

A Revision of the Neotropical
Aquatic Beetle Genera *Disersus*,
Pseudodisersus, and *Potamophilops*
(Coleoptera: Elmidae)

PAUL J. SPANGLER
and
SILVIA SANTIAGO

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ABSTRACT

Paul J. Spangler and Silvia Santiago. A Revision of the Neotropical Aquatic Beetle Genera *Disersus*, *Pseudodisersus*, and *Potamophilops* (Coleoptera: Elmidae). *Smithsonian Contributions to Zoology*, number 446, 40 pages, 140 figures, 1987.—The three neotropical genera *Disersus* Sharp (1882), *Pseudodisersus* Brown (1981), and *Potamophilops* Grouvelle (1896) are revised. Keys are provided for the following: the two subfamilies, Larainae and Elminae, recognized in the Elmidae; the nine genera from the New World assigned to the Larainae; the species assigned to the genus *Disersus*; and to separate the larvae of *Disersus* and *Pseudodisersus*. All included taxa are described or redescribed; synonymies are cited; maps showing known distribution are included for each species. Pertinent character states for recognition of the various taxa are illustrated by photographs, line drawings, or scanning electron micrographs. The larvae of *Disersus* and *Pseudodisersus* are described, illustrated, and distinguished in a key; their food habits are reported; a valve-like structure in the gut is discussed and illustrated; and their large air reservoirs are described and illustrated.

Ten species are now included in the genus *Disersus*. Three previously described species—*Disersus cacicus* (Coquérel, 1851), *D. longipennis* Sharp (1882), and *D. uncus* Spangler and Santiago (1982)—are redescribed; the following new species are described: *D. ambocheilus*, *D. chibcha*, *D. dasycolus*, *D. inca*, *D. pilitibia*, *D. quincemil*, and *D. saxicola*.

The type-species designated by Brown for his genus *Pseudodisersus*, *P. coquereli* Brown (1981), is found to be conspecific with *Pseudodisersus goudotii* (Guérin-Méneville, 1843) and is placed in synonymy; therefore, *P. goudotii* is now the type-species of the monotypic genus *Pseudodisersus*.

The monotypic genus *Potamophilops* and the single, presently included species, *P. cinereus* (Blanchard, 1841), are redescribed and illustrated.

Se revisan los tres géneros neotropicales *Disersus* Sharp (1882), *Pseudodisersus* Brown (1981), y *Potamophilops* Grouvelle (1896). Se proveen claves para los siguientes niveles: las dos subfamilias, Larainae y Elminae, que se reconocen en los Elmidae; los nueve géneros del Nuevo Mundo asignados a los Larainae; las especies asignadas al género *Disersus*; y para separar las larvas de *Disersus* y *Pseudodisersus*. Todos los taxa incluidos son descritos o redescritos; las sinonimias correspondientes son citadas; se incluyen mapas mostrando la distribución conocida para cada especie. Los principales caracteres para el reconocimiento de los diversos taxa, se ilustran por medio de fotografías, esquemas o microfotografías de microscopio electrónico. Las larvas de *Disersus* y *Pseudodisersus* se describen, ilustran y se separan por medio de una clave; se reportan sus hábitos alimenticios; se ilustra y discute la presencia de una estructura con forma de valva en el intestino; y sus grandes reservorios de aire se describen e ilustran.

Diez especies se incluyen ahora en el género *Disersus*. Tres especies previamente descritas—*Disersus cacicus* (Coquérel, 1851), *D. longipennis* Sharp (1882), y *D. uncus* Spangler y Santiago (1982)—son redescritas; las siguientes especies nuevas son descritas—*D. ambocheilus*, *D. chibcha*, *D. dasycolus*, *D. inca*, *D. pilitibia*, *D. quincemil*, y *D. saxicola*.

La especie tipo designada por Brown para su género *Pseudodisersus*, *P. coquereli* Brown (1981), se encontró conespecífico con *Pseudodisersus goudotii* (Guérin-Méneville, 1843) y es colocada en sinonimia; por lo tanto, *P. goudotii* es ahora la especie tipo del género monotípico *Pseudodisersus*.

El género monotípico *Potamophilops* y la única especie incluida, *P. cinereus* (Blanchard, 1841), son redescritos e ilustrados.

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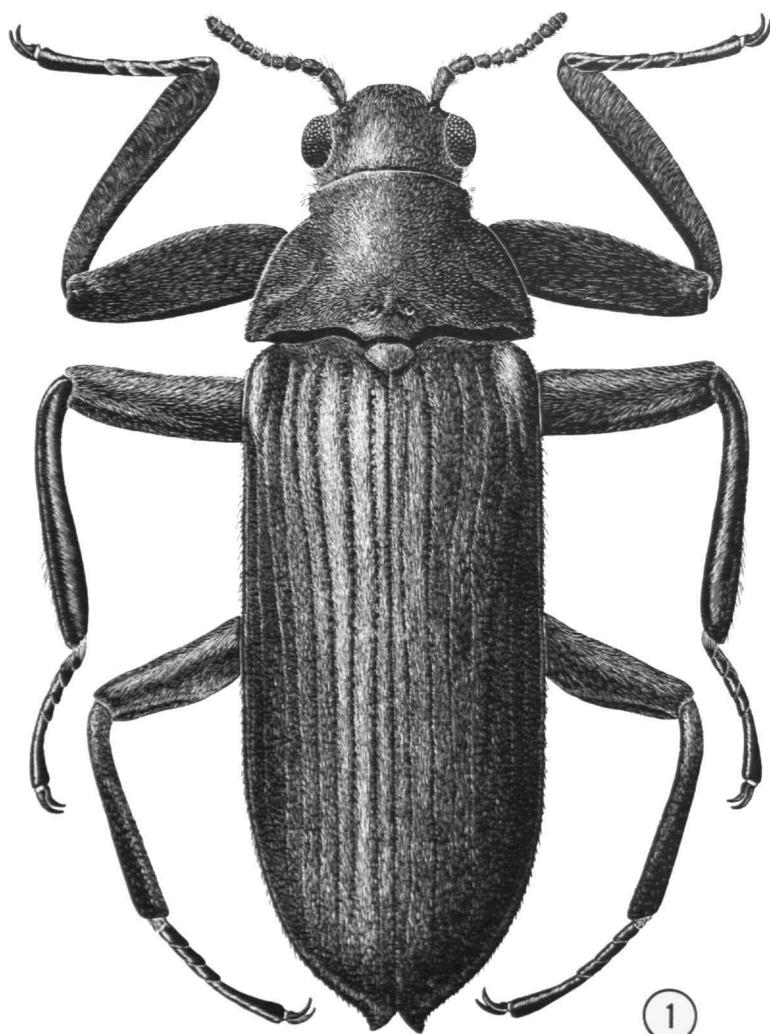


FIGURE 1.—*Disersus quincemil*, new species, habitus, dorsal view.

A Revision of the Neotropical Aquatic Beetle Genera *Disersus*, *Pseudodisersus*, and *Potamophilops* (Coleoptera: Elmidae)

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Introduction

The three genera treated in this study—*Disersus* Sharp (1882), *Potamophilops* Grouvelle (1896), and *Pseudodisersus* Brown (1981)—have not been revised previously. It seems appropriate to revise these related taxa because adults of several new species of *Disersus* and larvae of *Disersus* and *Pseudodisersus* were collected recently. Information about the habitats and food of *Disersus* and *Pseudodisersus* are included.

With his description of the genus *Disersus* and *D. longipennis*, Sharp stated that *Potamophilus goudotii* Guérin-Méneville (1843) from Colombia belonged to his new genus, but made no mention of *P. cacticus* Coquérel (1851) also described from Colombia; however, Grouvelle (1896) transferred *P. cacticus* to *Disersus* (*Potamophilus* now restricted to taxa of the Old World). Zaitzev (1910) and Blackwelder (1944) continued to maintain *longipennis*, *goudotii* (now *Pseudodisersus*), and *cacticus* in the genus *Disersus* and Spangler and Santiago (1982) described a species, *Disersus uncus*, from Costa Rica. In this study, we describe seven additional new species as members of *Disersus*.

The genus *Pseudodisersus*, based on *P. coquereli*, was described by Brown (1981) for a species represented by eight specimens from Colombia in the collections of the British Museum that were identified as *Potamophilus goudotii*. Although he was unable to examine the type of *P. goudotii*, Brown described the new genus and species because, in his opinion, the eight specimens from the British Museum differed sufficiently from Guérin-Méneville's description of

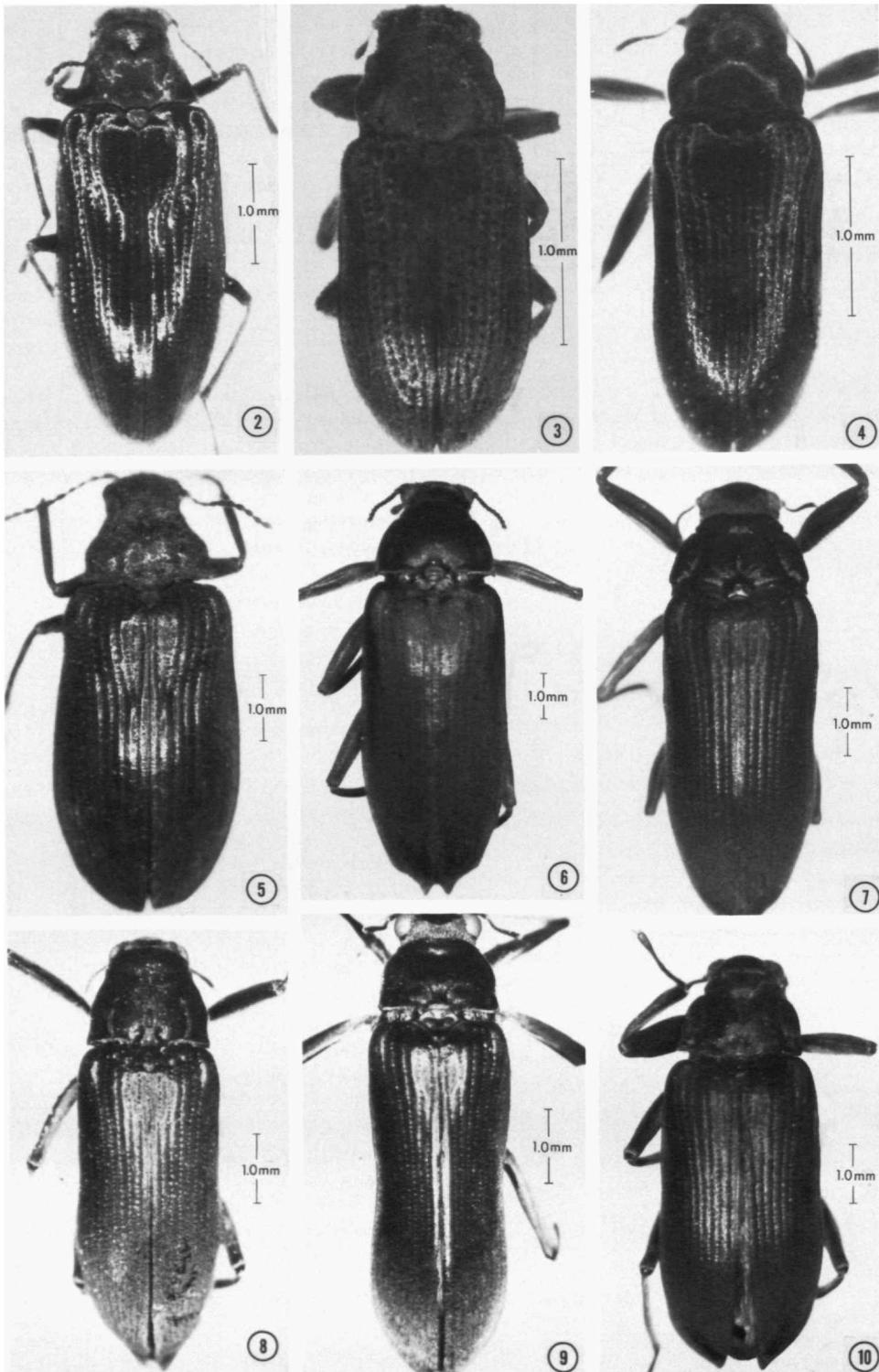
Potamophilus goudotii to represent a distinct new species. Brown stated that if the type of *Disersus goudotii* (Guérin-Méneville, 1843) was examined and found to be the same as *P. coquereli*, the type-species of *Pseudodisersus* would be *P. goudotii* (Guérin-Méneville, 1843) instead of *P. coquereli* Brown (1981). We have examined the type specimen of *P. goudotii* and paratypes of *P. coquereli* and found that they are conspecific; therefore, *coquereli* is a synonym of *goudotii* and the latter becomes the type-species of the genus *Pseudodisersus*.

At the present time only one species of *Pseudodisersus* and one species of *Potamophilops* are known.

Members of the genera *Disersus* and *Pseudodisersus* are presently known from Central America and South America and are found most commonly inhabiting streams in mountains and foothills; most specimens have been collected in the Andes at altitudes ranging from 672 to 3000 m. The genus *Potamophilops* is presently known only from Argentina and Brazil.

BIOLOGY.—Very little information has been published on the biology of the members of the genera *Disersus*, *Pseudodisersus*, and *Potamophilops*. Hinton (1940) mentioned that adult members of the former tribe Larini (now subfamily Larinae, fide Spangler, 1986), to which *Disersus* belongs, are riparian and Spangler (1981), referring to larvae elmids in general, reported that they live out of water near the air-water interface and inhabit whitewater habitats in riffles in small streams, in brooks, and at cascades. Spangler (1982) also reported that adults of *Disersus* enter water at times; however, it had not been determined whether those adults were foraging on the periphyton on the rock surfaces or whether they were ovipositing females. In Panama in 1983, Spangler, Faitoute, and Steiner found numerous specimens of *Pseudodisersus* under a thin layer of water running over vertical rock surfaces in cascades. In that situation the

Paul J. Spangler, Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington D.C. 20560. Silvia Santiago, Instituto de Biología UNAM, Departamento de Zoología, Apartado Postal no. 70-153, 04510 Mexico 20, D.F.



FIGURES 2-10.—Habitus views of New World genera in subfamily Larainae: 2, *Hydora*; 3, *Phanocerus*; 4, *Hexanchorus*; 5, *Lara*; 6, *Disersus*; 7, *Pseudodisersus*; 8, *Neblinagena*; 9, *Hispaniolara*; 10, *Potamophilops*.

beetles were located by spotting the silvery air bubble caused by the hydrofuge pubescence repelling the water as it passed over the beetles. The beetles clung so tenaciously to the rock surfaces that some of them had to be picked up one by one. Adult larvae found above water at the air-water interface may be captured rather easily by hand or net because they usually do not fly at the slightest disturbance. Adult larvae are commonly attracted to ultraviolet lights operated close to the brooks they inhabit. Larvae of the Larainae are aquatic and we have often found them in submerged rotting wood or leaf packs.

MATERIAL STUDIED.—Most of the material examined and listed for this study is from the entomological collections in the National Museum of Natural History, Smithsonian Institution (USNM = the former United States National Museum, collections now in the National Museum of Natural History); specimens listed without abbreviations indicating the depository are those from the Smithsonian. The types and other specimens received for study from other institutions and the abbreviations used to identify those institutions, as well as the curators who lent the material, are as follows: The British Museum (Natural History), London, Miss Christine von Hayek and Mrs. E.R. Peacock (BMNH); the Los Angeles County Museum of Natural History, Dr. Charles L. Hogue (LACM); the Louisiana State University, Dr. Joan Chapin (LSU); the Florida State Collection of Arthropods, Dr. Robert E. Woodruff (FSCA); Museo Argentino de Ciencias Naturales, Buenos Aires, Dr. M.J. Viana (MA); the Museum National d'Histoire Naturelle, Paris, France, Mlle. Nicole Berti (PM). We thank the above men-

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Family ELMIDAE Shuckard, 1839

Key to Subfamilies of the Elmidae

(Adults)

- Adults riparian, only occasionally entering water; fly commonly. Body densely pubescent; without plastrons. Cuticle moderately soft. Procoxae strongly transverse and trochantin exposed. **LARAINAE**
- Adults aquatic, rarely leaving water; fly rarely. Body with plastrons, especially on venter. Not pubescent except cleaning tufts on tibiae of some species. Cuticle typically hard. Procoxae usually round and trochantin not exposed. . . **ELMINAE**

Clave para las Subfamilias de la Elmidae

(Adultos)

- Adultos ribereños, solo ocasionalmente entran al agua; comunmente voladores. Cuerpos densamente pubescente; sin plastron. Cutícula moderadamente blanda. Procoxas fuertemente transversas y trocantin expuesto. **LARAINAE**

Adultos acuáticos, raramente fuera del agua; raramente voladores. Cuerpo con plastron, especialmente en la superficie ventral. No pubescente excepto por los cepillos limpiadores sobre las tibias de algunas especies. Cutícula típicamente dura. Procoxas generalmente globosas y trocantín no expuesto. ELMINAE

Key to the Genera of Larinae of the Western Hemisphere

(Adults)

1. Length, 2.5 to 4.5 mm. 2
Length, 5.6 to 10.1 mm. 4
2. Elytron with 1 accessory basal stria [Figure 2]. Chile and Argentina.
. *Hydora* Broun, 1882
Elytron without accessory basal stria. 3
3. Pronotum with transverse groove across apical third and 2 small prescutellar foveae [Figure 4]; anterolateral angles of pronotum declivous. Mexico to Peru and West Indies. *Hexanchorus* Sharp, 1882
Pronotum without transverse groove across apical third [Figure 3]. Texas to Peru, Greater Antilles. *Phanocerus* Sharp, 1882
4. Elytron with 1 accessory basal stria [Figure 5]. British Columbia and Pacific Northwestern United States. *Lara* LeConte, 1852
Elytron without accessory basal stria. 5
5. Pronotum with a distinct transverse groove across apical third 6
Pronotum without transverse groove across apical third [Figure 6]. Costa Rica to Peru. *Disersus* Sharp, 1882
6. Pronotum with a lateral longitudinal carina or arcuate-sinuate groove on basal third. 7
Pronotum without carina or arcuate-sinuate groove on basal third. 8
7. Pronotum with 2 prescutellar mammiform tubercles at base and 1 similar tubercle near each posterolateral angle, thus appearing bidentate [Figure 7]. Panama to Ecuador. *Pseudodisersus* Brown, 1981
Pronotum with 2 short, converging, prescutellar carinae, each with a deep pit laterally [Figure 8]. Venezuela. *Neblinagena* Spangler, 1985
8. Body narrow [Figure 9]. Prosternal process sagittate, tapering gradually to apex. Hispaniola. *Hispaniolara* Brown, 1981
Body broad [Figure 10]. Prosternal process ligulate at apex. Argentina and Brazil. *Potamophilops* Grouvelle, 1896

Clave para los Géneros de Larinae del Hemisferio Oeste

(Adultos)

1. Longitud, 2.5–4.5 mm. 2
Longitud, 5.6–10.1 mm. 4
2. Elitro con una estría basal accesoria [Figura 2]. Chile y Argentina.
. *Hydora* Broun, 1882
Elitro sin una estría basal accesoria. 3
3. Pronoto con un surco transverso a todo lo ancho del tercio apical y 2 pequeñas foveas preescutelares [Figura 4]; ángulos anterolaterales del pronoto en declive. México a Perú y las Antillas. *Hexanchorus* Sharp, 1882
Pronoto sin un surco transverso en el tercio apical [Figura 3]. Texas a Perú, Antillas Mayores. *Phanocerus* Sharp, 1882
4. Elitro con una estría basal accesoria [Figura 5]. Columbia Britanica y Noroeste del Pacifico de Estados Unidos. *Lara* LeConte, 1852
Elitro sin estría basal accesoria. 5

- 5. Pronoto con un surco transverso bien marcada a todo lo ancho del tercio apical. 6
 Pronoto sin surco transverso a todo lo ancho del tercio apical [Figura 6]. Costa Rica a Perú. *Disersus* Sharp, 1882
- 6. Pronoto con una carina longitudinal lateral o con un surco arqueado-sinuoso en el tercio basal. 7
 Pronoto sin carina o surco arqueado-sinuoso en el tercio basal. 8
- 7. Pronoto con 2 tubérculos mamiformes preescutelares en la base y un tubérculo similar cerca de cada ángulo posterolateral, apareciendo por lo tanto bidentado [Figura 7]. Panamá a Ecuador. *Pseudodisersus* Brown, 1981
 Pronoto con 2 carinas cortas preescutelares convergentes, cada una con una pequeña pero profunda cavidad lateral [Figura 8]. Venezuela.
 *Neblinagena* Spangler, 1985
- 8. Cuerpo angosto [Figura 9]. Proceso prosternal sagitado angostándose gradualmente hasta el ápice. Hispaniola. *Hispaniolara* Brown, 1981
 Cuerpo amplio [Figura 10]. Proceso prosternal ligulado en el ápice. Argentina y Brasil. *Potamophilops* Grouvelle, 1896

Disersus Sharp, 1882

FIGURES 1, 6, 11-109

Disersus Sharp, 1882:127 [type-species: *Disersus longipennis* Sharp; by monotypy].—Coquérel, 1851:596 [keys *D. cacticus*, 1851, as *Potamophilus*].—Grouvelle, 1896:78 [in key to genera].—Zaitzev, 1908:288 [catalog]; 1910:7 [catalog].—Hinton, 1940:226 [in key to genera, adults], 230 [in key to genera, larvae].—Blackwelder, 1944:272 [catalog].—Bertrand, 1972:482 [in key to larvae].—Brown, 1981:103 [in key to world larvae genera, adults].

DIAGNOSIS.—Body elongate, robust, densely pubescent. Length, 5.6 to 10.1 mm. Head not retracted into pronotum. Labrum very broad, wider than clypeus. Antennae widely separated at base; each 11 segmented. Pronotum wider than long, narrowed anteriorly; without anterior, transverse impression; anterolateral angles obtuse; posterolateral angles acute; posterior margin not raised (Figure 12). Proster-num subtriangular, shallowly excavated, very short in front of procoxae; anterior margin reflexed; apex rounded (Fig-

ure 13). Procoxae, mesocoxae, and metacoxae moderately broadly separated. Mesosternum with large, deep, medial excavation for entire length to receive apex of prosternal process. Metasternum with a narrow, median, longitudinal groove; disc broadly shallowly depressed on each side of midline, more pronounced on males. Legs long; tarsal claws robust, without teeth. Elytra elongate, not much broader across humeri than basal width of pronotum; apices acute or rounded and divergent at apex; without accessory striae; intervals only slightly raised (Figure 13). Hind wings without radial cross-vein; with closed anal cell; vein 1A interrupted between crossvein cu-a and wing margin; veins 2A₁ and 2A₂ fused; vein 3A₁ joining 2A₃ on posterior margin of anal cell distal to base of cell. Abdomen of 5 visible segments; segments 1-4 progressively shorter (Figure 14). Male genitalia very elongate and slender; basal piece longer than median lobe; median lobe longer than parameres. Female genitalia with coxites short and broad; styli short.

Members of the genus *Disersus* are known to occur in the mountains from Costa Rica to Cuzco, Peru (Figure 15).

Key to the Species of *Disersus* (Males)

- 1. Protibia with pubescence on lateral margin and ventrodistal third much longer than that on rest of tibia [Figure 18]. Male genitalia as illustrated [Figures 16, 17]. Ecuador. 1. *D. dasycolus*, new species
 Protibia with pubescence on lateral margin and ventrolateral third short and same length as that on rest of tibia. 2
- 2. Labrum with anterior margin thickly rimmed. Male genitalia as illustrated [Figures 22, 23]. Ecuador and Peru. 2. *D. ambocheilus*, new species
 Labrum with anterior margin not thickly rimmed. 3
- 3. Metatibia entirely pubescent to apex on lateral surface or essentially so [Figure 35]. Male genitalia as illustrated [Figures 31, 32]. Colombia and Ecuador. 3. *D. pilitibia*, new species
 Metatibia not entirely pubescent on lateral surface [Figures 19, 26, 44]. . . . 4

4. Apices of elytra rounded [Figure 47]. Male genitalia as illustrated [Figures 40, 41]. Peru. 4. *D. inca*, new species
Apices of elytra not rounded, but produced, obtusely or acutely angulate [Figures 56, 65, 74]. 5
5. Elytral apices indistinctly produced, angulate, [Figures 56, 65]. 6
Elytral apices distinctly produced, obtusely or acutely angulate [Figures 74, 83, 92, 101]. 7
6. Femora reddish yellow on basal half. Length, 7 to 7.2 mm. Median lobe of male genitalia strongly hooked apically in lateral view [Figure 50]. Costa Rica. 5. *D. uncus* Spangler and Santiago, 1982
Femora blackish brown. Length, 8.6 to 9.3 mm. Median lobe of male genitalia slightly bent apically in lateral view [Figure 59]. Colombia. 6. *D. chibcha*, new species
7. Elytral apices strongly emarginate along inner (sutural) margins [Figures 74, 83]. 8
Elytral apices not emarginate along inner margins [Figures 92, 101]. 9
8. Elytral apices strongly reflexed. Labrum not pubescent except at base. Venter piceous. Male genitalia as illustrated [Figures 67, 68]. Ecuador and Colombia. 7. *D. cacticus* (Coquérel), 1851
Elytral apices not strongly reflexed. Labrum pubescent. Venter rufous to piceous. Male genitalia as illustrated [Figures 76, 77]. Panama and Costa Rica. 8. *D. longipennis* Sharp, 1882
9. Non-pubescent area on lateral (outer) surface of metatibiae shorter, covering apical three-fourths [Figure 89]. Last abdominal sternum strongly emarginate [Figure 90]. Male genitalia as illustrated [Figures 85, 86]. Peru. 9. *D. quincemil*, new species
Non-pubescent area on lateral surface of metatibiae longer, covering apical five-sixths [Figure 98]. Last abdominal sternum shallowly emarginate [Figure 99]. Male genitalia as illustrated [Figures 94, 95]. Ecuador. 10. *D. saxicola*, new species

Clave para las Especies de *Disersus* (Machos)

1. Protibia con pubescencia en el margen lateral y en el tercio ventrodistal en una área mucho más larga que en el resto de la tibia [Figura 18]. Genitalia del macho como se ilustra [Figuras 16, 17]. Ecuador. . . 1. *D. dasycolus*, sp. nov.
Protibia con pubescencia en el margen lateral y en el tercio ventrolateral en una área corta y de la misma longitud que en el resto de la tibia. 2
2. Labro con el margen anterior bordado gruesamente. Genitalia del macho como se ilustra [Figuras 22, 23]. Ecuador y Perú. . . . 2. *D. ambocheilus*, sp. nov.
Labro con el margen anterior no bordado gruesamente. 3
3. Metatibia en la superficie lateral totalmente pubescente hasta el ápice o esencialmente así [Figura 35]. Genitalia del macho como se ilustra [Figuras 31, 32]. Colombia y Ecuador. 3. *D. pilitibia*, sp. nov.
Metatibia en la superficie lateral no totalmente pubescente [Figuras 19, 26, 44] 4
4. Apices de los elitros redondeados [Figura 47]. Genitalia del macho como se ilustra [Figuras 40, 41]. Perú. 4. *D. inca*, sp. nov.
Apices de los elitros no redondeados pero prolongados, angulados obtusa o agudamente [Figuras 56, 65, 74]. 5
5. Apices elitrales no claramente prolongados ni angulados [Figuras 56, 65]. . . 6
Apices elitrales claramente prolongados y angulados obtusa o agudamente [Figuras 74, 83, 92, 101]. 7

6. Fémures amarillo rojizos en la mitad basal. Longitud 7–7.2 mm. Lóbulo medio de los genitalia del macho con el ápice fuertemente curvado en forma de gancho en vista lateral [Figura 50]. Costa Rica. 5. *D. uncus* Spangler y Santiago, 1982
Fémures pardo negruzcos. Longitud, 8.6–9.3 mm. Lóbulo medio de los genitalia del macho con el ápice ligeramente doblado en vista lateral [Figura 59]. Colombia. 6. *D. chibcha*, sp. nov.
7. Apices elitrales fuertemente emarginados a lo largo de los márgenes internos (sutural) [Figuras 74, 83]. 8
Apices elitrales no emarginados a lo largo de los márgenes internos [Figuras 92, 101]. 9
8. Apices elitrales fuertemente doblados hacia arriba. Labro no pubescente excepto en la base. Superficie ventral piceous. Genitalia del macho como se ilustra [Figuras 67, 68]. Ecuador y Colombia. 7. *D. cacicus* (Coquérel), 1851
Apices elitrales no fuertemente doblados hacia arriba. Labro pubescente. Superficie ventral rufous a piceous. Genitalia del macho como se ilustra [Figuras 76, 77]. Panamá y Costa Rica. 8. *D. longipennis* Sharp, 1882
9. Metatibias con área no pubescente más corta en la superficie lateral (externa) cubriendo las tres cuartas partes apicales [Figura 89]. Ultimo esterno abdominal fuertemente emarginado [Figura 90]. Genitalia del macho como se ilustra [Figuras 85, 86]. Perú. 9. *D. quincemil*, sp. nov.
Metatibias con área no pubescente más larga en la superficie lateral, cubriendo los cinco sextos apicales [Figura 98]. Ultimo esterno abdominal escasamente emarginado [Figura 99]. Genitalia del macho como se ilustra [Figuras 94, 95]. Ecuador. 10. *D. saxicola* sp. nov.

1. *Disersus dasycolus*, new species

FIGURES 15–21

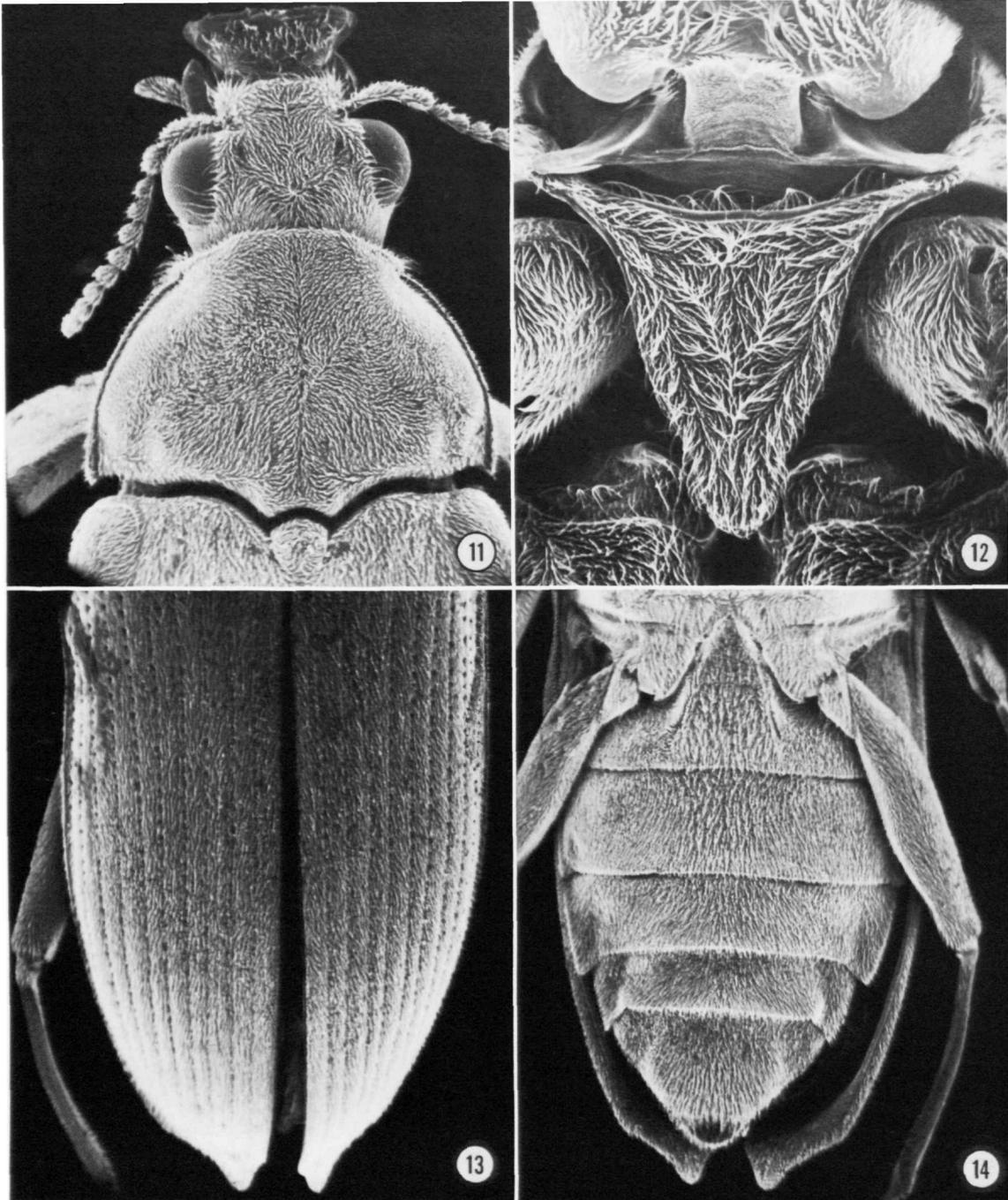
HOLOTYPE MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 6.2 mm; width, 2.2 mm.

Coloration: Dark reddish brown dorsally. Antennal segments 1 and 2 light reddish brown; antennal segments 3–11 dark reddish brown. Venter dark reddish brown except basal segments of all palpi, mentum, submentum, gula, parts of coxae, trochanters, bases of femora, mesotibiae, metatibiae, tarsi, and last abdominal sternum lighter reddish brown.

Head: Finely, densely punctate; punctures separated by a distance equal to or less than diameter of a puncture. Eyes large, hemispherical. Clypeus broadly, shallowly, arcuately emarginate anteriorly. Labrum densely, moderately coarsely punctate; punctures separated by $\frac{1}{2}$ to 1 times their diameter; anterior margin unmodified, truncate, and densely fringed with long, fine, golden, hair-like setae; anterolateral angles moderately rounded, not expanded laterally.

Thorax: Pronotum widest at base; length, 1.2 mm; width, 1.7 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse, with slight constriction laterally before each angle; apex arcuate; base strongly trisinate; very feebly swollen in front of scutellum; with a shallow

fovea on each side of swollen area; posterolateral angles acute; surface punctate, evenly convex; discal punctures fine and dense, separated by the diameter of a puncture or less. Prosternum short in front of procoxae. Prosternal process moderately broadly V-shaped; base broadest then converging to narrowed but rounded apex; narrowed apical half of process longitudinally, moderately broadly subcostiform on midline. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline but broadly depressed posteromedially; surface microreticulate and punctate, punctures moderately coarse and separated by a distance 1 or 2 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Protibia with distinctive, very long, curved, hair-like pubescence laterally and apicoventrally (Figure 18). Apices of protibiae, mesotibiae, and metatibiae with tuft of dense golden yellow setae; tuft more obvious on inner margins. Metatibia with lateral surface microreticulate; with few coarse punctures on basal two-thirds; densely pubescent except on apicolateral third (Figure 19). Tarsal claws large and stout. Elytron with 10 rows of moderately coarse punctures, punctures separated by a distance equal to 1 or 2 times their diameter; rows 1–3 with smaller punctures; rows 4–10 with coarser punctures; row 1 becoming moderately striate apically; intervals very finely alutaceous and very finely and moderately densely punctate,



FIGURES 11-14.—*Disersus inca*: 11, head and pronotum, $\times 30$; 12, prosternum, $\times 62$; 13, elytra, $\times 24$; 14, abdomen, $\times 22$.

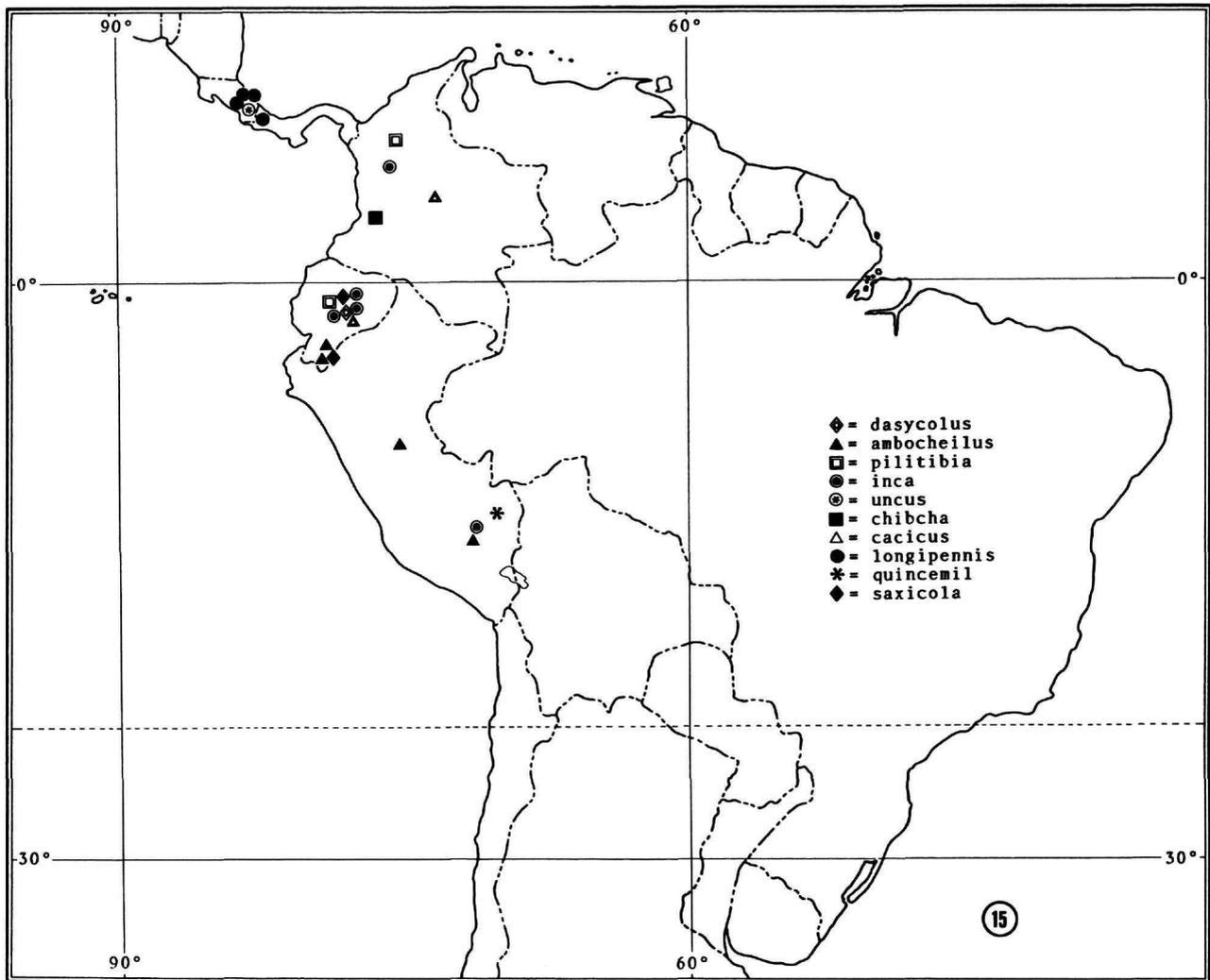


FIGURE 15.—Distribution map for the species of *Disersus*.

punctures obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex not dehiscent, evenly arcuate laterally, and rounded apically (Figure 21).

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by a distance equal to their diameter. First abdominal sternum depressed medially, with a moderate longitudinal carina extending from innermost side of each hind coxal cavity posterolaterally toward but not attaining the hind margin of the first abdominal sternum. Apicomedial margins of abdominal sterna 3–5 with patches of long, golden setae. Apicomedial margin of last sternum very shallowly emarginate (Figure 20).

Male Genitalia: As illustrated (Figures 16, 17).

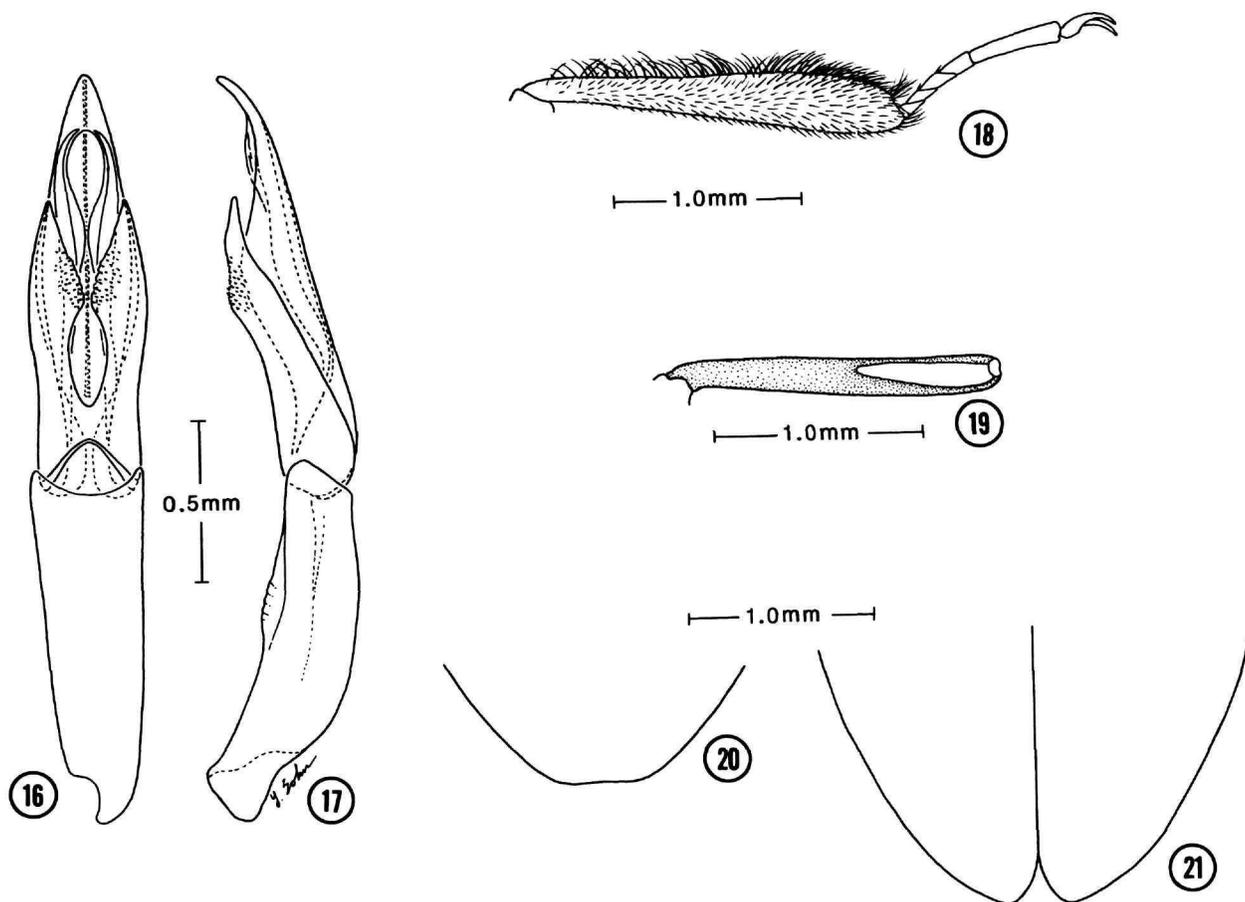
FEMALE.—Unknown.

VARIATIONS.—Only the unique male is known.

TYPE DATA.—*Holotype* (male): ECUADOR. PASTAZA: Puyo, 31 Jan 1976, P.J. Spangler et al.; deposited in the National Museum of Natural History, Smithsonian Institution.

ETYMOLOGY.—The specific name is from a combination of the Greek *dasy* (“hairy”) plus *kolon* (“leg”) in reference to the very long lateral and distal pubescence on the protibia of the male of this species.

HABITAT.—Unknown. The unique type specimen was collected at a blacklight operated beside the Rio Puyo.



FIGURES 16–21.—*Disersus dasycolus*, new species: 16, male genitalia, ventral view; 17, male genitalia, lateral view; 18, protibia; 19, metatibia; 20, last abdominal sternum, male; 21, elytral apices, male.

2. *Disersus ambocheilus*, new species

FIGURES 15, 22–30

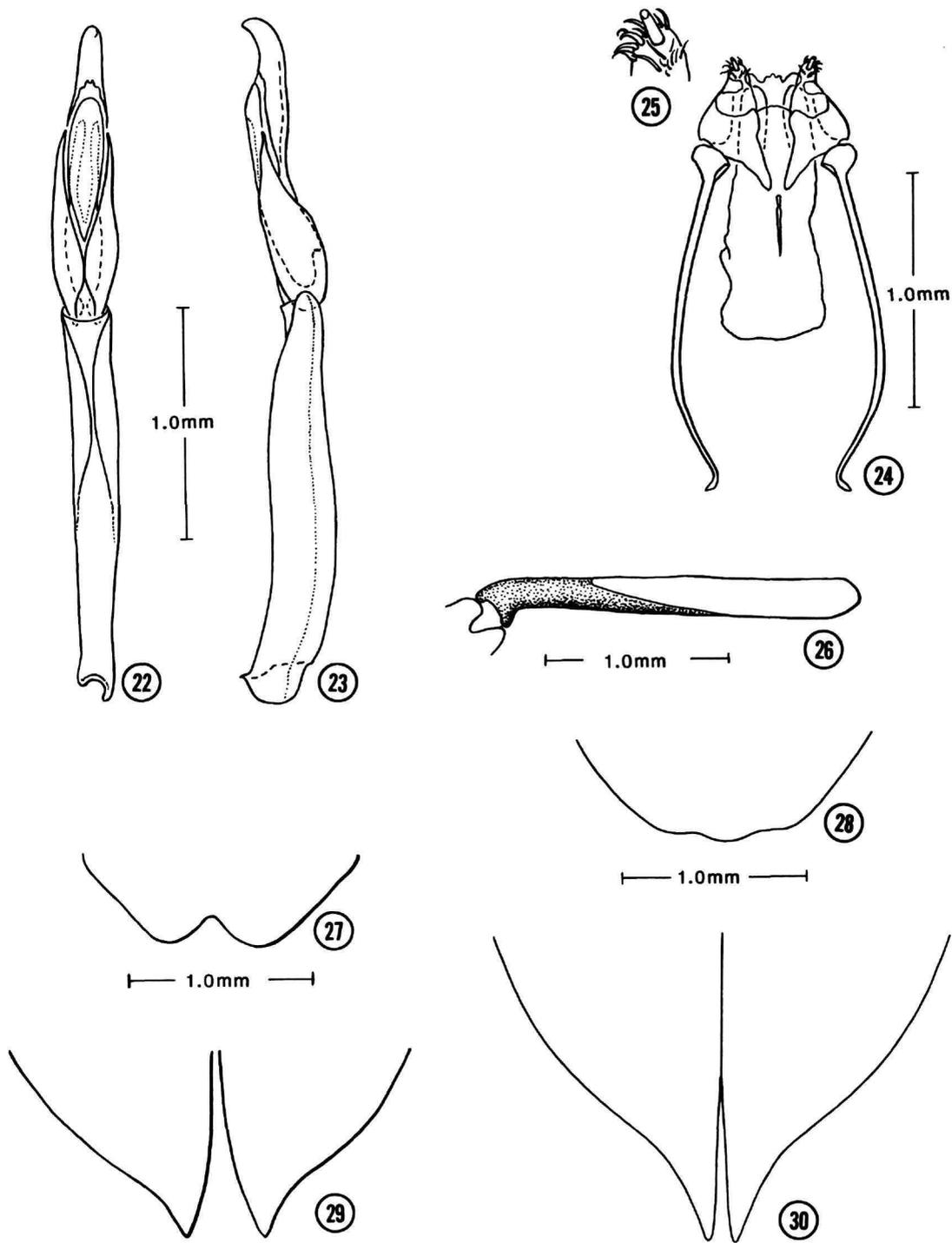
HOLOTYPE MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 8.2 mm; width, 3.1 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; segments 3–11 black. Venter black except basal segments of all palpi, ventral surface of head and its appendages, coxae, trochanters, bases of femora, mesotibiae, apical three-fourths of metatibiae, and tarsi reddish brown.

Head: Finely densely punctate; punctures separated by a distance equal to or less than diameter of a puncture. Eyes large, hemispherical. Clypeus broadly, arcuately emarginate anteriorly. Labrum with anterolateral angles moderately expanded laterally and anterior margin bordered by

strongly reflexed rim; rim almost glabrous, with only a few coarse punctures and sparse setae; anterior edge with a dense fringe of long, golden, hair-like setae; labrum strongly recessed behind rim; recessed area moderately coarsely punctate.

Thorax: Pronotum widest at base; length, 1.9 mm; width, 2.8 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse; with slight constriction posterolaterad of each angle; apex arcuate; base strongly trisinuate; slightly swollen in front of scutellum, a shallow depression on each side of swollen area; posterolateral angles acute and produced spine-like; surface convex, not impressed; moderately densely, moderately coarsely punctate; discal punctures separated by a distance about half as wide as or as wide as diameter of puncture. Prosternum short in front of procoxae. Prosternal process broadly V-shaped; base broadest, then converging to narrowed but rounded apex; narrowed apical third of process flat. Mesosternum deeply



FIGURES 22-30.—*Disersus ambocheilus*, new species: 22, male genitalia, ventral view; 23, male genitalia, lateral view; 24, female genitalia, ventral view; 25, stylus; 26, metatibia, lateral view; 27, last abdominal sternum, male; 28, last abdominal sternum, female; 29, elytral apices, male; 30, elytral apices, female.

excavated for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed posteromedially between metacoxae; surface microreticulate and punctate; punctures moderately coarse, separated by 1 to 3 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly less widely separated. Legs long and slender. Metatibiae with lateral surface lightly microreticulate and very sparsely punctate, punctures moderately coarse; basal third densely pubescent and sharply delimited from glabrous area (Figure 26). Tarsal claws large and stout. Elytron with 10 rows of coarse punctures, punctures separated by a distance 1 or 2 times their diameter; intervals very finely alutaceous and finely densely punctate, punctures separated by their diameter and obscured by dense pubescence; humeral area moderately strongly tumid; sides of elytra distinctly margined and almost parallel; apex moderately dehiscent, evenly arcuate laterally, then produced to large rather acute spinous process (Figure 29). Scutellum subtriangular; all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 3 times their diameter. First abdominal sternum with a moderate longitudinal carina extending from innermost side of metacoxal cavity posterolaterally toward but not attaining hind margin of first abdominal sternum. Last sternum with apicomedial, poorly defined patch of golden setae that are longer than rest of pubescence covering sterna; apicomedial margin deeply emarginate (Figure 27).

Male Genitalia: As illustrated (Figures 22, 23).

FEMALE.—Similar to male but labrum lacks the broadly reflexed rim. Larger; length, 9.3 mm; width, 3.1 mm. Last abdominal sternum slightly sinuate on apex (Figure 28). Elytral apices acute and longer than those of male (Figure 30). Genitalia as illustrated (Figures 24, 25).

VARIATIONS.—Bases of the appendages of teneral specimens are lighter reddish yellow. The length of specimens varies from 6.9 to 9.3 mm.

TYPE DATA.—*Holotype* (male): ECUADOR. MORONA-SANTIAGO: El Pincho (3 km E), 30 Nov 1978, J.J. Anderson; deposited in the National Museum of Natural History, Smithsonian Institution.

Allotype: Same data as holotype.

Paratypes: ECUADOR. ZAMORA-CHINCHIPE: Yanzatza, 6 Nov 1979, Rio Yanzatza, J.J. Anderson, 1♂. PERU. CUZCO: Cuzco, 4 Oct 1963, F. Carasco Z., 1♂. HUANUCO: Tingo Maria, 25–31 Jan 1980, 672 m, J.B. Heppner, 4♂.

ETYMOLOGY.—The specific name is from a combination of the Greek *ambon* ("rim") plus *cheilus* from *cheilos* ("lip") in reference to the strongly rimmed anterior margin of the labrum of the male of this species.

HABITAT.—The holotype and allotype were collected by picking them from rocks in the riffles of a small shaded stream in the forest.

3. *Disersus pilitibia*, new species

FIGURES 15, 31–39

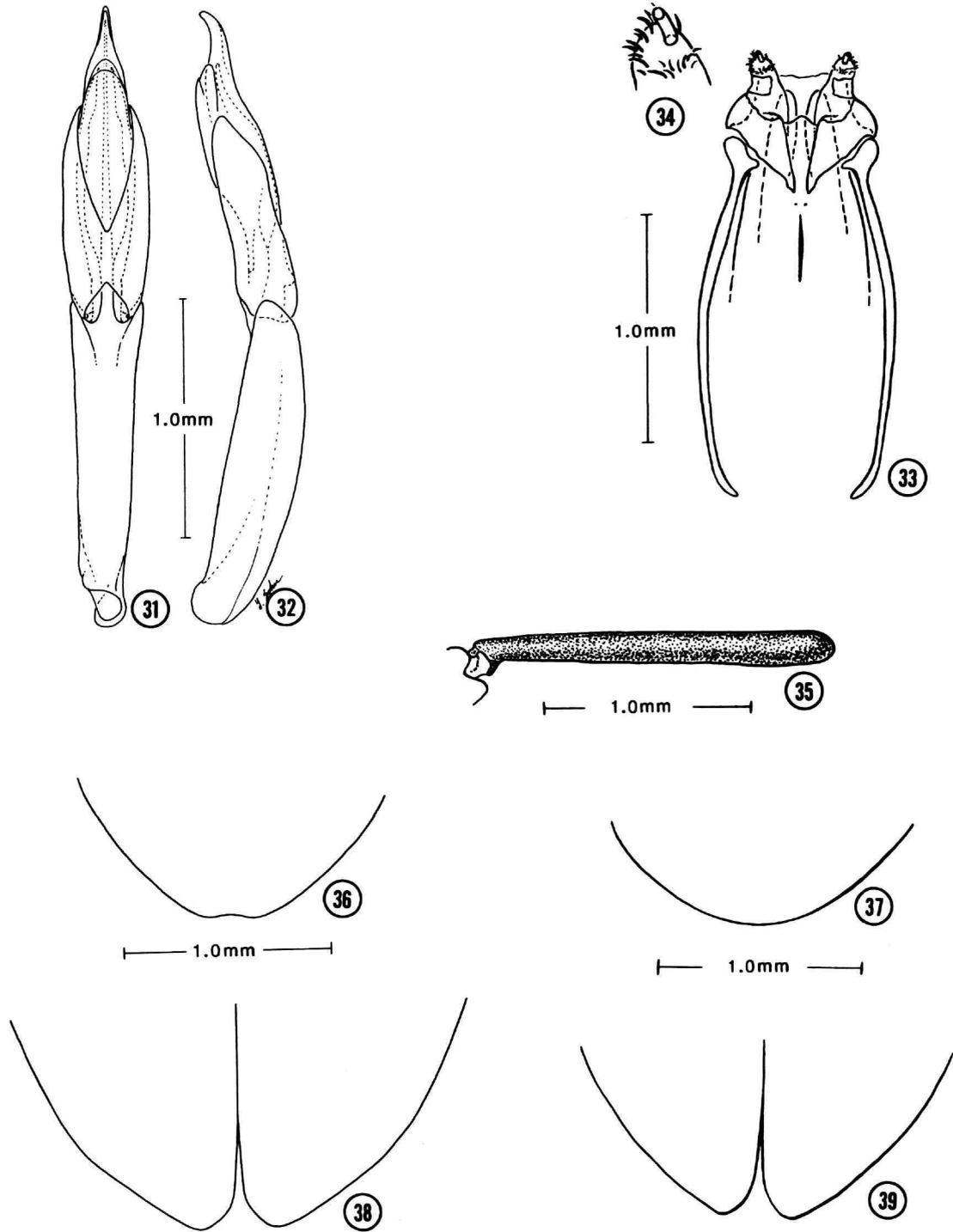
HOLOTYPE MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 5.6 mm; width, 2.3 mm.

Coloration: Reddish black dorsally. Antennal segments 1 and 2 reddish brown; segments 3–11 black. Venter reddish black except basal segments of all palpi, labium, maxillae, coxae, trochanters, basal half of femora, mesotibiae, metatibiae, and tarsi reddish brown.

Head: Finely punctate; punctures separated by 1 to 3 times the diameter of puncture. Eyes large, hemispherical. Clypeus broadly and arcuately emarginate anteriorly. Labrum punctate; with anterolateral angles moderately expanded laterally; with short, golden, hair-like setae at sides; anterior margin broadly arcuate, with a dense fringe of long, golden, hair-like setae.

Thorax: Pronotum widest at base; length, 1.3 mm; width, 1.8 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse; with slight constriction posterolaterally of each angle; apex arcuate; base strongly trisinate; slightly swollen in front of scutellum, a shallow depression on each side of swollen area; posterolateral angles subacute; surface convex, with a swollen area each side extending from base and becoming effaced at apical third; moderately densely, moderately coarsely punctate; discal punctures separated by a distance about half as wide as or as wide as diameter of puncture. Prosternum short in front of procoxae. Prosternal process broadly V-shaped; base broadest then converging to narrowed but rounded apex; narrowed apical third of process slightly convex. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline; strongly and broadly depressed posteromedially between metacoxae from base almost to apex; surface microreticulate and punctate; punctures moderately coarse, separated by 1 to 3 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly less widely separated. Legs long and slender. Metatibiae with lateral surface lightly microreticulate and very sparsely punctate, punctures moderately coarse; densely pubescent except a short area at apex (Figure 35). Tarsal claws large and stout. Elytron with 10 rows of coarse punctures, punctures separated by ½ or 1 times their diameter; intervals very finely alutaceous and finely densely punctate, punctures separated by distance equal to their diameter and obscured by dense pubescence; humeral area moderately strongly tumid; sides of elytra distinctly margined and almost parallel; apex moderately dehiscent, evenly arcuate laterally (Figure 38). Scutellum subtriangular; all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 3 times their



FIGURES 31-39.—*Disersus pilitibia*, new species: 31, male genitalia, ventral view; 32, male genitalia, lateral view; 33, female genitalia, ventral view; 34, stylus; 35, metatibia, lateral view; 36, last abdominal sternum, male; 37, last abdominal sternum, female; 38, elytral apices, male; 39, elytral apices, female.

diameter. First abdominal sternum shallowly depressed medially, with a moderate longitudinal carina extending from innermost side of metacoxal cavity posterolaterally about midway to hind margin of first abdominal sternum. Sterna 3 to 5 with apicomedial, moderate, poorly defined patch of golden setae that are longer than rest of pubescence covering sterna; apicomedial margin very feebly emarginate (Figure 36).

Male Genitalia: As illustrated (Figures 31, 32).

FEMALE.—Similar to male except size larger; length, 6.2 to 6.9 mm; width, 2.5 to 2.8 mm. Metasternum shallowly, narrowly depressed between metacoxae. First abdominal sternum not depressed medially and without carinae behind metacoxal cavities; apical margin of last sternum evenly arcuate (Figure 37). Elytral apices (Figure 39) similar to those of male. Genitalia as illustrated (Figures 33, 34).

TYPE DATA.—*Holotype* (male): COLOMBIA. ANTIOQUIA: Rio Anori, S.W. Zaragoza, D.C. Young, 23-IX-1970, blacklight trap; deposited in the Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumers Services, Gainesville, Florida (FSCA).

Allotype: Same data as holotype.

Paratypes: Same data as holotype, 2♀. ECUADOR. COTOPAXI: Latacunga, 113 km W, 1 Jul 1975, 4500 ft, Andrea Langley, Jeffrey Cohen, 1♀. The three paratypes are deposited in the National Museum of Natural History, Smithsonian Institution.

ETYMOLOGY.—The specific name is from a combination of the Latin *pilus* ("hair") plus *tibia* ("shinbone") because the metatibia of this species is almost completely pubescent laterally where other species have rather extensive non-pubescent areas.

HABITAT.—Unknown.

4. *Disersus inca*, new species

FIGURES 11–15, 40–48

HOLOTYPE MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 7.2 mm; width, 2.3 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; antennal segments 3–11 black. Venter black except basal segments of all palpi, labium, maxillae, epipleura, coxae, trochanters, bases of femora, apical halves of tibiae, and tarsi reddish brown.

Head: Moderately coarsely, moderately densely punctate; punctures on disc separated by a distance half as wide as or as wide as diameter of puncture. Eyes large, hemispherical. Clypeus broadly, shallowly arcuately emarginate anteriorly. Labrum densely and moderately coarsely punctate, punctures separated by a distance equal to diameter of puncture; anterior margin broadly arcuate; anterior edge densely fringed with long, fine, golden, hair-like setae;

anterolateral angles rounded and moderately expanded laterally.

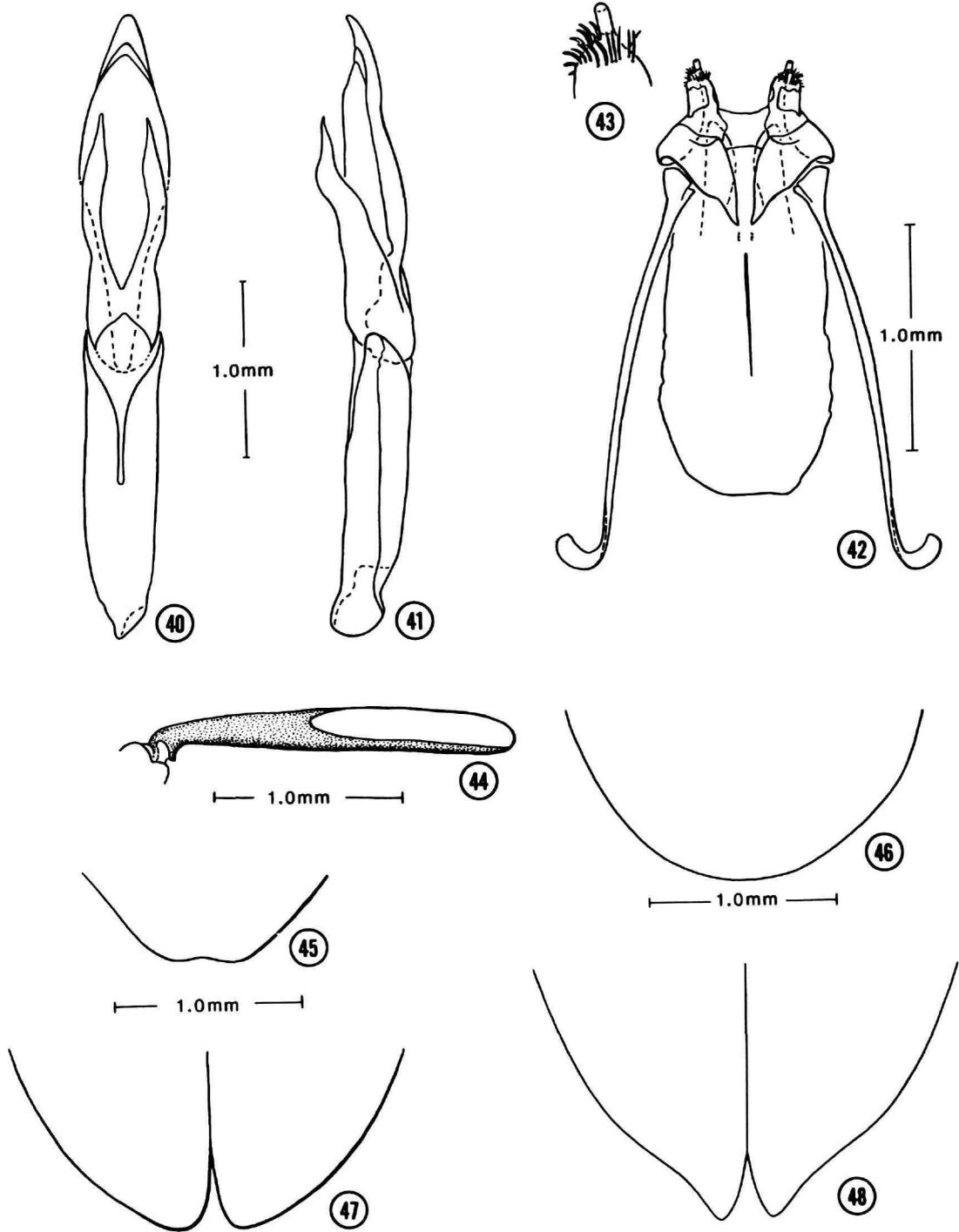
Thorax: Pronotum widest at base; length, 1.8 mm; width, 2.3 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse, with slight constriction before each angle; apex arcuate; base strongly trisinate, very feebly swollen in front of scutellum; with a very shallow fovea on each side of swollen area; posterolateral angles obtuse; surface punctate; disc convex but a shallow sublateral depression medially of a distinct sublateral lobe on each side of pronotum; discal punctures separated by a distance half as wide as or as wide as diameter of puncture. Prosternum short in front of procoxae. Prosternal process moderately broadly V-shaped; base broadest then converging to narrowed but rounded apex; narrowed apical third of process longitudinally subcostiform on midline. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed posteromedially between hind coxae; surface microreticulate and punctate; punctures moderately coarse, separated by a distance half as wide as or as wide as diameter of puncture. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Metatibiae with lateral surface lightly microreticulate and very sparsely punctate, punctures moderately coarse; basal third densely pubescent and sharply delimited from glabrous area (Figure 44). Tarsal claws large and stout. Elytron with 10 rows of coarse punctures; punctures separated by a distance half as wide as or as wide as diameter of puncture; intervals very finely alutaceous, with occasional, fine, widely spaced punctures that are obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex feebly dehiscent; evenly arcuate laterally and not produced (Figure 47). Scutellum subtriangular; all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 3 times their diameter. First abdominal sternum with a moderate longitudinal carina extending from innermost side of each hind coxal cavity posterolaterally toward but not attaining hind margin of first abdominal sternum. Apicomedial margins of sterna 3, 4, and 5 each with a patch of golden setae distinctly longer than the normal pubescence covering the sterna. Apicomedial margin of last sternum moderately emarginate (Figure 45).

Male Genitalia: As illustrated (Figures 40, 41).

FEMALE.—Similar to male except the metasternum is less broadly and less deeply depressed. The first abdominal sternum is moderately convex instead of depressed and the carinae between the metacoxae become effaced at the posterior margin of the metacoxal cavities. Last abdominal sternum rounded apicomedially (Figure 46). Elytral apices moderately produced (Figure 48). Genitalia as illustrated (Figures 42, 43).

VARIATIONS.—Specimens vary in intensity and extent of



FIGURES 40-48.—*Disersus inca*, new species: 40, male genitalia, ventral view; 41, male genitalia, lateral view; 42, female genitalia, ventral view; 43, stylus; 44, metatibia, lateral view; 45, last abdominal sternum, male; 46, last abdominal sternum, female; 47, elytral apices, male; 48, elytral apices, female.

the reddish brown color of the bases of the appendages and venter; freshly eclosed specimens exhibit more extensive, lighter reddish brown color. Specimens varied in length from 6.6 to 7.6 mm.

TYPE DATA.—*Holotype* (male): ECUADOR. TUNGURAHUA: Banos (39 km E), 4200 ft, 25 Jan 1976, Spangler et al, blacklight; deposited in the National Museum of Natural History, Smithsonian Institution.

Allotype: Same data as holotype.

Paratypes: COLOMBIA. ANTIOQUIA: El Retiro (2 km E), Quebrado la Aguadelo, 8 Feb 1983, O.S. Flint, Jr., 1♂, 1♀; same data except 25 Feb 1984, 1♂, 2♀. ECUADOR. Same data as holotype, 6♂, 6♀. NAPO: San Francisco de Borja, 15 May 1975, Spangler, Langley, and Cohen, at blacklight, 30♂, 31♀; same locality and data, A.B. Gurney, 1♀. PASTAZA: Puyo, 8–11 Feb 1976, Spangler et al., 1♀; Puyo (22 km W), 5 Feb 1976, Spangler et al., blacklight, 1♀. TUNGURAHUA: Banos (13 km E), 23 Jan 1976, blacklight, 5300 ft, Spangler et al., 2♀; Banos (5 km E), 26 Jan 1976, blacklight, Spangler et al., 1♀. PERU. CUZCO: Valle de Lares, Calca (75 km NW), 2060 m, 6 Feb 1979, W.E. Steiner, 1♂, 1♀.

Paratypes will be deposited in the following collections. British Museum (Natural History), London, England; California Academy of Sciences, San Francisco, California; Canadian National Museum, Ottawa, Canada; Instituto de Zoología Agrícola, Facultad de Agronomía, Maracay, Venezuela; Museum National d'Histoire Naturelle, Paris, France; Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium; Instituto de Biología, Universidad Nacional Autónoma de México, México, D.F.; Zoologische Sammlung des Bayerischen Staates, München, Germany; Naturhistorisches Museum Wien, Wien, Austria; and in the collection of H.P. Brown, Norman, Oklahoma.

ETYMOLOGY.—The specific name, a noun used in apposition to the genus, refers to the indigenous people of the area from which specimens of this species were collected.

HABITAT.—All of the specimens reported above were collected from blacklights operated beside small montane brooks.

5. *Disersus uncus* Spangler and Santiago

FIGURES 15, 49–57

Disersus uncus Spangler and Santiago, 1982:17.

REDESCRIPTION, MALE.—*Body Form and Size*: Elongate, subparallel, and moderately convex dorsally. Length, 7.2 mm; width, 2.8 mm.

Coloration: Black dorsally, with reddish brown tinge; head and pronotum darker than elytra. Antennal segments 1 and 2 yellowish brown; antennal segments 3–11 dark reddish brown. Venter black, with dark reddish brown tinge except all palpi, labium, maxillae, metepisterna, epipleura,

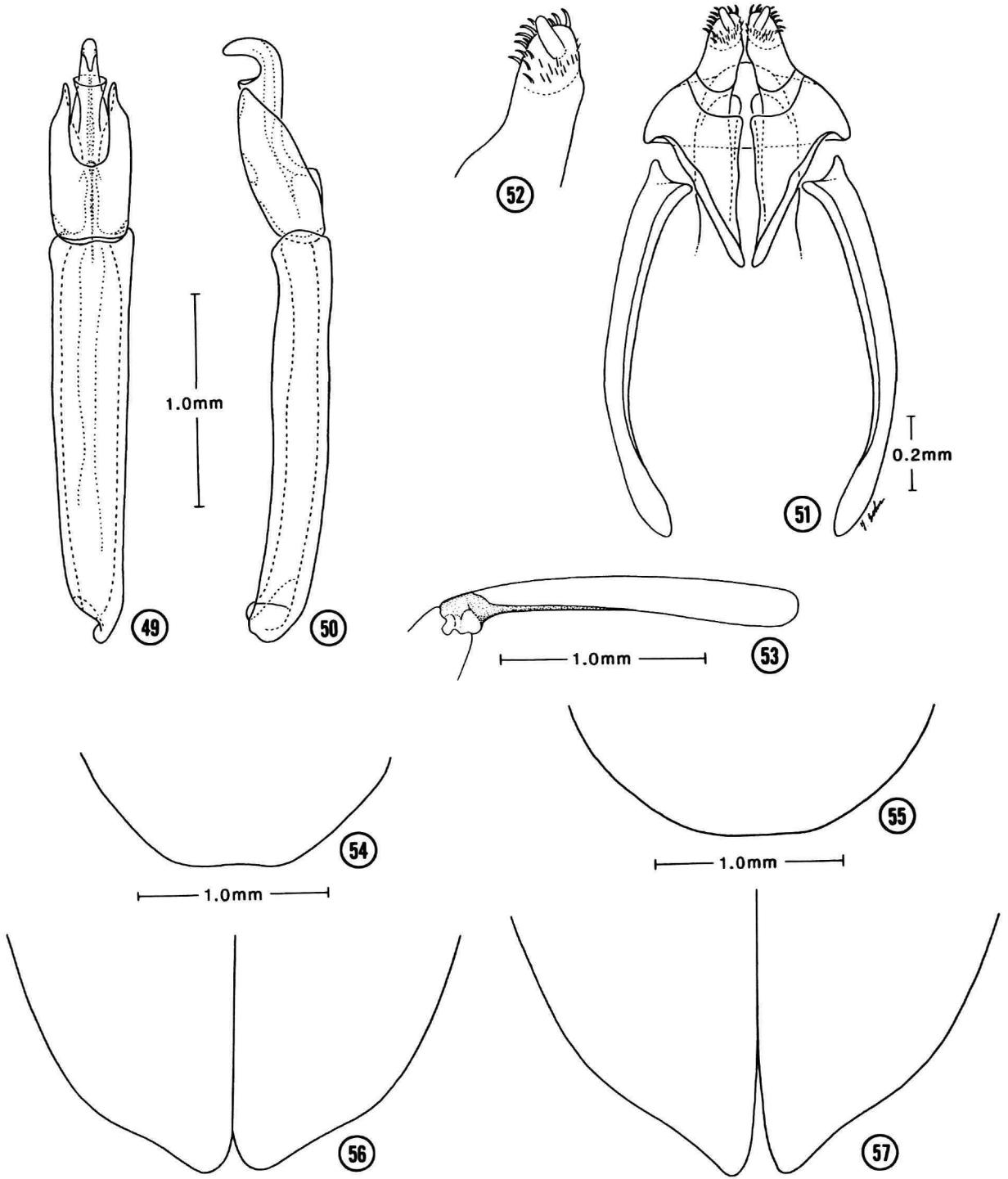
procoxae, mesocoxae, trochanters, bases of femora, apical halves of protibiae and mesotibiae, apical three-fourths of metatibiae, and tarsi lighter reddish brown. Integument obscured by dense golden hair-like setae; setae shorter on dorsum.

Head: Moderately coarsely, moderately densely punctate; punctures on disc separated by about diameter of a puncture. Eyes large, hemispherical. Clypeus broadly arcuately emarginate anteriorly. Labrum densely and moderately coarsely punctate; anterior margin truncate and densely fringed with long, fine, golden, hair-like setae; anterolateral angles broadly rounded and expanded laterally.

Thorax: Pronotum widest at base; length, 1.3 mm; width, 2.2 mm; with sides arcuate and distinctly margined; anterolateral angles obtuse; with slight constriction posterolaterally of each angle; apex arcuate; base strongly sinuate; slightly swollen in front of scutellum; with shallow fovea on each side of swollen area; posterolateral angles acute and produced spine-like; surface convex, not impressed; moderately densely, moderately coarsely punctate; discal punctures separated by about half their diameter. Prosternum short in front of procoxae. Prosternal process broadly V-shaped; broadest at base then converging to narrowed but rounded apex; narrowed apical third of process flat. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline; depressed posteromedially between metacoxae; surface microreticulate and punctate; punctures moderately coarse, separated by 1 to 3 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae very slightly more widely separated. Legs long and slender. Mesotibia and metatibia with lateral surface distinctly microreticulate and sparsely, moderately coarsely punctate; very sparsely pubescent at base but pubescent area not sharply delimited (Figure 53). Tarsal claws large and stout. Elytron with 10 rows of coarse punctures; these punctures separated by a distance half as wide as or as wide as diameter of puncture; intervals very finely alutaceous, with occasional fine, widely spaced punctures but punctures obscured by the dense pubescence; humeral areas strongly tumid; sides of elytra distinctly margined and almost parallel; apex dehiscent, scarcely produced, obtusely angulate (Figure 56). Scutellum subtriangular; all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by about 2 or 3 times their diameter. First abdominal sternum concave medially; with a moderate longitudinal carina extending from innermost side of each hind coxal cavity posterolaterally toward but not attaining hind margin of sternum. Last sternum with apicomedial margin slightly emarginate (Figure 54); with apicomedial patch of golden setae longer than rest of pubescence.

Male Genitalia: As illustrated (Figures 49, 50).



FIGURES 49-57.—*Disersus unicus* Spangler and Santiago: 49, male genitalia, ventral view; 50, male genitalia, lateral view; 51, female genitalia, ventral view; 52, stylus; 53, metatibia, lateral view; 54, last abdominal sternum, male; 55, last abdominal sternum, female; 56, elytral apices, male; 57, elytral apices, female.

FEMALE.—Externally similar to male except the first abdominal sternum is evenly convex medially and the last abdominal sternum rounded (Figure 55). Elytral apices moderately produced (Figure 57). Genitalia as illustrated (Figures 51, 52).

SPECIMENS EXAMINED.—*Holotype* (male), *Allotype*, and *Paratype* (one female): COSTA RICA. La Suiza, 17 Jun 1967, Flint and Ortiz; USNM 100122.

6. *Disersus chibcha*, new species

FIGURES 15, 58–66

HOLOTYPE MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 8.57 mm; width, 2.86 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; antennal segments 3–11 black. Venter black except basal segments of all palpi, labium, maxillae, epipleura, coxae, trochanters, bases of femora, mesotibiae and metatibiae reddish brown. Tarsi dark reddish brown.

Head: Moderately coarsely, moderately densely punctate; punctures on disc separated by a distance half as wide as or as wide as diameter of puncture. Eyes large, hemispherical. Clypeus truncate anteriorly. Labrum densely and moderately coarsely punctate; anterior margin unmodified, truncate, and densely fringed with long, fine, golden, hair-like setae; anterolateral angles rounded and expanded laterally.

Thorax: Pronotum widest at base; length, 1.81 mm; width, 2.39 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse, with slight constriction before each angle; apex arcuate; base strongly sinuate; emarginate and very feebly swollen in front of scutellum, with a very shallow fovea on each side of swollen area; posterolateral angles acute; surface densely punctate; disc convex but a shallow sublateral depression mediad of a barely discernible sublateral swelling on each side of pronotum; discal punctures separated by a distance half as wide as or as wide as diameter of puncture. Prosternum short in front of procoxae; shallowly depressed medially. Prosternal process moderately broadly V-shaped; base broadest then converging to narrowed but rounded apex; apical third of process almost flat on midline. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed posteromedially between hind coxae; surface microreticulate and punctate; punctures moderately coarse, separated by a distance half as wide as to twice as wide as diameter of puncture. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Metatibiae with lateral surface lightly microreticulate and moderately densely punctate, punctures coarse; with extreme base densely pubescent and sharply delimited from glabrous area (Figure 62). Tarsal claws large and stout.

Elytron with 10 rows of coarse punctures; punctures separated by a distance half as wide as to twice as wide as diameter of puncture; intervals very finely alutaceous, with occasional, fine, widely spaced punctures that are obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex feebly dehiscent; evenly arcuate laterally and feebly produced (Figure 65). Scutellum subtriangular; with all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 3 times their diameter. First abdominal sternum concave; with a moderate longitudinal carina extending from innermost side of each hind coxal cavity posterolaterally toward but not attaining hind margin of first abdominal sternum. Apicomедial margin of last sternum moderately but distinctly emarginate (Figure 63); with apicomедial patch of golden setae that are distinctly longer than the normal pubescence covering sterna.

Male Genitalia: As illustrated (Figures 58, 59).

FEMALE.—Similar to male except metasternum less broadly and less deeply concave. First abdominal sternum not concave and lacking carinae behind metacoxal cavities; apicomедial margin of last abdominal sternum subtruncate, not distinctly emarginate (Figure 64). Elytral apices same as on male (Figure 66). Genitalia as illustrated (Figures 60, 61).

VARIATIONS.—No variations have been found other than slight differences in the extent of the reddish brown color on the coxae and femora.

TYPE DATA.—*Holotype* (male): COLOMBIA. VALLE [DEL CAUCA]: Cisneros (4 km W), 28-II-1969, R.E. Woodruff, blacklight trap; deposited in the Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Gainesville, Florida (FSCA).

Allotype: Same data as holotype.

Paratypes: Same data as holotype, 2♀; deposited in the National Museum of Natural History, Smithsonian Institution.

ETYMOLOGY.—The specific name refers to the the language and the sedentary, indigenous farmers encountered by the Conquistadores in Colombia; used as a noun in apposition to the genus.

HABITAT.—Unknown; all of the specimens reported above were collected in a blacklight trap.

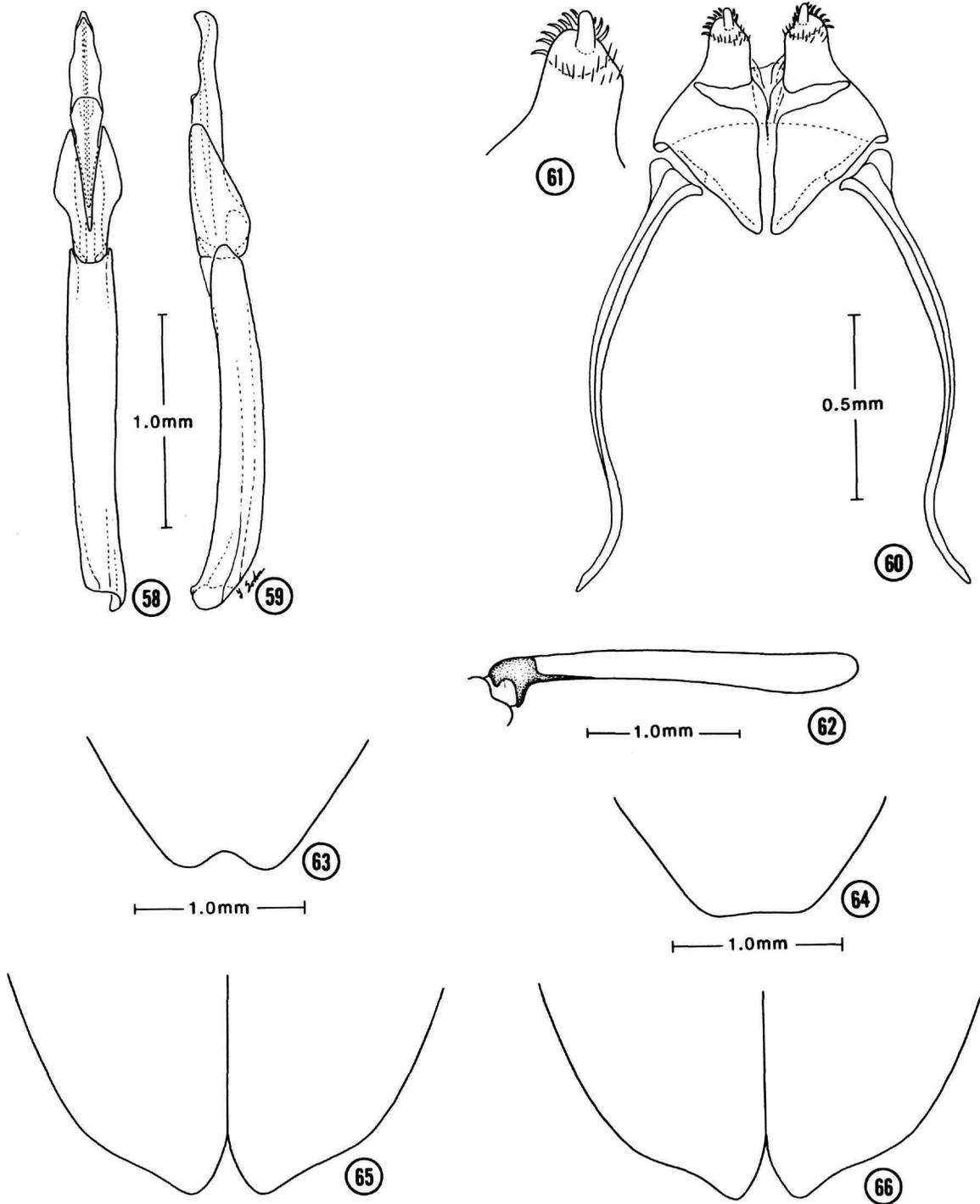
7. *Disersus cacticus* (Coquérel)

FIGURES 15, 67–75

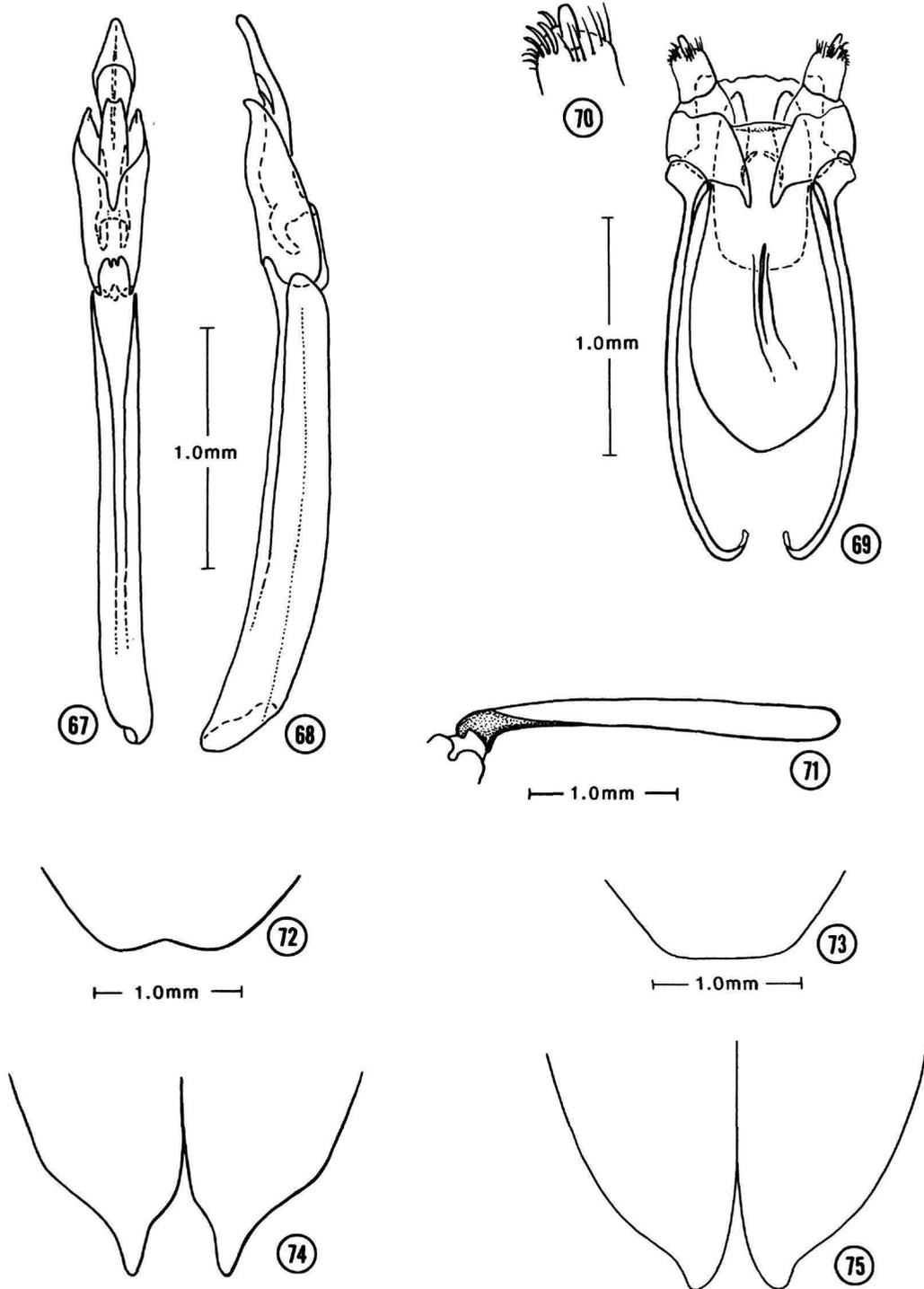
Potamophilus cacticus Coquérel, 1851:596.

Disersus cacticus.—Grouvelle, 1896:78.—Zaitzev, 1908:288; 1910:7.—Blackwelder, 1944:272.—Brown, 1981:101.

REDESCRIPTION, MALE.—*Body Form and Size:* Elongate,



FIGURES 58-66.—*Disersus chibcha*, new species: 58, male genitalia, ventral view; 59, male genitalia, lateral view; 60, female genitalia, ventral view; 61, stylus; 62, metatibia, lateral view; 63, last abdominal sternum, male; 64, last abdominal sternum, female; 65, elytral apices, male; 66, elytral apices, female.



FIGURES 67-75.—*Disersus cacticus* (Coquérel): 67, male genitalia, ventral view; 68, male genitalia, lateral view; 69, female genitalia, ventral view; 70, stylus; 71, metatibia, lateral view; 72, last abdominal sternum, male; 73, last abdominal sternum, female; 74, elytral apices, male; 75, elytral apices, female.

subparallel, moderately convex dorsally. Length, 9.8 mm; width, 2.6 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; segments 3–11 black. Venter black except basal segments of all palpi, ventral surface of head and its appendages, coxae, trochanters, bases of femora, mesotibiae, apical three-fourths of metatibiae, and tarsi reddish brown.

Head: Finely, densely punctate; punctures separated by a distance equal to or less than diameter of a puncture. Eyes large, hemispherical. Clypeus broadly, arcuately emarginate anteriorly. Labrum with anterolateral angles moderately expanded laterally and anterior margin broadly arcuate, bordered with a dense fringe of long, golden, hair-like setae.

Thorax: Pronotum widest at base; length, 1.9 mm; width, 2.8 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse; with slight constriction posterolaterally of each angle; apex arcuate; base strongly trisinate; slightly swollen in front of scutellum, a shallow fovea on each side of swollen area; posterolateral angles acute and produced spine-like; surface convex, not impressed; moderately densely, moderately coarsely punctate; discal punctures separated by a distance about half as wide as to as wide as diameter of puncture. Prosternum short in front of procoxae. Prosternal process broadly V-shaped; base broadest, then converging to narrowed but rounded apex; narrowed apical third of process flat. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed posteromedially between metacoxae; surface microreticulate and punctate; punctures moderately coarse, separated by 1 to 3 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly less widely separated. Legs long and slender. Metatibiae with lateral surface lightly microreticulate and very sparsely punctate, punctures moderately coarse; basal eighth densely pubescent and sharply delimited from glabrous area (Figure 71). Tarsal claws large and stout. Elytron with 10 rows of coarse punctures, punctures separated by a distance 1 or 2 times their diameter; intervals very finely alutaceous and finely, densely punctate, punctures separated by distance equal to their diameter and obscured by dense pubescence; humeral areas strongly tumid; sides of elytra distinctly margined and almost parallel; apex dehiscent, strongly emarginate along inner margins then produced to large rather acute spinous process (Figure 74). Scutellum subtriangular; all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 3 times their diameter. First abdominal sternum with a moderate longitudinal carina extending from innermost side of metacoxal cavity posterolaterally toward but not attaining hind margin of first abdominal sternum. Last sternum with apicomedia, moderately long patch of golden setae that are longer than rest of pubescence covering sterna; apicomedia margin

shallowly emarginate (Figure 72).

Male Genitalia: As illustrated (Figures 67, 68).

FEMALE.—Similar to male but smaller; length, 7.3 mm; width, 3.1 mm. Carinae on first abdominal sternum broader and more rounded than the narrower, more sharply distinct carinae on the male. Apicomedia margin of last abdominal sternum subtruncate (Figure 73). Apices of elytra moderately dehiscent, evenly arcuate laterally then moderately produced (Figure 75). Genitalia as illustrated (Figures 69, 70).

VARIATIONS.—No significant variations were noted in the few specimens available.

TYPE DATA.—We have examined the unique type specimen of *Potamophilus cacicus*, which is on deposit in the Museum National de Histoire Natural, Paris, France. The type is a female *Disersus* in poor state of preservation; it lacks both protarsi, left middle leg, right antenna, right hind leg, and last 2 segments of left hind tarsus; the abdomen was loose; and the setae were abraded on the discal area of the head. We dissected the specimen and the female genitalia are as illustrated (Figures 69, 70). The dissected genitalia was placed in glycerine in a microvial and the latter attached to the pin. The specimen was reglued to the card with Leprieur's mountant. The specimen bears the following labels numbered here in the sequence they are attached. (1) A green circle about 6.0 mm in diameter glued to a thin white cardboard square; written on the circle is "Colomb." (2) A small, aged, white rectangle with "Buquet" written on it. (3) An aged white rectangle with "Type/. Coquérel" on it. (4) A fresh-looking, rectangular red label with an inner black border with HOLOTYPE inside the border. (5) An aged white rectangle bearing "Potamophilus cacicus/Coquérel/Colombia" on it. (6) A fresh rectangular label with "Deleve, 1966/Disersus/cacicus Coquérel."

ADDITIONAL SPECIMENS EXAMINED.—COLOMBIA. META: Queb. Blanca, Restrepo (3 km W), 11 Feb 1983, O.S. Flint, Jr., 1♂, 1♀. ECUADOR. PASTAZA: Puyo (22 km W), 9 May 1977, P.J. Spangler, D.R. Givens, 1♂.

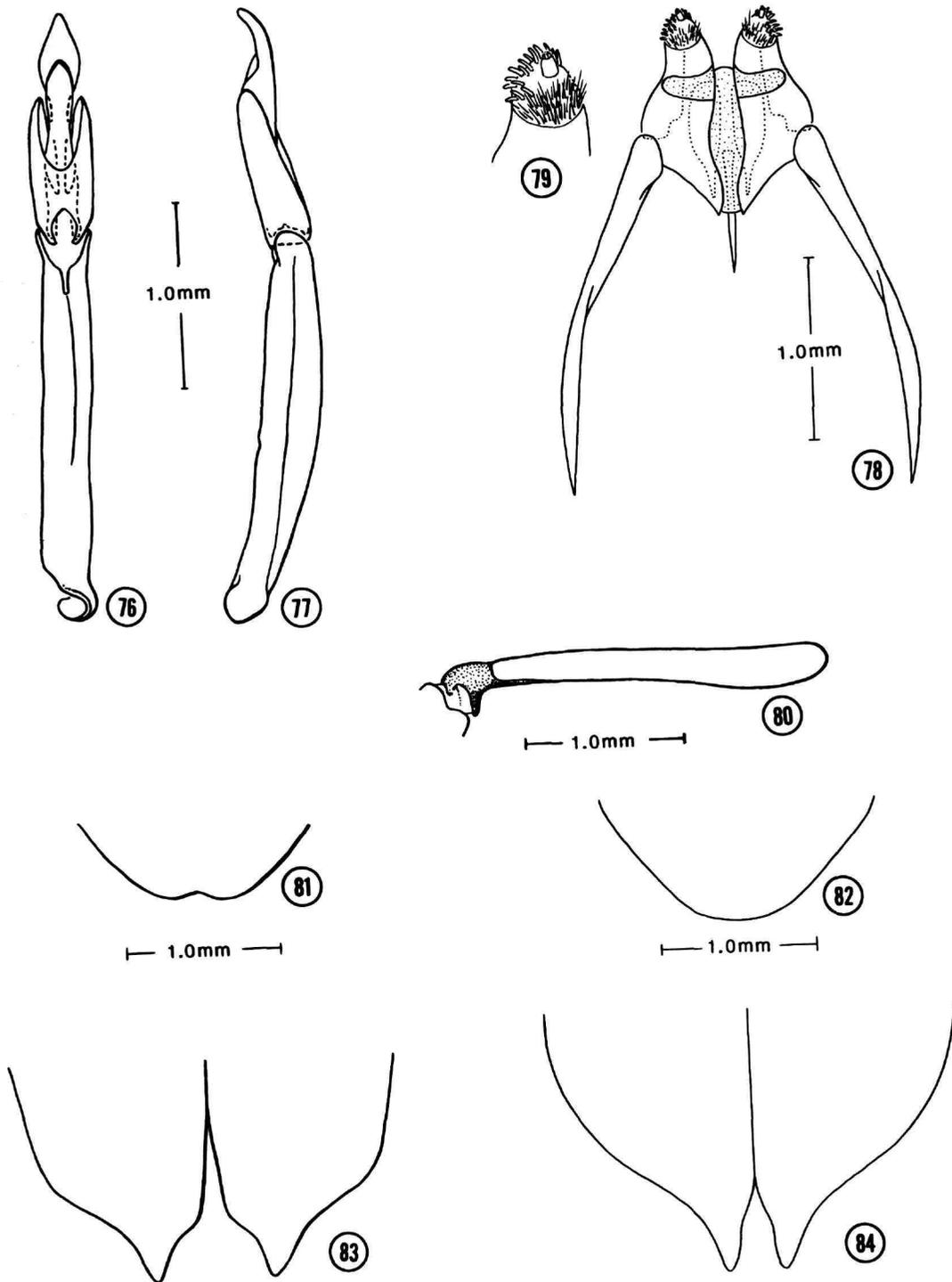
HABITAT.—The specimens from 22 km west of Puyo were collected in a brook about 3 feet wide and sloping to about 1 foot in depth. The substrate was cobble, boulders, gravel, and sand; lodged on the rocks were leaf packs and wood rubble. Specimens were collected by net and by picking by hand. The specimens from Colombia were collected at blacklight.

8. *Disersus longipennis* Sharp

FIGURES 15, 76–84

Disersus longipennis Sharp, 1882:127.—Zaitzev 1908:288; 1910:7.—Blackwelder, 1944:272.—Brown, 1981:101.—Spangler and Santiago, 1982:17.

LECTOTYPE FEMALE.—**Body Form and Size:** Elongate, subparallel, and moderately convex dorsally. Length, 8.4 mm; width, 2.9 mm.



FIGURES 76-84.—*Disersus longipennis* Sharp: 76, male genitalia, ventral view; 77, male genitalia, lateral view; 78, female genitalia, ventral view; 79, stylus; 80, metatibia, lateral view; 81, last abdominal sternum, male; 82, last abdominal sternum, female; 83, elytral apices, male; 84, elytral apices, female.

Coloration: Black dorsally, with reddish brown tinge; head and pronotum darker than elytra. Antennal segments 1 and 2 yellowish brown; antennal segments 3–11 dark reddish brown. Venter black, with dark reddish brown tinge except all palpi, labium, maxillae, metepisterna, epipleura, coxae, trochanters, bases of femora, apical halves of tibiae, and tarsi lighter reddish brown.

Head: Moderately coarsely, moderately densely punctate; punctures on disc separated by about diameter of puncture. Eyes large, hemispherical. Clypeus broadly arcuately emarginate anteriorly. Labrum densely and moderately coarsely punctate; anterior margin truncate and densely fringed with long, fine, golden, hair-like setae; anterolateral angles broadly rounded and expanded laterally.

Thorax: Pronotum widest at base; length, 1.8 mm; width, 2.6 mm; with sides arcuate; distinctly margined laterally; anterolateral angles obtuse, with slight constriction posterolaterally of each angle; apex arcuate; base strongly sinuate; slightly swollen in front of scutellum; with shallow fovea on each side of swollen area; posterolateral angles acute and produced spine-like; surface convex, not impressed; moderately densely, moderately coarsely punctate; discal punctures separated by about half their diameter. Prosternum short in front of procoxae. Prosternal process broadly V-shaped; broadest at base then converging to narrowed but rounded apex; narrowed apical third of process flat. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline; depressed posteromedially between metacoxae; surface microreticulate and punctate; punctures moderately coarse, separated by 1 to 3 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Metatibia with lateral surface distinctly microreticulate and sparsely, moderately coarsely punctate; very sparsely pubescent at base only and this not sharply delimited (Figure 80). Tarsal claws large and stout. Elytron with 10 rows of coarse punctures; punctures separated by a distance half as wide as to as wide as diameter of puncture; intervals very finely alutaceous, with occasional fine, widely spaced punctures but punctures obscured by the dense pubescence; humeral areas strongly tumid; sides of elytra distinctly margined and almost parallel; apex dehiscent, rounded laterally then produced apically to large moderately acute spinous process (Figure 84). Scutellum subtriangular; all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by about 2 or 3 times their diameter. First abdominal sternum with a moderate longitudinal carina extending along innermost side of each hind coxal cavity but becoming effaced at hind margin of metacoxal cavity. Last sternum with apicomedial margin rounded (Figure 82).

Female Genitalia: As illustrated (Figures 78, 79).

MALE.—Externally similar to female except metasternum and first abdominal sternum deeply depressed and carinae between metacoxae more distinct and longer than those on female and almost attaining hind margin of first sternum. Apicomedial margin of last abdominal sternum shallowly emarginate (Figure 81). Elytral apices dehiscent, obtusely angled laterally then slightly emarginate and produced to form large, moderately acute spinous processes; inner margins of processes also emarginate (Figure 83). Male genitalia as illustrated (Figures 76, 77).

TYPE DATA.—We have examined the two syntypes mentioned by Sharp (1882) in his description of *Disersus longipennis*. Both specimens are females and are deposited in the British Museum (Natural History); each specimen is glued to a card on a separate pin. Because no type nor lectotype was previously designated for this species we have chosen the specimen with the following labels as the lectotype and have so labeled it. The specimen bears the following labels numbered here in the sequence they are attached. (1) Card on which the specimen is glued, inscribed in longhand "Disersus longipennis Type D. S. V. de Chiriqui, 2-3000 ft. Champion." (2) A round label on which is printed "Type." (3) "V. de Chiriqui below 4,000 ft. Champion." (4) "Sharp coll. 1905-313." (5) "B.C.A. Col. 1.2. Disersus longipennis, Sharp." The second specimen has the following labels: (1) Card on which the specimen is glued; "Disersus longipennis, D. S. V. de Chiriqui, 2-3,000 ft. Champion." (2) "sp. figured." (3) "V. de Chiriqui, 2-3,000 ft. Champion." (4) "B.C.A. 1.2. Disersus longipennis, Sharp."

A third female from "Bogota" is pinned with the syntypes but Sharp specifically mentioned having only two specimens from "Hab. Panama, Volcan de Chiriqui 2000 to 3000 feet (Champion)." The specimen from Bogota [Colombia] has the elytral apices evenly arcuate instead of obtusely angled laterally and produced to spinous processes; therefore, that specimen represents the female of another species.

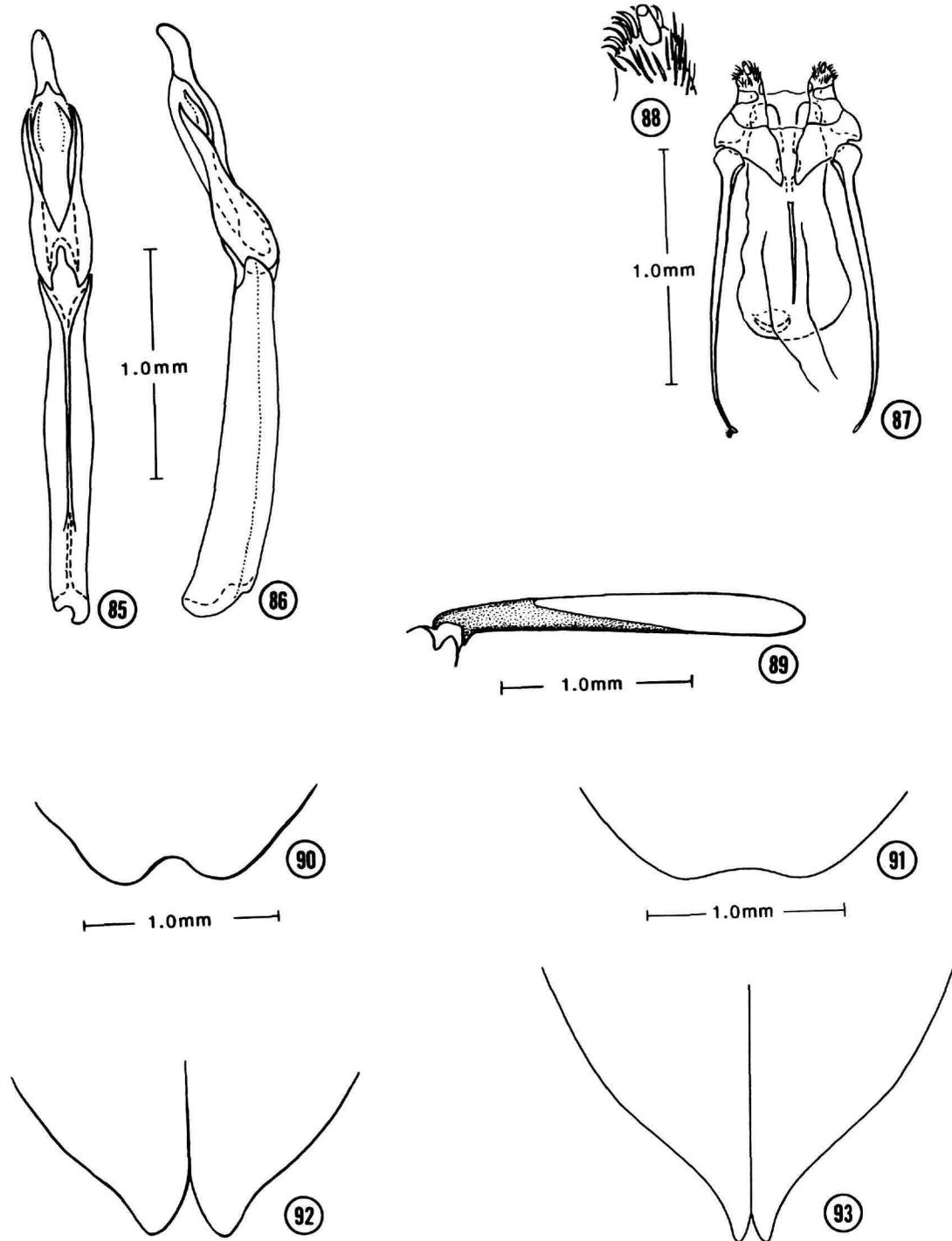
ADDITIONAL SPECIMENS EXAMINED.—COSTA RICA. CARTAGO: Chitaria, 19 Jun 1967, Flint and Ortiz, 1♂; La Suiza, 17 Jun 1967, Flint and Ortiz, 3♂, 1♀; Turrialba (3 mi W), 18–21 Jun 1967, Flint and Ortiz, 1♂, 1♀; Tapanti, 25 Jun 1967, 3900 ft., Paul J. Spangler, 2♂. PANAMA. CHIRIQUI: Santa Clara, 23–25 May 1980, E. Riley and LeDoux, 1♂, 7♀ (LSU); Volcan (26 km W), 3 Jun 1983, 1380 m, small brook, P.J. Spangler, R.A. Faitoute, W.E. Steiner, 1♂.

HABITAT.—The specimens from Tapanti, Costa Rica, were collected by net in a small brook about 2 feet wide, 6 inches deep, and flowing through an open pasture. The substrate was sand and gravel with leaf packs and wood rubble caught against occasional rocks and exposed roots.

9. *Disersus quincemil*, new species

FIGURES 15, 85–93

HOLOTYPE MALE.—*Body Form and Size:* Elongate, sub-



FIGURES 85-93.—*Disersus quincemil*, new species: 85, male genitalia, ventral view; 86, male genitalia, lateral view; 87, female genitalia, ventral view; 88, stylus; 89, metatibia, lateral view; 90, last abdominal sternum, male; 91, last abdominal sternum, female; 92, elytral apices, male; 93, elytral apices, female.

allel, moderately convex dorsally. Length, 7.0 mm; width, 2.3 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; antennal segments 3–11 black. Venter black except basal segments of all palpi, labium, maxillae, epinota, coxae, trochanters, bases of femora, apical halves of tibiae, and tarsi reddish brown.

Head: Moderately coarsely, moderately densely punctate; punctures on disc separated by a distance half as wide as diameter of puncture. Eyes large, hemispherical. Clypeus truncate anteriorly. Labrum densely and moderately coarsely punctate; anterior margin unmodified, truncate, and densely fringed with long, fine, golden, hair-like setae; anterolateral angles rounded and expanded laterally.

Thorax: Pronotum widest at base; length, 1.2 mm; width, 2.1 mm; sides broadly arcuate, distinctly margined laterally; anterolateral angles obtuse, with slight constriction before each angle; apex arcuate; base strongly trisinuate; pronotum very feebly swollen in front of scutellum, with a very shallow depression on each side of swollen area; posterolateral angles acute; surface punctate; disc convex but a feeble and scarcely noticeable sublateral depression mediad of a distinct sublateral lobe on each side of pronotum; discal punctures separated by a distance half as wide as to as wide as diameter of puncture. Prosternum short in front of procoxae. Prosternal process moderately broadly V-shaped; process broadest then converging to narrowed but rounded apex. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed posteromedially between hind coxae; surface microreticulate and punctate; punctures moderately coarse and separated by a distance half as wide as to as wide as diameter of puncture. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Metatibiae with lateral surface lightly microreticulate and very sparsely punctate, punctures moderately coarse; basal fourth densely pubescent and sharply delimited from glabrous area (Figure 89). Basal claws large and stout. Elytron with 10 rows of coarse punctures; punctures separated by a distance half as wide as diameter of puncture; intervals very finely reticulate, with occasional, fine, widely spaced punctures that are obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex feebly dehiscent, moderately produced and rounded (Figure 92). Scutellum subtriangular; with all three sides arcuate.

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 3 times their diameter. First abdominal sternum with a moderate longitudinal carina extending from innermost side of each hind abdominal cavity posterolaterally toward but not attaining hind margin of first abdominal sternum. Apicomedial margin of

sterna 3, 4, and 5 each with a patch of golden setae distinct longer than the normal pubescence covering the sternum. Apicomedial margin of last sternum moderately emarginate (Figure 90).

Male Genitalia: As illustrated (Figures 85, 86).

FEMALE.—Similar to male except metasternum and first abdominal sternum not as deeply nor as broadly depressed as on male. Genitalia as illustrated (Figures 87, 88). Apicomedial margin of last sternum shallowly emarginate (Figure 91). Apices of elytra strongly produced and acute (Figure 93).

VARIATIONS.—The specimens in the type series do not vary significantly; they range in length from 6.6 to 7.6 mm.

TYPE DATA.—*Holotype* (male): PERU. CUZCO: Quince Mil, 23 Jan 1979, W.E. Steiner; deposited in the National Museum of Natural History, Smithsonian Institution.

Allotype: Same data as holotype.

Paratypes: Same data as holotype, 2♂; same data except Quince Mil, 25 Jan 1979, 3♂, 1♀; 28 Jan 1979, 1♂, 1♀.

ETYMOLOGY.—The specific name is from the type locality; a noun used in apposition to the genus.

HABITAT.—Unknown, all specimens were collected from a blacklight operated in the town of Quince Mil.

10. *Disersus saxicola*, new species

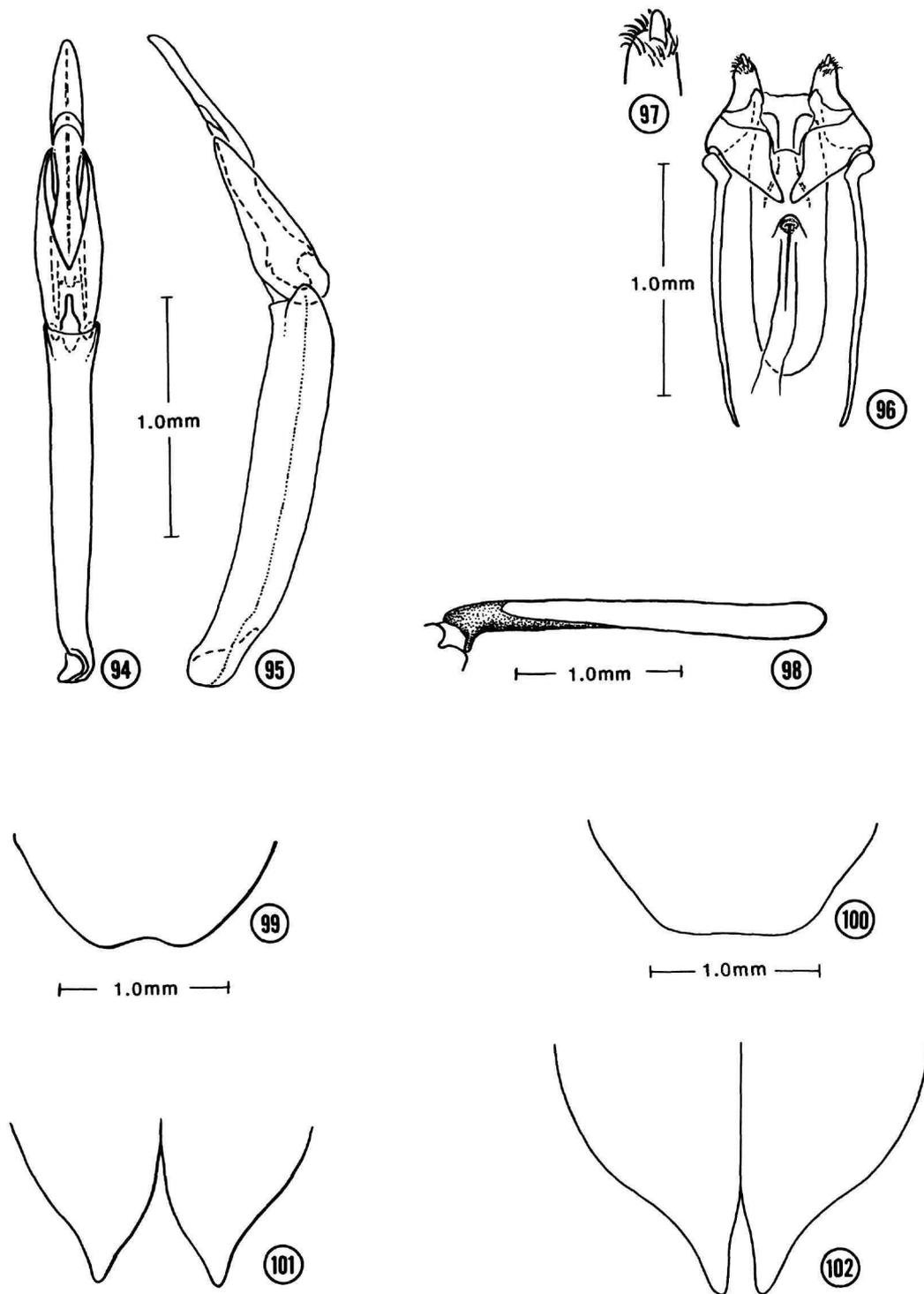
FIGURES 15, 94–102

HOLOTYPE MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 8.6 mm; width, 3.0 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; antennal segments 3–11 black. Venter black except basal segments of all palpi, mentum, submentum, gula, parts of coxae, trochanters, bases of femora, mesibiae, metatibiae, and tarsi reddish brown.

Head: Finely, densely punctate; punctures separated by a distance equal to or less than diameter of a puncture. Eyes large, hemispherical. Clypeus broadly, shallowly, arcuately emarginate anteriorly. Labrum moderately densely, moderately coarsely punctate; punctures separated by 1/2 to 1 times their diameter; anterior margin unmodified, truncate and densely fringed with long, fine, golden, hair-like setae; anterolateral angles rounded and moderately expanded laterally.

Thorax: Pronotum widest at base; length, 2.1 mm; width, 2.9 mm; sides arcuate; distinctly margined laterally; anterolateral angles obtuse, with slight constriction laterad before each angle; apex arcuate; base strongly trisinuate; pronotum very feebly swollen in front of scutellum; with a slight depression on each side of swollen area; posterolateral angles acute; surface punctate, evenly convex; discal punctures fine and dense, separated by the diameter of a puncture or less. Prosternum short in front of procoxae. Proster-



FIGURES 94–102.—*Disersus saxicola*, new species: 94, male genitalia, ventral view; 95, male genitalia, lateral view; 96, female genitalia, ventral view; 97, stylus; 98, metatibia, lateral view; 99, last abdominal sternum, male; 100, last abdominal sternum, female; 101, elytral apices, male; 102, elytral apices, female.

process broadly V-shaped; base broadest then converging to narrowed but rounded apex; narrowed apical third of process longitudinally subcostiform on midline. Mesosternum deeply excavated for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed posteromedially between hind coxae; surface microreticulate and punctate, punctures moderately coarse and separated by a distance about equal to their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Metatibiae with lateral surface microreticulate and moderately densely and moderately coarsely punctate; densely pubescent only at extreme base and on ventral surface along basal two-thirds (Figure 98). Tarsal claws large and stout. Elytron with 10 rows of moderately coarse punctures, punctures separated by a distance about equal to their diameter; rows 1–3 with smaller punctures; rows 4–10 with coarser punctures; rows 1–6 becoming moderately striate apically; intervals very finely alutaceous and very finely and sparsely punctate, punctures obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex strongly dehiscent, evenly arcuate laterally, and strongly produced (Figure 101).

Abdomen: Sterna 1–5 finely microreticulate and punctate; punctures fine and separated by 1 to 5 times their diameter. First abdominal sternum with a moderate longitudinal carina extending from innermost side of each hind coxal cavity posterolaterally toward but not attaining the hind margin of the first abdominal sternum. Apicomedial margins of abdominal sterna without patches of long, golden setae. Apicomedial margin of last sternum broadly and shallowly emarginate (Figure 99).

Male Genitalia: As illustrated (Figures 94, 95).

FEMALE.—Externally similar to male but longer (10.1 mm). Apicomedial margin of last abdominal sternum truncate (Figure 100). Apices of elytra moderately dehiscent and strongly produced (Figure 102). First abdominal sternum without longitudinal carinae. Genitalia as illustrated (Figures 96, 97).

VARIATIONS.—The six examples in the type series are very similar with the following exceptions. They vary in length from 8.0 mm to 9.7 mm, and one female has an indistinct basal remnant of the carinae that are present on the first abdominal sterna of the male specimens.

TYPE DATA.—*Holotype* (male): ECUADOR. NAPO: Tena (17 km SW), 28 May 1977, P.J. Spangler and D.R. Givens; deposited in the National Museum of Natural History, Smithsonian Institution.

Allotype: Same data as holotype.

Paratypes: Same data as holotype, 1♀; ZAMORA-CHINCHIPE: Yanzatza, 6 Nov 1979, Rio Yanzatza, J.J. Anderson, 2♂, 1♀.

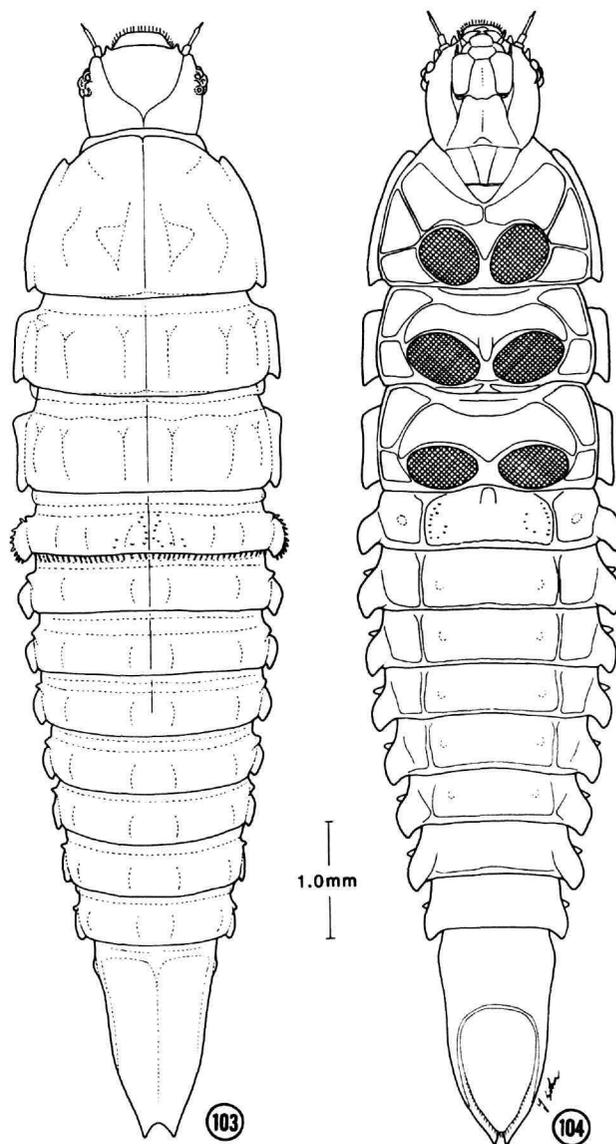
ETYMOLOGY.—The specific name is from a combination of the Latin *saxum* ("rock") plus *cola* ("dweller") in reference to the occurrence of this species, as well as others in the

genus, on rocks in riffles; a noun used in apposition.

HABITAT.—The type series was collected from a rock in riffles in a small, shaded, stream in a forest. One specimen was collected above water on the vertical downstream surface of a rock and two others were collected from the vertical face of the same rock but underwater.

Disersus species

LARVA (Figures 103–109).—Body elongate ovate (Figures 103, 104); moderately flattened ventrally; moderately



FIGURES 103, 104.—*Disersus* species, larva: 103, habitus, dorsal view; 104, habitus, ventral view.

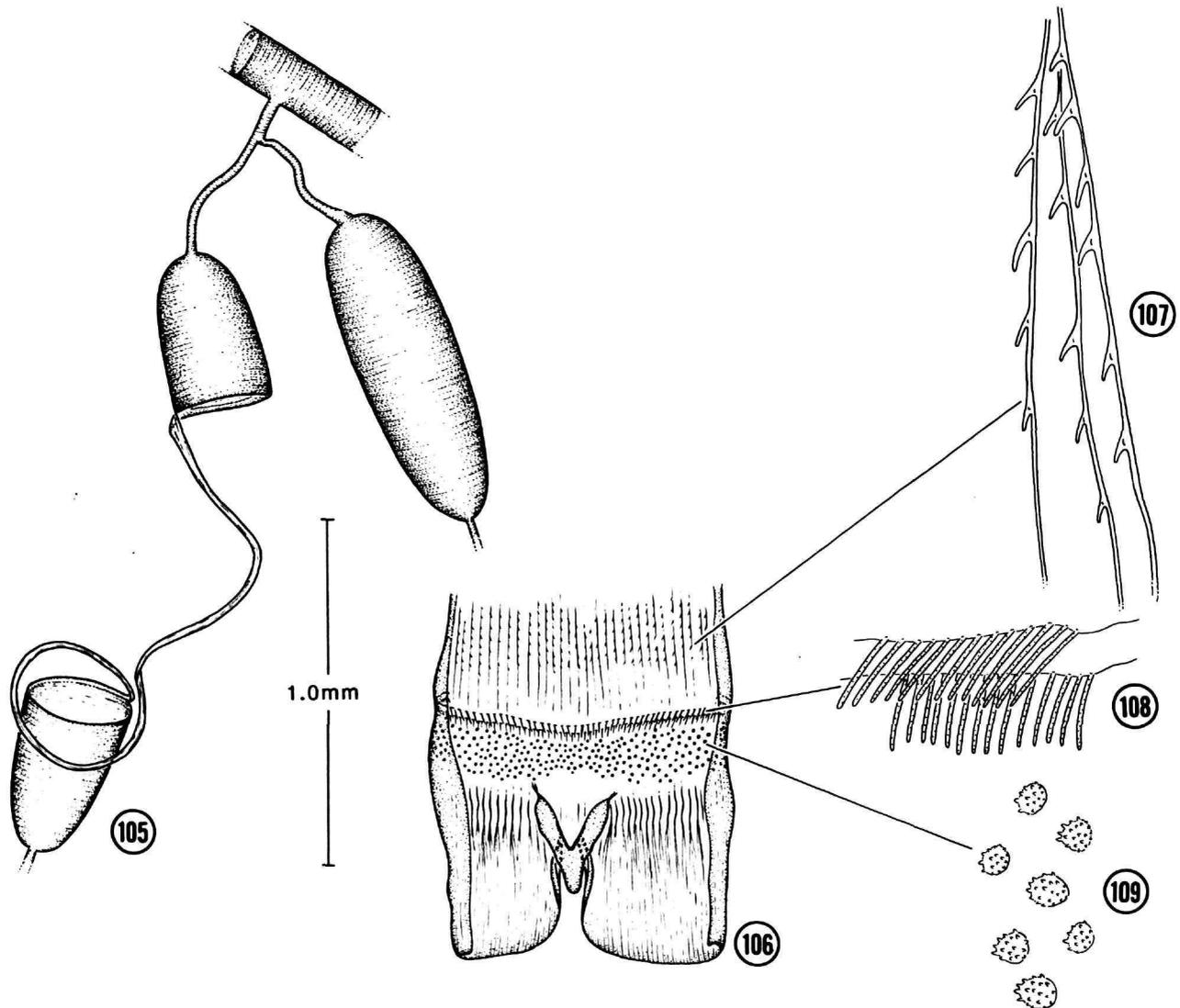
convex dorsally; subtriangular in cross section. With 3 longitudinal rows of broad, ovate, yellowish setae on each side of midline from pronotum to first abdominal tergum; with 2 rows of setae on terga 2 to 8. Margins of mesothoracic, metathoracic, and abdominal segments expanded laterally; those on abdominal segments broad, short, subfalcate.

Head, when seen from above, not concealed by pronotum; anterior margin toothed between base of antenna and clypeus. A cluster of 6 ocelli on each side. Frontoclypeal suture well developed. Labrum with dense fringe of long recurved setae apically. Antenna, 3 segmented. Mandibles symmetrical; with 3 obtuse apical teeth; prostheca long,

slender, and densely hirsute. Maxillary palpus, 4 segmented; stipes without palpifer; galea and lacinia separate and apex of each densely spinose. Labium with postmentum undivided. Labial palpus, 2 segmented. Prementum with a palpiger. Gula well developed.

Prothorax ventrally as follows. Cervical sclerite medial, small, triangular. Prepleurite long in front of coxal cavities; postpleurite divided into 2 sclerites. Posterior sternum absent thus procoxal cavities open posteriorly. Mesosternum and metasternum each with 2 pleural sclerites.

Abdominal sterna with sternopleural sclerites on segments 1-6; segments 7 and 8 forming completely sclerotized



FIGURES 105-109.—*Disesus* species, larva: 105, air reservoirs; 106, oesophageal intima and sclerite; 107, hooks on intima; 108, band of setae on intima; 109, asperities on intima.

rings; segment 9 tectiform. Abdominal terga without tergopleural sclerites. Ninth abdominal segment with a dorsal row and a lateral row of broad, ovate, yellowish setae; apex deeply emarginate; apicolateral angles with acute, tooth-like projections; midline moderately ridged dorsally. Operculum ovate, tapering to an obtuse apex.

Spiracles present on mesothorax and first 8 abdominal segments; opening on small, lateral tubercles.

The specimen described above is identified as the larva of *Disersus* because it keys to that genus in Bertrand's (1972) key to neotropical elmid genera and agrees with his illustration of *Disersus*. The specimen described is labeled: EC-UADOR. PASTAZA: Puyo (16 km west), 5 Feb 1976, P.J. Spangler et al. The larva figured by Bertrand was drawn by Harley P. Brown, who collected it in Costa Rica: Heredia: north of Barba on 20 Nov 1966 (fide H.P. Brown).

Pseudodisersus Brown, 1981

FIGURES 110–126

Pseudodisersus Brown, 1981:98 [type-species: *Pseudodisersus coquereli* Brown, 1981 (= *Potamophilus goudotii* Guérin-Méneville, 1843:18)].

DIAGNOSIS.—Body elongate, densely pubescent. Labrum very broad, wider than clypeus. Antennae widely separated. Pronotum wider than long, narrowed anteriorly; with a deep, transverse, anterior impression and a distinct, median, longitudinal impression extending from base to transverse impression; sides narrowly margined; anterolateral angles obtuse; posterolateral angles acute and appearing bidentate because of lateral emargination preceding actual angles; posterior margin raised and bearing 2 gibbosities in front of scutellar emargination (Figure 110). Prosternum broadly triangular, shallowly excavated, very short in front of procoxae, anterior margin reflexed (Figure 111). Procoxae, mesocoxae, and metacoxae moderately widely separated. Mesosternum with large, deep, medial excavation to receive apex of prosternal process. Metasternum with narrow, median, longitudinal groove; disc broadly shallowly depressed on each side of midline. Legs strongly compressed dorsoventrally, flattened; hind legs shortest and least flattened; tarsal claws without teeth. Elytra elongate, narrow, broader across humeri than pronotum; tapering posteriorly; apices acute and slightly divergent; without accessory striae; intervals only slightly raised (Figure 112). Hind wings without radial cross-vein; with closed anal cell; vein 1A interrupted between crossvein cu-a and wing margin; veins 2A₁ and 2A₂ fused; vein 3A₁ joining 2A₃ on posterior margin of anal cell slightly distad of base of cell. Abdomen of 5 visible sterna in both sexes; segments 1–4 progressively shorter (Figure 113). Male genitalia very elongate and slender; basal piece longer than median lobe; median lobe longer than parameres. Female genitalia with coxites short and broad; styli short.

The only member of the genus presently described, *Pseudodisersus goudotii*, is known to occur only in the mountains from Costa Rica to Zumbi, Ecuador (Figure 114).

11. *Pseudodisersus goudotii* (Guérin-Méneville)

FIGURES 110–124

Potamophilus goudotii Guérin-Méneville, 1843:18.—Coquérel, 1851:597.

Disersus goudotii.—Sharp, 1882:127.

Disersus goudoti.—Zaitzev, 1908:288; 1910:7.—Blackwelder, 1944:272.

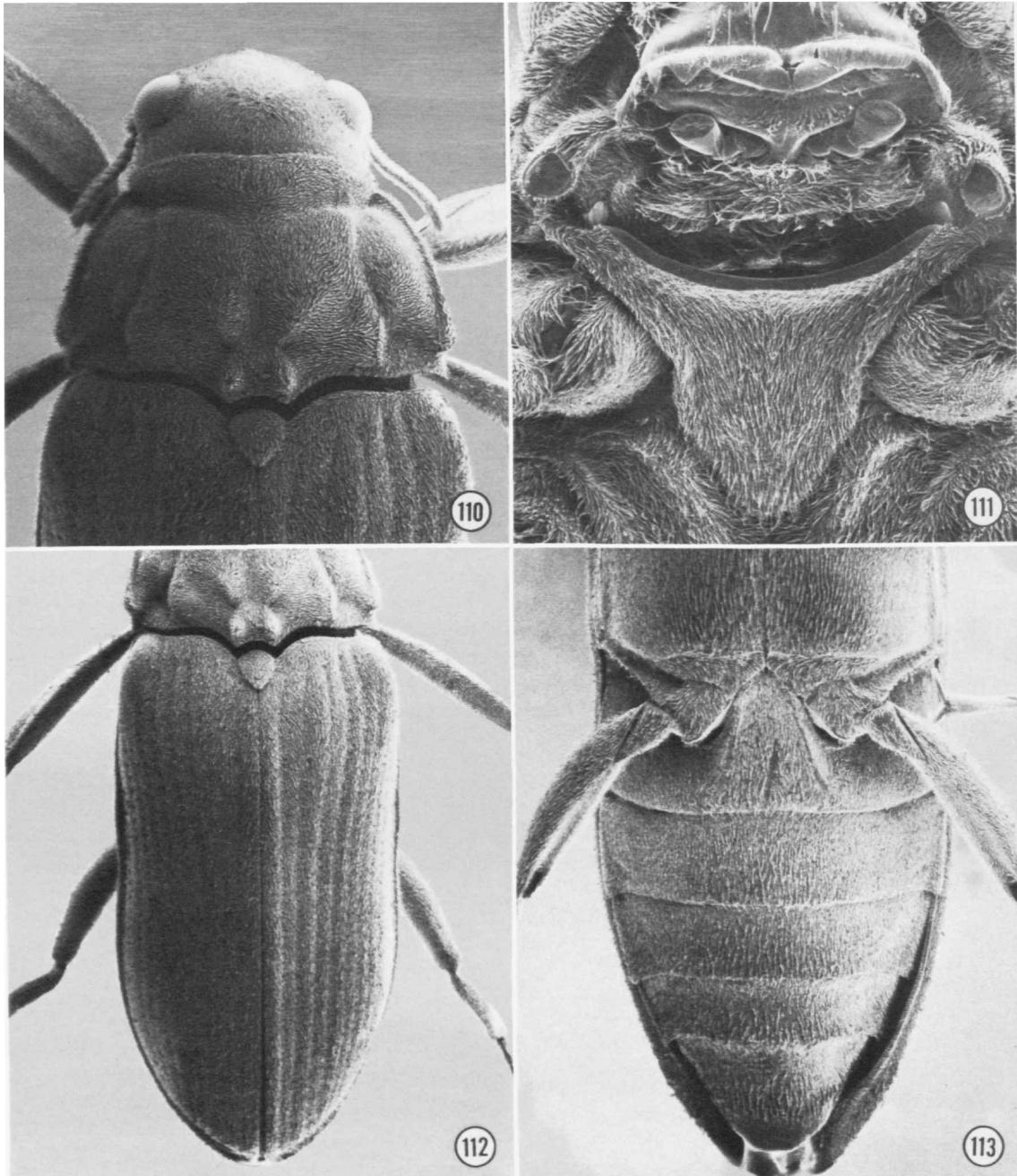
Pseudodisersus coquereli Brown, 1981:100 [new synonymy].

MALE.—*Body Form and Size:* Elongate, subparallel, moderately convex dorsally. Length, 6.4 mm; width, 2.1 mm.

Coloration: Blackish brown dorsally. Antennal segments 1 and 2 reddish brown; antennal segments 3–11 black. Venter blackish brown except basal segments of all palpi; labium; maxillae; coxae; trochanters; bases of femora, mesotibiae, metatibiae, and tarsi reddish brown.

Head: Finely, densely punctate; punctures separated by a distance equal to or less than diameter of a puncture. Eyes large, hemispherical. Clypeus broadly, arcuately emarginate anteriorly. Labrum densely and moderately coarsely punctate; anterior margin unmodified, almost truncate, and densely fringed with long, fine, golden, hair-like setae; anterolateral angles rounded and only moderately expanded laterally.

Thorax: Pronotum slightly widest just before base; length, 1.2 mm; width, 2.0 mm; sides arcuate; anterolateral angles obtuse; with distinct constriction posterolaterally of each angle resulting from deep transverse impression across apical fourth of pronotum; apex arcuate; base strongly sinuate; with a robust tubercle on each side of midline in front of scutellum; each tubercle preceded by a small gibbosity with a slight depression anterolaterally; posterolateral angles obtuse, obscured by a strongly raised dentiform tubercle at lateral margin that arises before true posterolateral angle; surface with deep transverse impression across apical fourth; with sublateral, moderately deep impressions separating strong sublateral lobe from smaller basolateral lobe; midline longitudinally depressed behind transverse depression, more deeply so on basal half; discal area finely densely punctate, punctures separated by distance equal to about half their diameter. Prosternum short in front of procoxae; depressed medially. Prosternal process broadly V-shaped; base broadest then converging to narrowed but rounded apex; narrowed apical third of process flat. Mesosternum deeply and broadly excavated for reception of apex of prosternal process. Metasternum convex on each side of midline; deeply and broadly depressed posteromedially between metacoxae; surface microreticulate and punctate; punctures moderately coarse and sparse, separated by 1 or 2 times their diameter. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated.



FIGURES 110–113.—*Pseudodisersus goudotii* (Guérin-Méneville): 110, head and pronotum, $\times 30$; 111, prosternum, $\times 62$; 112, elytra, $\times 20$; 113, abdomen, $\times 25$.

rated. Legs strongly compressed dorsoventrally, flattened. Mesotibiae with lateral surface finely alutaceous; without dense hydrofuge pubescence except a very small area at base and a narrow strip on medial (lower) and lateral (upper)

surface. Metatibiae with lateral surface lightly, finely alutaceous; virtually impunctate; with basal half densely pubescent and sharply delineated from glabrous area (Figure 119). Tarsal claws moderately long and very stout. Elytron

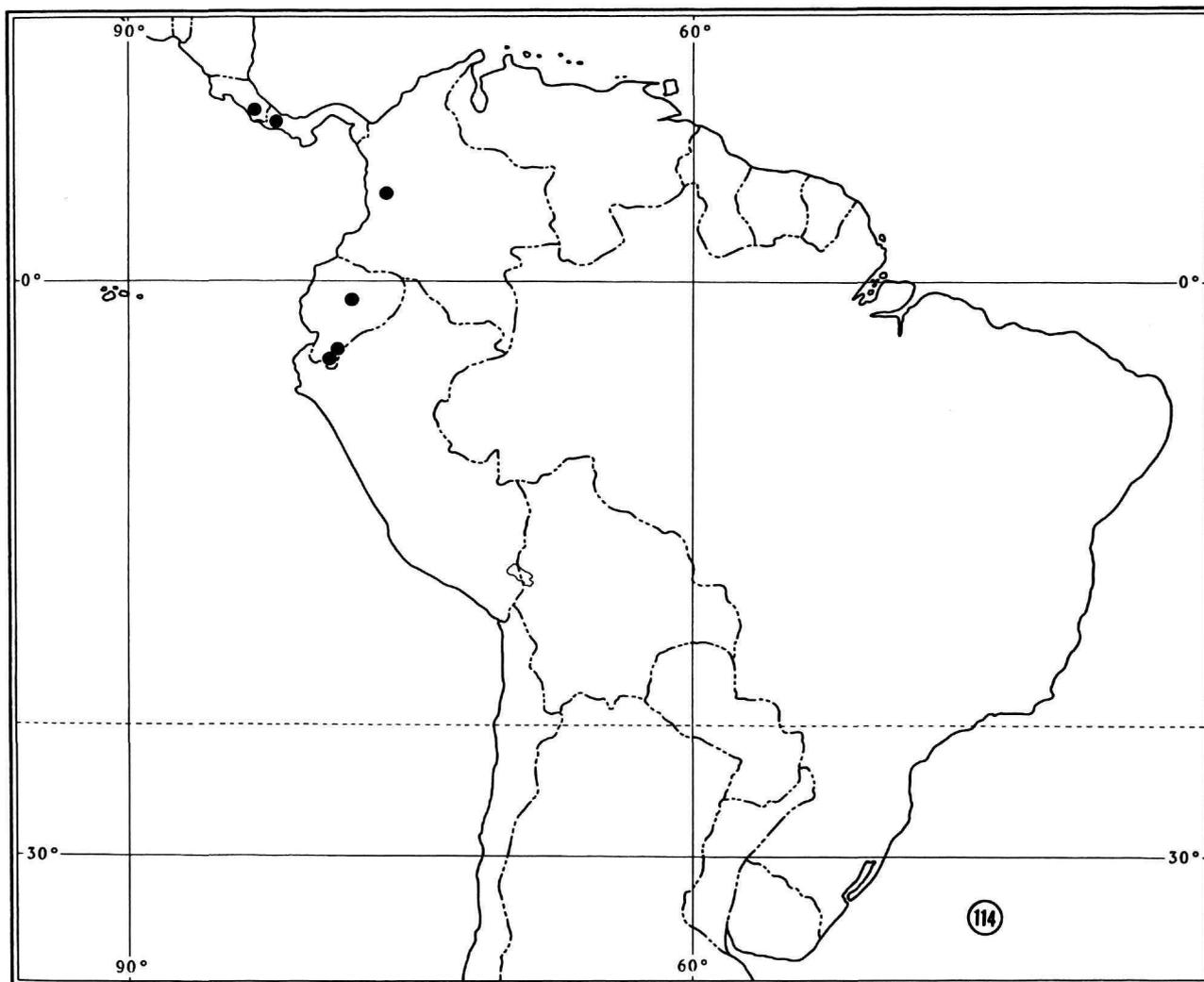


FIGURE 114.—Distribution map for *Pseudodisersus goudotii* (Guérin-Méneville).

with 10 rows of coarse punctures, punctures separated by 1 or $1\frac{1}{2}$ times their diameter; intervals very finely alutaceous and finely, densely punctate; punctures on intervals separated by distance equal to their diameter or slightly less and obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex moderately dehiscent, evenly arcuate laterally and terminating in evenly rounded apex (Figure 122).

Abdomen: Sterna 1–4 becoming progressively shorter. Sternum 1 with distinct longitudinal carina extending from metacoxa almost to hind margin each side of midline. Apex of last sternum rounded (Figure 120).

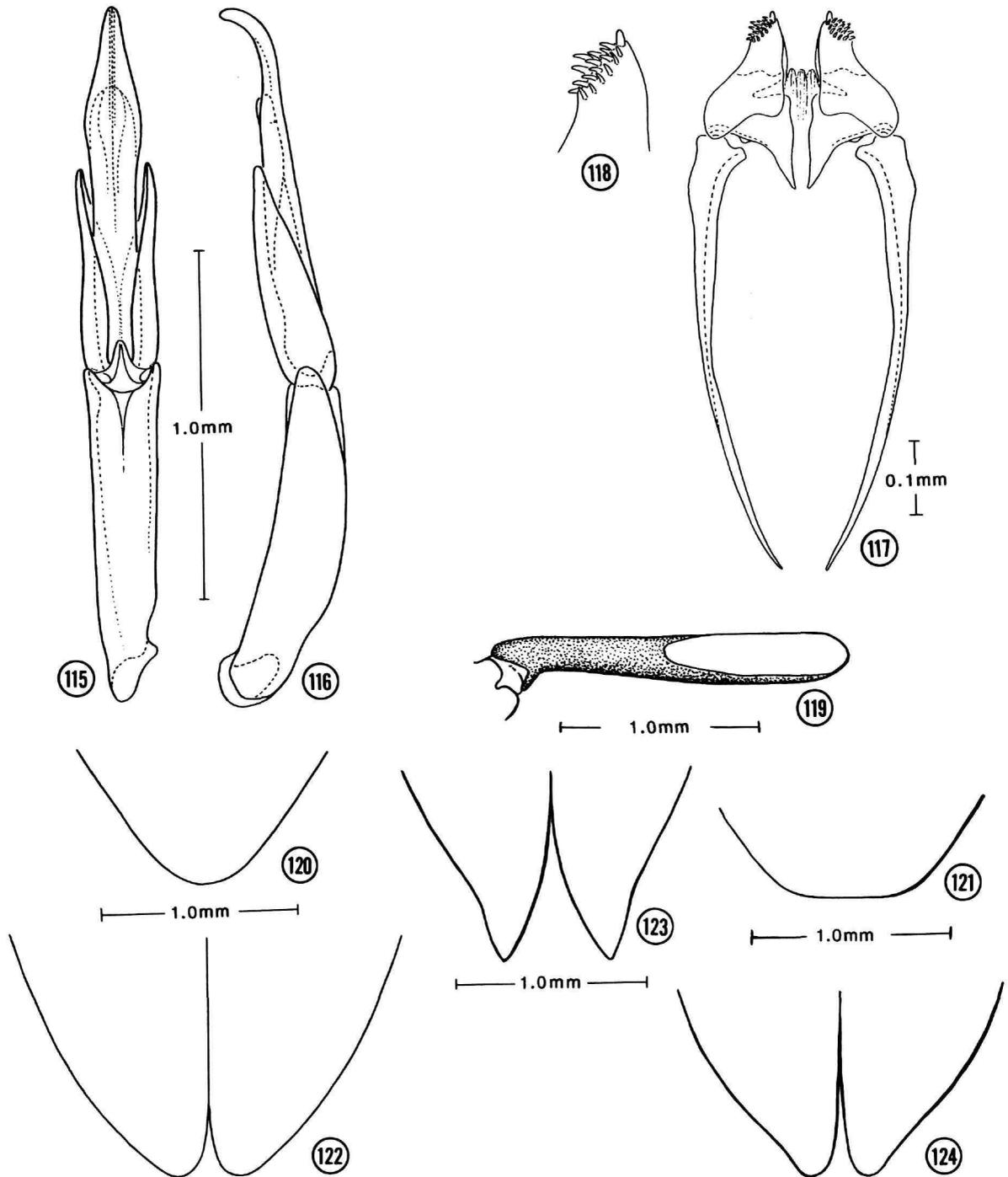
Male Genitalia: As illustrated (Figures 115, 116).

FEMALE.—Similar to male except metasternum less deeply and less broadly depressed medially. Apex of last

abdominal sternum subtruncate (Figure 121). Elytral apices slightly more produced (Figure 124) than those of male. Genitalia as illustrated (Figures 117, 118).

VARIATIONS.—The elytral apices of the series of specimens from Panama are evenly arcuate laterally and consistently terminate in rounded apices (Figure 122). The specimens from Ecuador have the apices distinctly dehiscent, slightly sinuous laterally, and terminate in elongated apices (Figure 123). These differences were sufficient to suggest to us that we might be dealing with two distinct species. However, other characters, including the male genitalia, confirmed that we were looking at variation in the shape of the elytral apices. Consequently, we presently recognize only one species, *Pseudodisersus goudotii*, in this genus.

TYPE DATA.—The female type specimen of *goudotii* is



FIGURES 115–124.—*Pseudodisersus goudoti* (Guérin-Méneville): 115, male genitalia, ventral view; 116, male genitalia, lateral view; 117, female genitalia, ventral view; 118, stylus; 119, metatibia, lateral view; 120, last abdominal sternum, male; 121, last abdominal sternum, female; 122, elytral apices, male; 123, elytral apices, variant; 124, elytral apices, female.

from "Nouvelle-Grenade" [COLOMBIA]: Rio Chipalo [at 04°38'N 74°52'W near Viota, about 30 miles [48 km] SW of Bogota in Departamento Cundinamarca]. In the article by Guérin-Méneville (1843) he described two species, *Potamophilus goudotii* (= *Disersus*) and *P. cordillerae* (= *Hexanchorus*) in that sequence. Following the description of *P. cordillerae* he described the collection site as follows. "J'ai trouvé ces deux espèces ensemble sur des pierres au milieu de la rivière Chipalo. Elles se tiennent tout près de l'eau et sont continuellement mouillées par les petites vagues du courant. Je les ai prises en septembre et octobre en même temps que les *Oxycheila aquatica*."

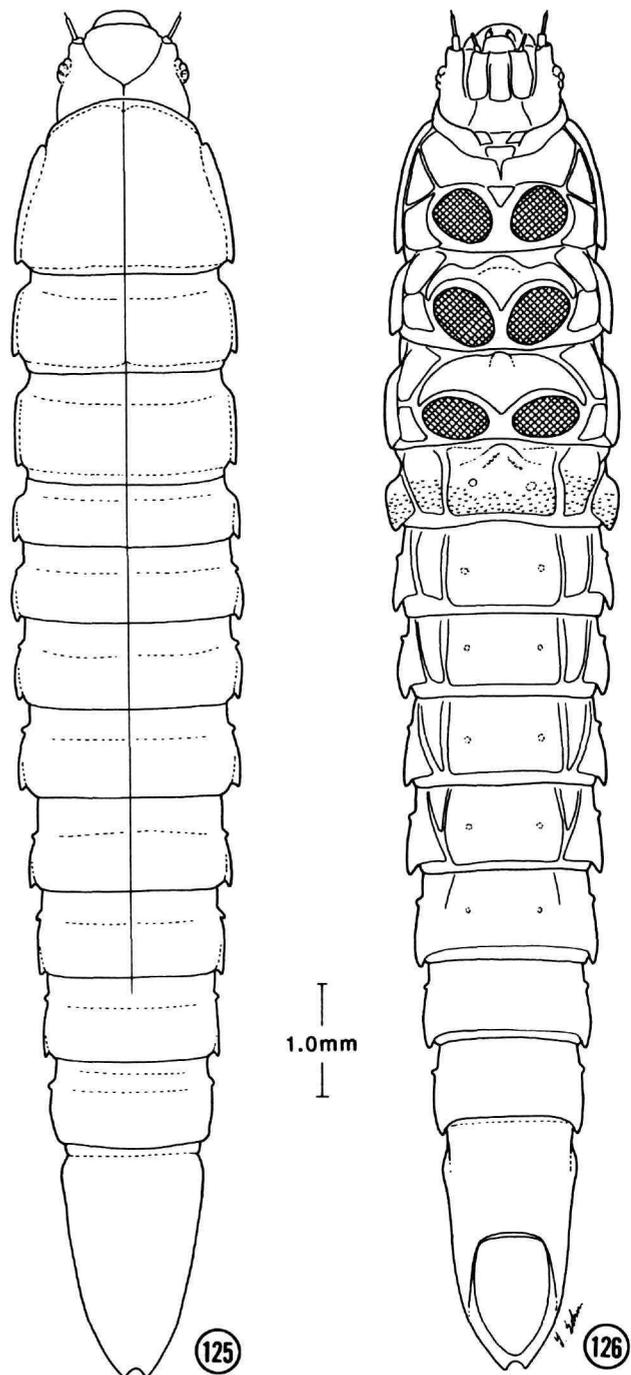
The type specimen of *P. goudotii* kindly lent to us by Mlle. N. Berti is a female bearing the following labels: (1) A large (15 mm) blue circular label: "P./Goudoti/Guerin/Columbia." (2) A female sex sign on a white rectangle. (3) A light blue rectangle: "Museum Paris/Collection/Generale." (4) A red rectangle: "?Type."

The elytral apices of the type specimen are broken off or were eaten away by a pest. However, what remains appears to have been explanate and prolonged posteriorly. This and other distinguishing characters—truncate hind margin of last abdominal sternum, carinae of first abdominal sternum, non-pubescent area on metatibia, and female genitalia—of the type specimen are exceedingly similar to the specimens listed below from Tena and El Pincho, Ecuador.

The allotype and two paratypes of *Pseudodisersus coquereli* Brown were borrowed for study from the British Museum (Natural History). The allotype is labeled as follows. (1) A rectangular card with one specimen pinned to it, the abdomen and female genitalia glued to the card, and "Bogota" handwritten in ink on its base. (2) A round white label with a yellow rim: "Paratype" printed in the middle. (3) A white rectangular label: "Sharp Coll./1905-313." (4) A green, folded, rectangular label: "Ancyronyx/goudotii guer./Bogota." (5) A white rectangular label: "Pseudodisersus/coquerel Brown/ det. H. P. Brown." (6) A rectangular pink label: ALLOTYPE.

The paratypes are labeled as follows. (1) An almost square card bearing two specimens pinned into the card and "Bogota" handwritten across the base of the card. (2) A round white label with yellow rim and "Paratype" printed in middle. (3) A white rectangular label: "Sharp Coll./1905-313." (4) A white rectangular label: "Pseudodisersus/coquerel Brown/ det. H. P. Brown." (5) A rectangular pink label: "PARATYPE." Both specimens are males. The specimen on the right side of the card was dissected and we attached the genitalia with water soluble glue on the card below the dissected specimen. These three specimens are conspecific with *Pseudodisersus goudotii*, therefore, we place *P. coquereli* in synonymy under *P. goudotii*.

ADDITIONAL SPECIMENS EXAMINED.—COSTA RICA. SAN JOSE: Rio Union and Pan Am Hiway, 22 Jun 1972, C.L. Hogue, 1♂ (LACM). ECUADOR. NAPO: Tena (17 km SW),



FIGURES 125, 126.—*Pseudodisersus goudotii* (Guérin-Méneville), larva: 125, habitus, dorsal view; 126, habitus, ventral view.

28 May 1977, P.J. Spangler and D.R. Givens, 1♂, 2♀. MORONA-SANTIAGO: El Pincho (3 km E), 30 Nov 1978, J.J. Anderson, 1♀. ZAMORA-CHINCHIPE: Zumbi (14.4 km S), 4 Nov 1979, J.J. Anderson, 5♂, 3♀. PANAMA. CHIRIQUI: Volcan (19 km W), 3 Jun 1983, P.J. Spangler, R.A. Faitoute, W.E. Steiner, 32♂, 21♀.

HABITAT.—The specimens from Tena, Ecuador, were collected by hand-picking submerged beetles from rocks in riffles of a small, shaded stream in the forest. The stream was about 5 meters wide and contained some pools that were up to 1 meter in depth. Those from Panama were collected from their resting places on the rock face of a small, 1½ m high, waterfall in a cascade. Those specimens were collected by dislodging them by hand and allowing the current to wash them into an aerial insect net. The cascade was about ½ m wide and ½ cm deep over the rock surface.

LARVA (Figures 125, 126).—Body elongate ovate; moderately flattened ventrally; moderately convex dorsally; subtriangular in cross section. With three scar-like depressions on each side of midline from pronotum to first abdominal tergum. Margins of mesothoracic, metathoracic, and abdominal segments expanded laterally very narrowly.

Head, when seen from above, not concealed by pronotum; anterior margin toothed between base of antenna and clypeus. With a cluster of 5 ocelli on each side. Frontoclypeal suture well developed. Labrum with dense fringe of long recurved setae anteriorly. Antenna, 3 segmented. Mandibles symmetrical; with 3 obtuse apical teeth; prosthema long, slender, and densely hirsute. Maxillary palpus, 4 segmented; stipes without palpifer; galea and lacinia separate and apex of each densely spinose. Labium with postmentum undivided. Labial palpus, 2 segmented; prementum with a palpiger. Gula well developed.

Prothorax ventrally as follows. Cervical sclerite medial, small, triangular. Prepleurite long in front of coxal cavities; postpleurite divided into 2 sclerites. Posterior sternum absent thus procoxal cavities open posteriorly. Mesosternum and metasternum each with 2 pleural sclerites.

Abdominal sterna with sternopleural sclerites on segments 1–5 and a partial suture on segment 6; segments 7 and 8 forming completely sclerotized rings; segment 9 tectiform. Abdominal terga without tergopleural sclerites. Ninth abdominal segment with apex deeply emarginate; apicolateral angles with acute, tooth-like projections; midline moderately ridged dorsally. Operculum ovate tapering to an obtuse apex.

Spiracles present on mesothorax and first 8 abdominal segments; opening on small tubercles.

The specimen described is identified as the larva of *Pseudodisersus goudotii* by elimination of *Disersus*, the only other known Andean larvae of similar size. The specimen is labeled: ECUADOR: PASTAZA: Puyo (16 kilometers west), 5 Feb 1976, P.J. Spangler et al.

Potamophilops Grouvelle, 1896

FIGURES 127–140

Potamophilops Grouvelle, 1896:78 [type-species: *Potamophilus cinereus* Blanchard, 1841:60; by monotypy].—Coquérel, 1851:598 [cites *P. cinereus* and repeats Blanchard's description, 1841].—Grouvelle, 1896:78 [description and in key to genera].—Zaitzev, 1908:288 [catalog, *P. cinereus*]; 1910:6 [catalog].—Blackwelder, 1944:272 [catalog, *P. cinerea*].—Bertrand, 1972:482 [in key to larvae].—Brown, 1981:77 [in key to genera].

DIAGNOSIS.—Body elongate, robust, densely pubescent. Labrum very broad, wider than clypeus. Antennae widely separated at base; each 11 segmented. Pronotum wider than long, narrowed anteriorly; with deep anterior, transverse impression across entire width; anterolateral and posterolateral angles obtuse; posterior margin moderately raised medially between sharply and broadly depressed posterolateral angles (Figure 127). Prosternum not triangular, shallowly excavated, very short in front of procoxae; anterior margin not reflexed (Figure 128). Prosternal process parallel-sided between procoxae, with raised ligulate apex. Procoxae, mesocoxae, and metacoxae moderately broadly separated. Mesosternum with moderately broad, shallow, pubescent depression on posterior fourth to receive loose fitting apex of prosternal process. Metasternum with a narrow, median, longitudinal groove; disc broadly shallowly depressed on each side of midline, more pronounced on males. Legs long; tarsal claws robust, without teeth. Elytra elongate, not much broader across humeri than basal width of pronotum; apices rounded to slightly angulate and only slightly divergent at apex; without accessory striae; intervals only vaguely raised (Figure 129). Hind wings without radial cross-vein; with closed anal cell; vein 1A uninterrupted between crossvein cu-a and wing margin; veins 2A₁ and 2A₂ fused; vein 3A₁ joining 2A₃ on posterior margin of anal cell distal of base of cell. Abdomen of 5 visible segments; segments 1–4 progressively shorter (Figure 130). Male genitalia very elongate and slender; basal piece longer than median lobe; median lobe longer than parameres. Female genitalia with coxites short and broad; styli short.

The single species described in this genus, *Potamophilops cinereus*, is presently known to occur only in Argentina and Brazil (Figure 131).

12. *Potamophilops cinereus* (Blanchard)

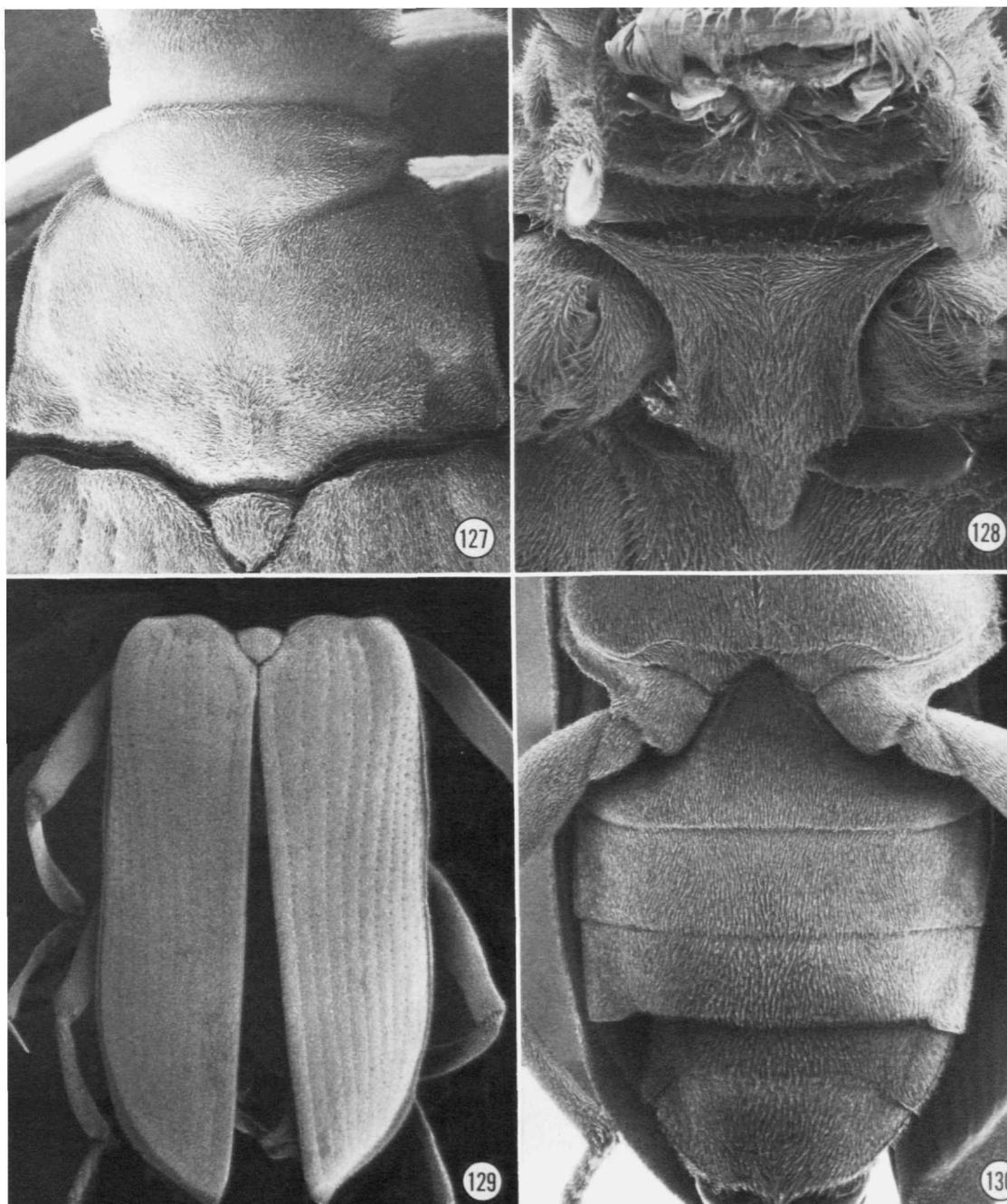
FIGURES 127–140

Potamophilus cinereus Blanchard, 1841:60.

Potamophilops cinereus.—Grouvelle, 1896:78.—Zaitzev, 1908:288; 1910:7.—Bertrand, 1972:494.

Potamophilops cinerea.—Blackwelder, 1944:272.

REDESCRIPTION, MALE.—*Body Form and Size:* Elongate,



FIGURES 127-130.—*Potamophilops cinereus* (Blanchard): 127, head and pronotum, $\times 40$; 128, prosternum, $\times 60$; 129, elytra, $\times 20$; 130, abdomen, $\times 30$.



FIGURE 131.—Distribution map for *Potamophilops cinereus* (Blanchard).

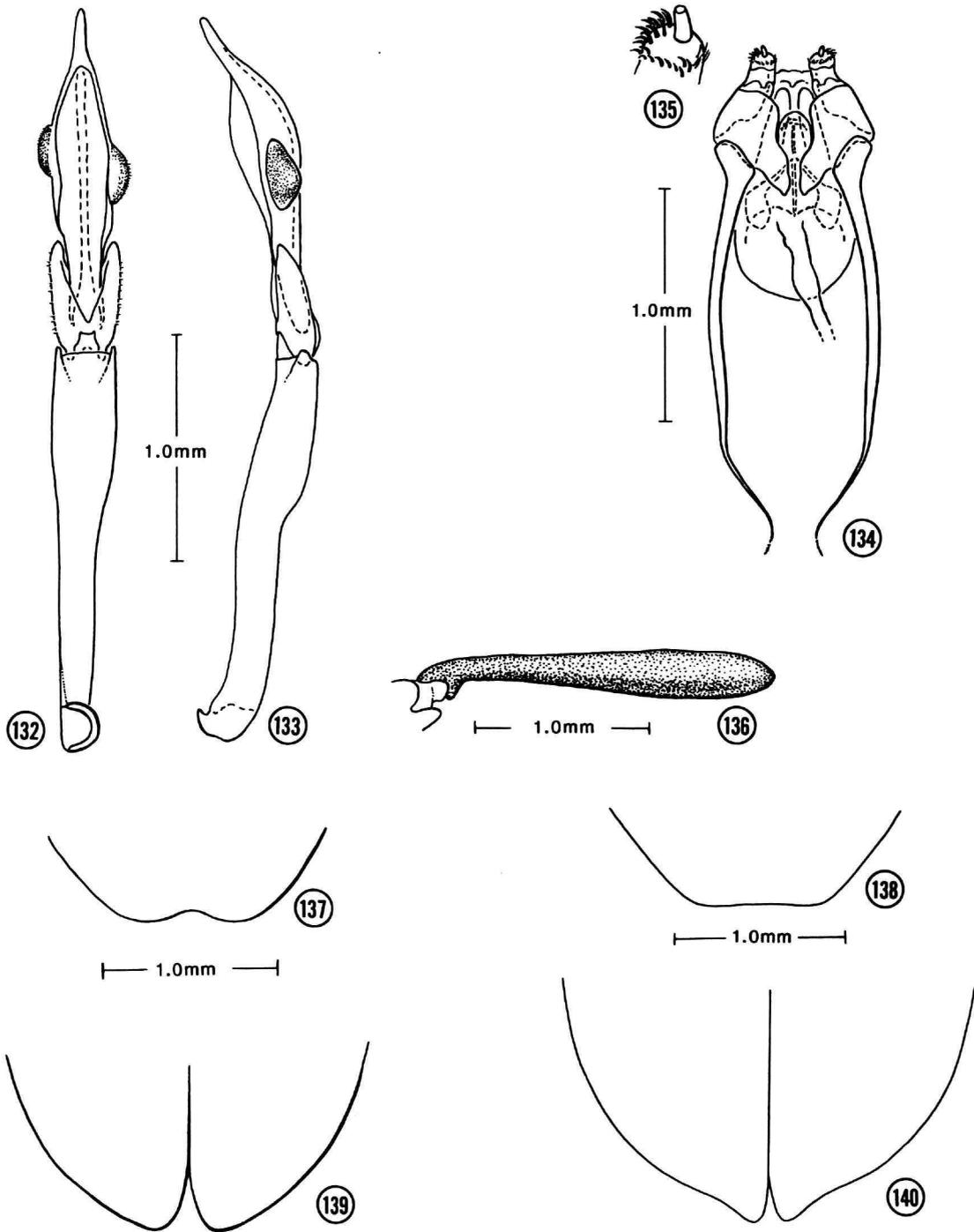
subparallel, moderately convex dorsally. Length, 7.0 mm; width, 2.7 mm.

Coloration: Black dorsally. Antennal segments 1 and 2 reddish brown; antennal segments 3–11 black. Venter black except maxillary palpal segments 1 and 2, labial palpi, labium, maxillae, coxae, trochanters, bases of femora, mesotibiae, tarsal claws, and a small area (behind each metacoxa) on first abdominal sternum reddish brown.

Head: Finely, densely punctate; punctures separated by distance equal to about half their diameter. Eyes large, hemispherical. Clypeus shallowly arcuately emarginate anteriorly. Labrum, especially on anterior half, moderately coarsely, moderately densely punctate; anterior margin un-

modified, truncate, and densely fringed with long, fine, golden, hair-like setae; anterolateral angles rounded but not expanded laterally.

Thorax: Pronotum widest at base; length, 1.7 mm; width, 2.2 mm; sides arcuate; anterolateral angles obtuse, with distinct constriction posterolaterally of each angle resulting from deep transverse impression across apical third of pronotum; apex arcuate; base strongly sinuate; with a shallow fovea on each side of midline a short distance in front of scutellum; posterolateral angles obtuse; with a deep, broad depression adjacent to each angle; surface with deep transverse impression across apical third; midline convex behind transverse impression; discal area finely densely



FIGURES 132-140.—*Potamophilops cinereus* (Blanchard): 132, male genitalia, ventral view; 133, male genitalia, lateral view; 134, female genitalia, ventral view; 135, stylus; 136, metatibia, lateral view; 137, last abdominal sternum, male; 138, last abdominal sternum, female; 139, elytral apices, male; 140, elytral apices, female.

punctate, punctures separated by a distance equal to or less than their diameter. Prosternum short in front of procoxae. Prosternal process scutiform but apex prolonged, bluntly subspiniform, and subcostate. Mesosternum with moderately deep depression for reception of apex of prosternal process. Metasternum convex on each side of midline, depressed, with a glabrous line posteromedially between metacoxae; surface microreticulate and punctate; punctures on convex surface fine and dense, separated by a distance equal to or less than their diameter; punctures sparser laterally. Procoxae and metacoxae moderately widely separated; mesocoxae slightly more widely separated. Legs long and slender. Mesotibiae with lateral surface finely alutaceous; with sparse coarse punctures; without dense hydrofuge pubescence except a very narrow strip on medial (lower) surface. Metatibia covered with dense pubescence (Figure 136). Tarsal claws long and stout. Elytron with 10 rows of coarse punctures, punctures separated by a distance about equal to their diameter; intervals finely densely punctate, punctures separated by distance about equal to their diameter and obscured by dense pubescence; humeral area strongly tumid; sides of elytra distinctly margined and almost parallel; apex slightly dehiscent, evenly arcuate laterally and terminating in rounded apex (Figure 139).

Abdomen: Metasternum and first abdominal sternum broadly and moderately impressed. First abdominal sternum with poorly defined carinae between metacoxae; carinae scarcely exceeding hind margin of metacoxal cavities. Apicomedial margin of last sternum moderately emarginate (Figure 137).

Male Genitalia: As illustrated (Figures 132, 133).

FEMALE.—Similar to male except last abdominal sternum is subtruncate (Figure 138) and the elytral apices are slightly produced (Figure 140). Genitalia as illustrated (Figures 134, 135).

VARIATIONS.—No variations were found in the small series of specimens examined.

SPECIMENS EXAMINED.—BRAZIL. MATO GROSSO: Rancho Grande, 9 Nov 1966, M.J. Viana, 3♂, 5♀ (MA). A pair of specimens is deposited in the Smithsonian Institution collections and a pair in the collection of the Instituto de Biología, Universidad Nacional Autónoma de México.

HABITAT.—Unknown.

Larvae

The immature stages of *Disersus*, *Pseudodisersus*, and *Potamophilops* have received less attention than the adults. Hinton (1940) tentatively attributed a larva from Bolivia to *Disersus* in his key to larval elmids and no further description was provided; however, his specimen probably represents the larva of *Pseudodisersus*. Bertrand (1972) illustrated and included a larva of *Disersus* and *Potamophilops* in his key to

neotropical elmids but he gave only a few brief comments about them and no information on their habitat or biology. The larva Bertrand described as that of *Potamophilops* probably is the larva of *Stegoelmis*. We believe this because we have frequently collected large larvae like the one Bertrand illustrated in habitats with adults of *Stegoelmis* in northern South America where adults of *Potamophilops* have not been reported to occur. Brown (1981) reported having larvae of *Pseudodisersus* that he collected in mountain streams near Bogota, Colombia, but no additional habitat data were mentioned. We can report that larvae of both *Disersus* and *Pseudodisersus* have been found in the same streams from which adults were collected, but in submerged, rotting sticks, saplings, and logs. Some of the logs were partially buried in the sandy bottoms of streams; other waterlogged limbs, logs, etc., were pulled from piles of driftwood, and examined for larvae. The larvae were wedged in cracks, under loose bark, or burrowing in the soft wood. Because larvae were present in the rotting wood it seemed probable that they fed on the softer tissues of the wood. When the guts of larvae of *Disersus* and *Pseudodisersus* were examined, they were found to be loosely packed with tiny fragments of wood, which confirms that both are shredders-herbivores.

Although our dissections of larvae were made to establish what type of food was being ingested by the larvae of the two genera, two structures were found that merit further description. The first and most obvious structures were 12 large air-reservoirs similar to those described for the Australian elmids, *Coxelmis novemnotata* (King), as described by Davis (1947). Although most of the reservoirs appeared to be separated from each other in larvae of both genera, the reservoirs illustrated (Figure 105) were found attached to a common tracheal duct that was attached to one of the main tracheal trunks. The other end of each reservoir is reduced to a small trachea that branches into tracheoles that terminate on the walls of the gut.

The second structure, found in the oesophagus of larvae of *Disersus* and *Pseudodisersus*, is a V-shaped sclerite (Figure 106), similar to one illustrated and called an "oesophageal sclerite" by Hinton (1939) for the elmids *Phanoceroides aquaticus* Hinton. This valve-like structure is part of a modified area (proventriculus?) in the oesophagus composed, from front to rear, of an area provided with tiny, sparse hooks (Figure 107) followed by a narrow, constricted band of 2 dense rows of long setae (Figure 108). Behind those setae is a wider, pebbly looking band of microasperities (Figure 109) that presumably aids in grinding or compacting the food as it passes through the constricted area. The apices of the hooks and long setae in the band are all directed toward the hind end of the gut, thus allowing the wood fragments to pass unimpeded through the gut. The three areas are then followed by the V-shaped "oesophageal sclerite" whose function remains unclear.

Key to Larvae of *Disersus* and *Pseudodisersus*

- Abdominal pleurites present on segments 1–6 [Figure 104]; lateral expansions on abdominal segments 1–7 distinct, broad, and subfalciform [Figures 103, 104]. ***Disersus***
- Abdominal pleurites present on segments 1–5 [Figure 126]; lateral expansions on abdominal segments 1–7 indistinct, very narrow, and moderately arcuate [Figures 125, 126]. ***Pseudodisersus***

Clave para las Larvas de *Disersus* y *Pseudodisersus*

- Pleuritos abdominales presentes en los segmentos 1 al 6 [Figura 104]; expansiones laterales de los segmentos abdominales 1 al 7 evidentes, amplias y subfalciformes [Figuras 103, 104]. ***Disersus***
- Pleuritos abdominales presentes en los segmentos 1 al 5 [Figura 126]; expansiones laterales de los segmentos abdominales 1 al 7 inconspicuas, muy angostas y moderadamente arqueadas [Figuras 125, 126]. ***Pseudodisersus***

Literature Cited

- Bertrand, H.P.I.
1972. *Larves et Nymphes des Coléoptères Aquatiques du Globe*. 804 pages, 561 figures. Abbeville, France: F. Paillart.
- Blackwelder, R.E.
1944. Checklist of the Coleopterous Insects of Mexico, Central America, the West Indies, and South America; Part 2. *United States National Museum Bulletin*, 185:189–341.
- Blanchard, C.E.
1841. Famille des Elmiens. In *Insectes de L'Amerique Meridionale, recueillis par Alcide d'Orbigny*, 2(2):60–61. Paris.
- Broun, T.
1882. Alteration of Generic Names. *The Annals and Magazine of Natural History*, 5(9):409.
- Brown, H.P.
1981. Key to the World Genera of Larinae (Coleoptera, Dryopoidea, Elmidae), with Descriptions of New Genera from Hispaniola, Colombia, Australia, and New Guinea. *Pan-Pacific Entomologist*, 57(1):76–104, 64 figures.
- Coquérel, J.C.
1851. Monographie du genre *Potamophilus*. *Revue et Magazine de Zoologie*, series 2, 3:591–603.
- Davis, C.
1947. Oxygen Economy of *Coxelmis novemnotata* (King) (Coleoptera, Dryopidae). *Proceedings of the Linnean Society New South Wales*, 67:1–8.
- Grouvelle, A.
1896. Note sur les subdivisions génériques des Potamophiliens (Col.). *Bulletin de la Société Entomologique de France*, 1896:77–79.
- Guérin-Méneville, F.E.
1843. Insectes nouveaux, observés sur les plateaux des Cordillères et dans les vallées chaudes de la Nouvelle-Grenade. *Revue Zoologique*, 1:12–22.
- Hinton, H.E.
1939. An Inquiry into the Natural Classification of the Dryopoidea, Based Partly on a Study of the Internal Anatomy (Col.). *Transactions of the Royal Entomological Society*, 89:133–184.
1940. A Monographic Revision of the Mexican Water Beetles of the Family Elmidae. *Novitates Zoologicae*, 42(2):217–396.
- LeConte, J.L.
1852. Synopsis of the Parnidae of the United States. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 6:41–45.
- Sharp, D.
1882. Insecta Coleoptera, Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Heteroceridae, Parnidae, Georissidae, Cyathoceridae. *Biologia Centrali-Americana*, 1(2):1–144.
- Shuckard, W.E.
1839. *The Elements of British Entomology*. 240 pages. London.
- Spangler, P.J.
1981. Coleoptera. In S.H. Hurlbert, G. Rodriguez, and N.D. Santos, editors, *Aquatic Biota of Tropical South America, Part 1: Arthropoda*, pages 129–220. San Diego, California: San Diego State University.
1982. Coleoptera. In S.H. Hurlbert and A. Villalobos-Figueroa, editors, *Aquatic Biota of Mexico, Central America, and The West Indies, Part 1: Arthropoda*, pages 328–397. San Diego, California: San Diego State University.
1985. A New Genus and Species of Riffle Beetle, *Neblinagena prima*, from the Venezuelan Tepui, Cerro de la Neblina (Coleoptera, Elmidae, Larinae). *Proceedings of the Entomological Society of Washington*, 87(3):538–544, 15 figures.
1986. The Status of the Riffle Beetle Genus *Lara* LeConte and Homonymy of the Subfamily Group Name Larinae (Coleoptera: Elmidae). *Entomological News*, 97(2):76–78.
- Spangler, P.J., and S. Santiago.
1982. A New Species of Aquatic Beetle, *Disersus uncus*, from Costa Rica (Coleoptera: Elmidae: Larinae). In M. Satô, editor, *Special Issue to the Memory of Retirement of Emeritus Professor Michio Chûjô*, pages 17–20, 1 figure.
- Zaitzev, P.
1908. Catalogue des coléoptères aquatiques des familles des Dryopidae, Georissidae, Cyathoceridae, Heteroceridae et Hydrophilidae. *Horae Societatis Entomologicae Rossicae*, 38(4):283–420.
1910. Family Dryopidae. In W. Junk and S. Schenkling, *Coleopterorum Catalogus*, 14(17):1–68. Berlin: Junk.

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