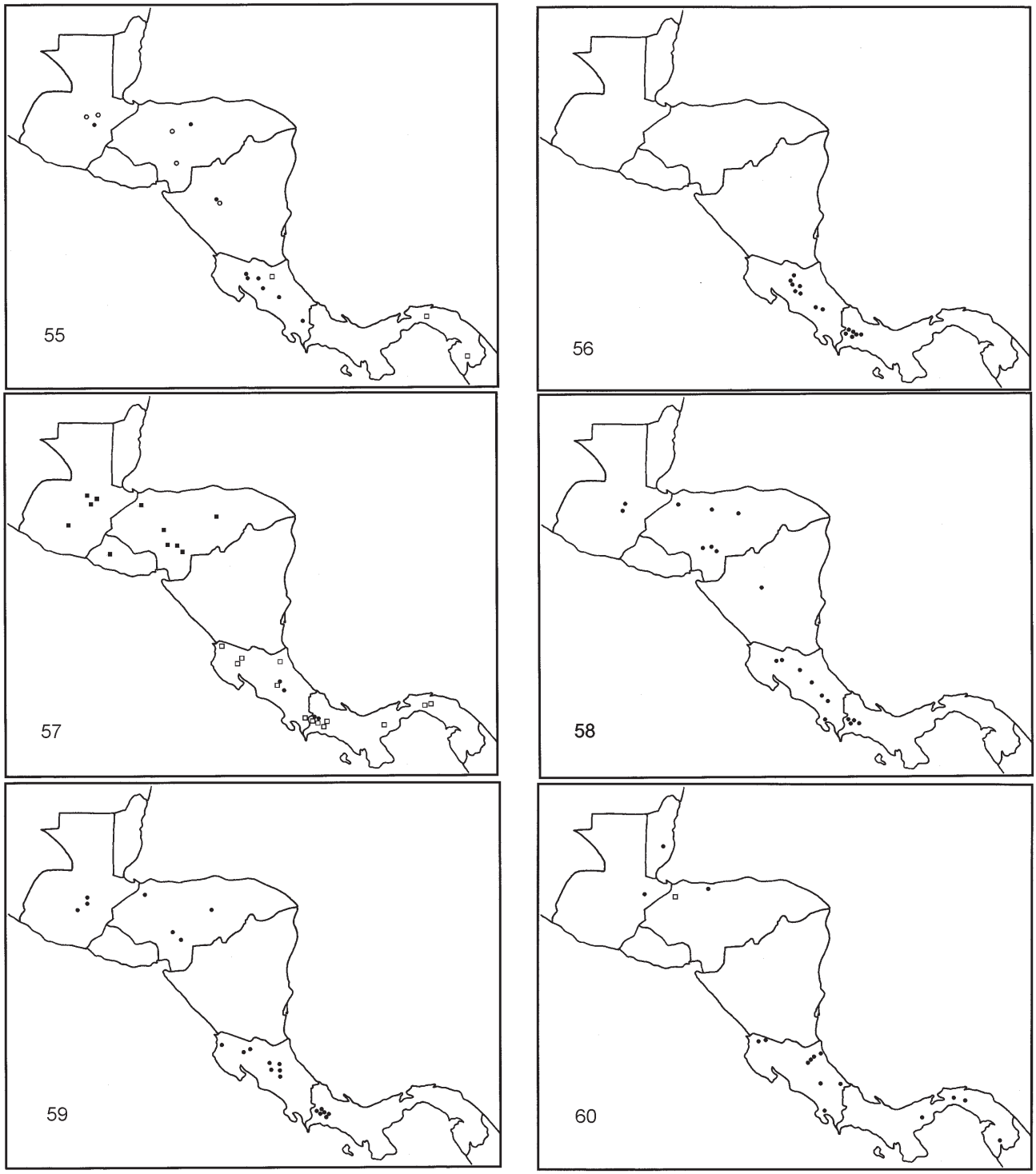
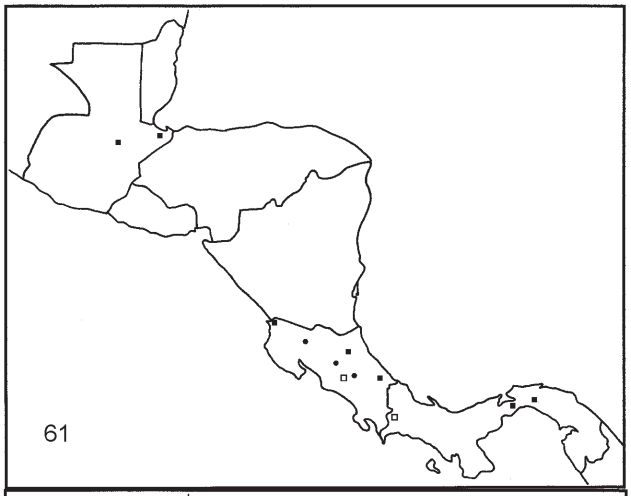
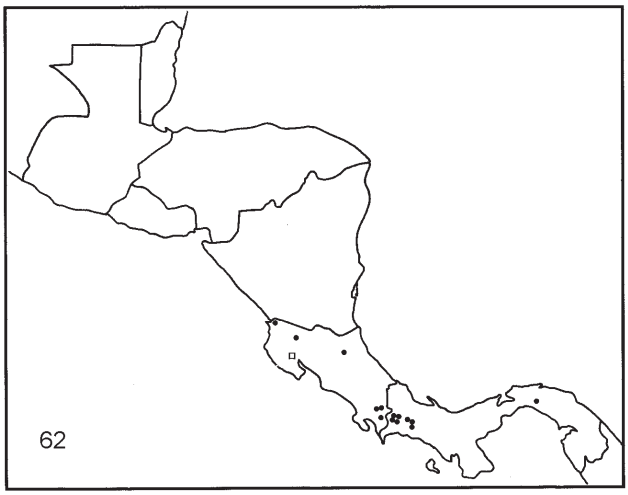


Figure 55. Distribution of *Dissochaetus obscurus* (●), *D. latitarsus* (□) and *D. mexicanus* (○) in Central America. Figure 56. Distribution of *Dissochaetus fimbriatus* (●) in Central America. Figure 57. Distribution of *Dissochaetus angustilis* (●), *D. confusus* (□) and *D. claviformis* (■) in Central America. Figure 58. Distribution of *Dissochaetus costaricensis* (●) in Central America. Figure 59. Distribution of *Dissochaetus forticornis* (●) in Central America. Figure 60. Distribution of *Dissochaetus newtoni* (●) and *D. reniformis* (□) in Central America.





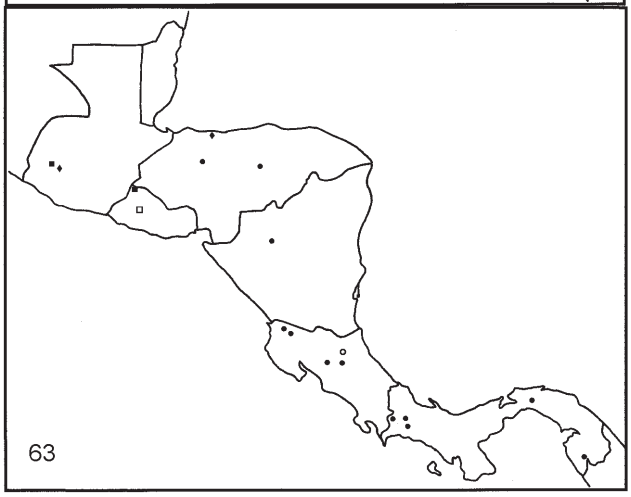


Figure 61. Distribution of *Dissochaetus unidentatus* (●), *D. chiapensis* (■) and *D. platyformis* (□) in Central America. Figure 62. Distribution of *Dissochaetus ancylostylus* (●) and *D. barrahonda* (□) in Central America. Figure 63. Distribution of *Dissochaetus carinatus* (●), *D. cerroverde* (□), *D. chelatus* (○), *D. dendrodes* (♦) and *D. multisetus* (■) in Central America.

Thasus neocalifornicus Brailovsky and Barrera in Brailovsky, Schaefer, Barrera and Packauskas, 1995 Coreidae. Collector: J.C. Rorabaugh. Date: 09 September 2013. Locality: Mexico, Sonora, Nacozari de García, Rancho El Salto, 15.2 km (by air) N of Nacozari de García, Sierra la Púrica. Photographer James C. Rorabaugh.