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SOUTH AMERICAN COCCINELLIDAE (COLEOPTERA). PART VII: A  
SYSTEMATIC REVISION OF SOUTH AMERICAN SCYMNUS (PULLUS)  
MULSANT (SCYMNINAE: SCYMNINI)

COCCINELLIDAE (COLEOPTERA) DEL SUD AMERICA. PARTE VII: REVISIONE  
SISTEMATICA DELLE SPECIE DI SCYMNUS APPARTENENTI AL  
SOTTOGENERE PULLUS MULSANT

ABSTRACT

The taxonomy of South American *Scymnus* (*Pullus*) species is revised.

INTRODUCTION

American *Scymnus* is composed of two subgenera, *Scymnus* Kugelann, s. str., and *Pullus* Mulsant. In South America members of *Scymnus* s. str., are apparently not present; therefore ensuing discussions refer only to *Pullus*. Western Hemisphere *Pullus* consists of a large number of mostly north temperate species but only 27 South American representatives are known. GORDON (1976) recognized 81 North American species and many species occur in Mexico, but the numbers of *Pullus* species decrease rapidly from Mexico to South America. South American *Pullus* have not been taxonomically treated as a unit since MULSANT (1850), although CROTCH (1874) listed the names used by Mulsant without assigning them to subgenera.

BIOLOGY

No actual prey records have been seen for South American species of *Pullus*, but in other geographic regions various species of aphids are preferred food. DAVIDSON (1923) recorded many species of aphids as acceptable food for *Scymnus* (*Pullus*) *loewii*, a species that occurs in North and South America, but Davidson's records referred only to North America. Also for the North American fauna, Whitehead (unpublished thesis) recorded *Scymnus* (*Scymnus*) *nebulosus* LeConte as feeding on "black aphid on citrus and aphids on riparian grasses"; *S. (S.) caurinus* Horn on "pea aphids, alfalfa aphids and a gray aphid"; *S. (S.) fenderi* Malkin on "black aphids on willow"; *Scymnus* (*Pullus*) *marginicollis* "on pea aphid and walnut aphid"; and *S. (P.) calaveras* Casey "on black aphid".

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## DIAGNOSTIC CHARACTERS

Morphological terms used here are generally known and repeatedly used by previous authors. However, to simplify use of the keys and descriptions, brief notes on some characters are provided.

*Punctuation and pubescence*: Relative size of punctures on the head, thorax, elytra, and ventral surface is often a useful character. Head punctures vary little in size but pronotal and elytral punctures are usually large medially, becoming smaller toward lateral margins; therefore it is understood that comparative remarks concerning the latter two are derived from median punctures, not punctures on lateral 1/3. Spacing of punctures is expressed as "separated by a diameter" (of a puncture), "separated by less than a diameter", etc. Color and length of pubescence are important – colors are either grayish white or yellowish white. Length of pubescence is established by comparison with scutellar length.

*Elytra*: Most species of *Pullus* have discal punctures of uniform size, but several species have distinctly larger punctures arranged in 1 or 2 subsutural rows.

*Abdomen*: Type of postcoxal line on abdominal sternum 1 is the major feature defining *Scymnus* and *Pullus*; however, within each subgenus form and length of line is significant. In *Pullus* the line may extend to the hind sternal margin or be narrowly or widely separated from it; the outer, recurved end may terminate at the outer end of the coxal depression or distinctly lateral of it, sometimes nearly reaching the lateral margin of sternum 1. Form of the apices of abdominal sterna 5 and 6 varies among males of species from apically truncate, to feebly emarginate, to deeply emarginate.

*Male genitalia*: This organ is the most critically important structure for identification of *Pullus* species, if not for most of the *Coccinellidae*. GORDON (1985) illustrated and defined the various genitalic parts in detail but only the most important structures are discussed here, as follows.

Basal lobe - median apical projection of phallobase serving as a siphonal guide; many *Pullus* species have a basoventral projection that is an asymmetrical, rounded or angulate structure at ventral base of the basal lobe; many species have ventral and dorsal projections that are differently formed upper and lower portions of the basal lobe. Lateral alae – paired lateral projections of phallobase between basal lobe and paramere (= ventral ala of WINGO 1952, GORDON 1976). Terminology of the "ventral ala" is slightly changed here to "lateral ala" because this more accurately reflects the actual position of the structure in relation to other portions of the male genitalia. Paramere – paired lateral projection of phallobase serving to position and hold basal lobe in position during copulation. Phallobase – includes the basal piece, basal lobe, lateral alae, and paramere of male genitalia. Siphon – sclerotized rod inserted through the basal lobe and into the female bursa copulatrix during copulation, corresponding to aedeagus or penis.

*Female genitalia*: See GORDON (1999) for labeled structures. Spermathecal capsule – usually bent medially, cornu usually with distinct apical beak, base somewhat bulbous or cylindrical. Ramus – distinct, well developed. Infundibulum – usually present, well developed. Sperm duct – short, not coiled, unmodified.

## TECHNIQUES

*Dissection:* Male and female genitalia must be dissected when studying *Pullus* specimens. Specific techniques are simple and time honored. They consist of softening a specimen in hot water; removing the abdomen, placing it in a dilute solution of potassium or sodium hydroxide until muscle and fat are removed, rinsing abdomen and genitalic structures in clear water, and placing cleaned structures in glycerine for examination. Genitalia were stored in glycerine in microvials attached to the donor specimen.

*Type material:* Type material of all previously described species was examined. Detailed information is included under "Type locality", "Type depository", and "Remarks". The "Methods" section in GORDON (1985) contains discussions of locality records and primary type depositories that are equally applicable here.

*Collections:* The following acronyms denote depositories for specimens used in this study: (BM) Natural History Museum, London; (CAS) California Academy of Sciences, San Francisco, California; (CM) Carnegie Museum, Pittsburgh, Pennsylvania; (CNC) Canadian National Collection, Ottawa, Ontario; (IML) Fundación e Instituto Miguel Lillo, Tucumán, Argentina; (MBR) Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina; (MHNS) Museo Nacional de Historia Natural, Santiago, Chile; (UMZC) Cambridge University Museum, Cambridge, England; (USNM) U.S. National Museum of Natural History, Smithsonian Institution, Washington, DC; (ZMHB) Zoology Museum, Humboldt University Zoology Museum, Berlin.

Many other institutional collections were examined that did not contain examples of South American *Pullus*.

## SYSTEMATICS

### Subgenus *Pullus* Mulsant

*Pullus* Mulsant, 1846:241; Mulsant, 1850:976; Casey, 1899:139; Gordon, 1976:48. Type species; *Coccinella subvillosa* Goeze, 1777, by subsequent designation of Korschefsky, 1931.

*Description:* *Scymnus* with 11-segmented antenna; postcoxal line on 1st abdominal sternum complete, apically recurved, reaching base of sternum; male 5th and 6th abdominal sterna moderately to strongly emarginate and impressed apically.

*Remarks:* *Pullus* Mulsant (1850) has traditionally been treated as a subgenus of *Scymnus* Kugelann (1794) by most authors and that status is maintained here, although a case could be made to elevate it to generic status.

North American *Pullus* species were categorized in three sections based on male genitalia by Gordon (1976), and this grouping applies, in general, to South American species. Section I is composed of species having simple male genitalia of the *Scymnus* s. str. type, and in South America is represented by only *P. gnomus*. Section II contains the species from *P. loewii* to *P. trulla*, and all remaining species belong to Section III. Species arrangement herein follows this sequence and is based on a presumption that extremely simple genitalia are primitive and complex genitalia derived.

Many species of *Coccinellidae* were described as South American "*Scymnus*", mostly from 1850 to 1925. Generic placement of these cannot be assumed; type material must be examined because many were incorrectly placed by the original author, including Mulsant (1850). A revision of South American *Diomus* Mulsant (Gordon 1999) made type examination of all taxa imperative, and many species of "*Scymnus*"

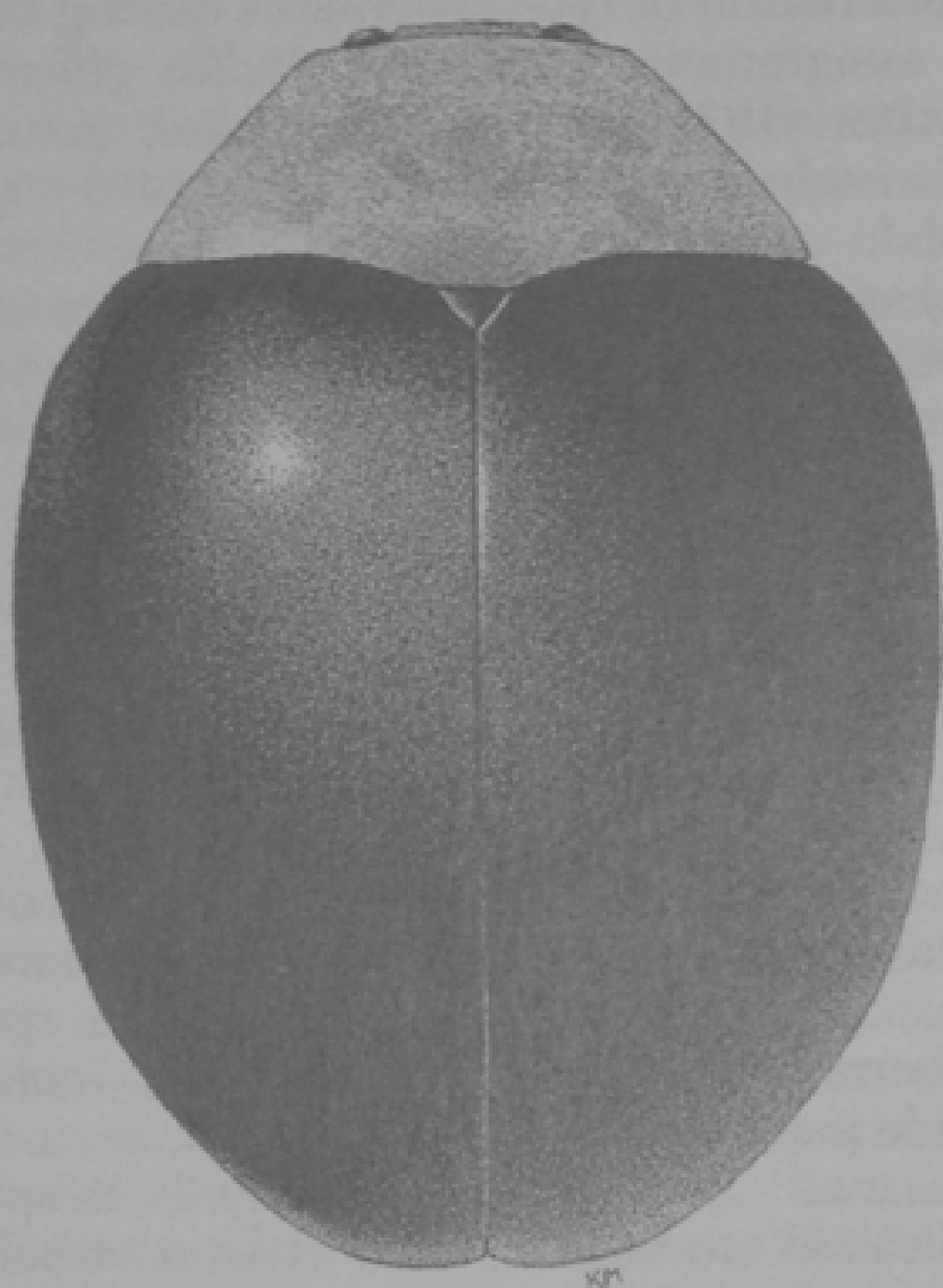
or "*Pullus*" were reassigned in that paper. Examination of type specimens during the present study resulted in several more new assignments as follows: *Pullus gilberti* Brethès (1925a:168) and *Pullus electus* Brethès (1925b:10) to *Coccidulini*, genus *Mimoscyrnus*; and *Scymnus (Pullus) inclytus* Mulsant (1853:149) to *Cephaloscyrnini*, genus *Prodilis* Mulsant.

Thirty-three South American *Scymnus (P.)* species names are treated here (not including North American synonyms of *P. loewii*), of which 4 are valid names of previous authors, 6 are junior synonyms, and 23 are names of new taxa.

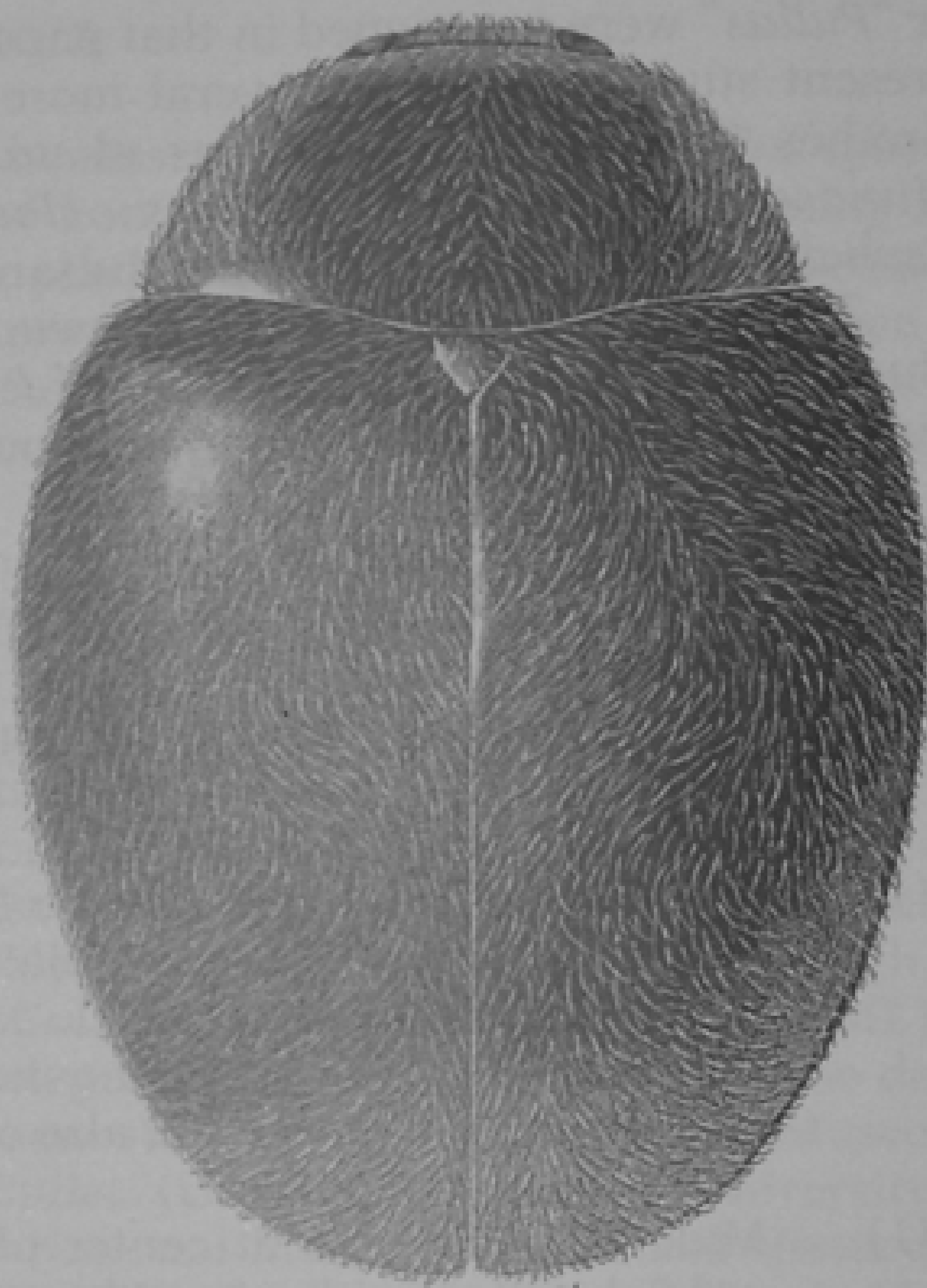
# Key to South American species of *Scymnus (Pullus)*

1. Species with maculate, patterned elytra ..... 2  
Species with concolorous or variously shaded elytra, without maculate pattern..... 3
- 2(1). Elytral markings reduced, elytral base pale medially, not bordered (Fig. 4), or if bordered then male genitalia with large lateral alae and slender paramere (Figs. 92, 93) ..... *citreus*, n. sp.  
Elytral markings large, pronounced, elytral base dark brown or piceous; male genitalia with small lateral alae and wide paramere (Figs. 52, 53) .....  
..... *pictilis*, n. sp.
- 3(1). Male with tubercle at center of abdominal sternum 1; each elytron either reddish yellow with triangular, median black area on sutural margin, or black with elongate, median reddish yellow area sometimes reduced to small apical spot ..... *loewii* Mulsant  
Male without tubercle on abdominal sternum 1; elytral color not as above....  
..... 4
- 4(3). Elytron with at least one distinct row of coarse, subsutural punctures..... 5  
Elytron without row of coarse subsutural punctures, or punctures indistinct ..... 9
- 5(4). Length 2.7 mm or more; elytra black with short, contrasting gray pubescence except pubescence mostly absent basomedially, forming spot; elytron with 2 rows of subsutural punctures..... *paprzyckii*, n. sp.  
Length less than 2.7 mm; elytra lacking basomedian spot; elytron with 1 or 2 rows of subsutural punctures ..... 6
- 6(5). Postcoxal line on abdominal sternum 1 narrowly separated from posterior margin of sternum ..... 7  
Postcoxal line on abdominal sternum 1 reaching posterior margin of sternum ..... 8
- 7(6). Metasternal punctures coarse, much larger than elytral punctures; punctures on abdominal sternum 1 as coarse as metasternal punctures; dorsal color almost entirely pale except elytral margins narrowly dark .....*tiaboensis*, n. sp.  
Metasternal punctures not coarse, about as large as elytral punctures; punctures on abdominal sternum 1 as large as metasternal punctures; dorsal color usually mostly dark..... *rubicundus* Erichson
- 8(6). Apical 1/12 of elytron yellow; form round, extremely convex.. *gnomus*, n. sp.  
Apex of elytra dark; form broad, slightly elongate, moderately convex.....  
..... *triangularis*, n. sp.
- 9(4). Pronotum entirely yellow; elytron black except apical 1/8 yellow; Chile.....  
.....*bicolor* Philippi  
Pronotum variable, if entirely yellow then elytron not black; not known from Chile..... 10
- 10(9). Pronotum entirely yellow or reddish yellow (except *dozieri* with small, black, basal spot) ..... 11  
Pronotum mostly dark, only anterior and/or lateral margins yellow or reddish yellow ..... 13





1



2



3



4

Figs. 1-4 - *Scymnus* (P.) habitus. 1, *S. (P.) cerinotum*; 2, *S. (P.) hamatus*; 3, *S. (P.) melanogaster*; 4, *S. (P.) citreus*.

- 11(10). Form, round, convex (Fig. 1); dorsal pubescence semierect, slightly longer than scutellum; pronotum entirely bright yellow ..... *cerinotum*, n. sp.  
 Form elongate, moderately convex; dorsal pubescence semidecumbent, not longer than scutellum; pronotum entirely or mostly reddish yellow ..... 12  
 12(11). Pronotum reddish yellow with small, basomedian black spot; form widest across base, slightly tapered from humeral angle to apex (Fig. 5); Ecuador ..  
 ..... *dozieri*, n. sp.  
 Pronotum usually entirely reddish yellow, sometimes with vaguely defined, basomedian area darker; form elongate (fig. 3), not widest across base of pronotum; Colombia ..... *melanogaster* Mulsant

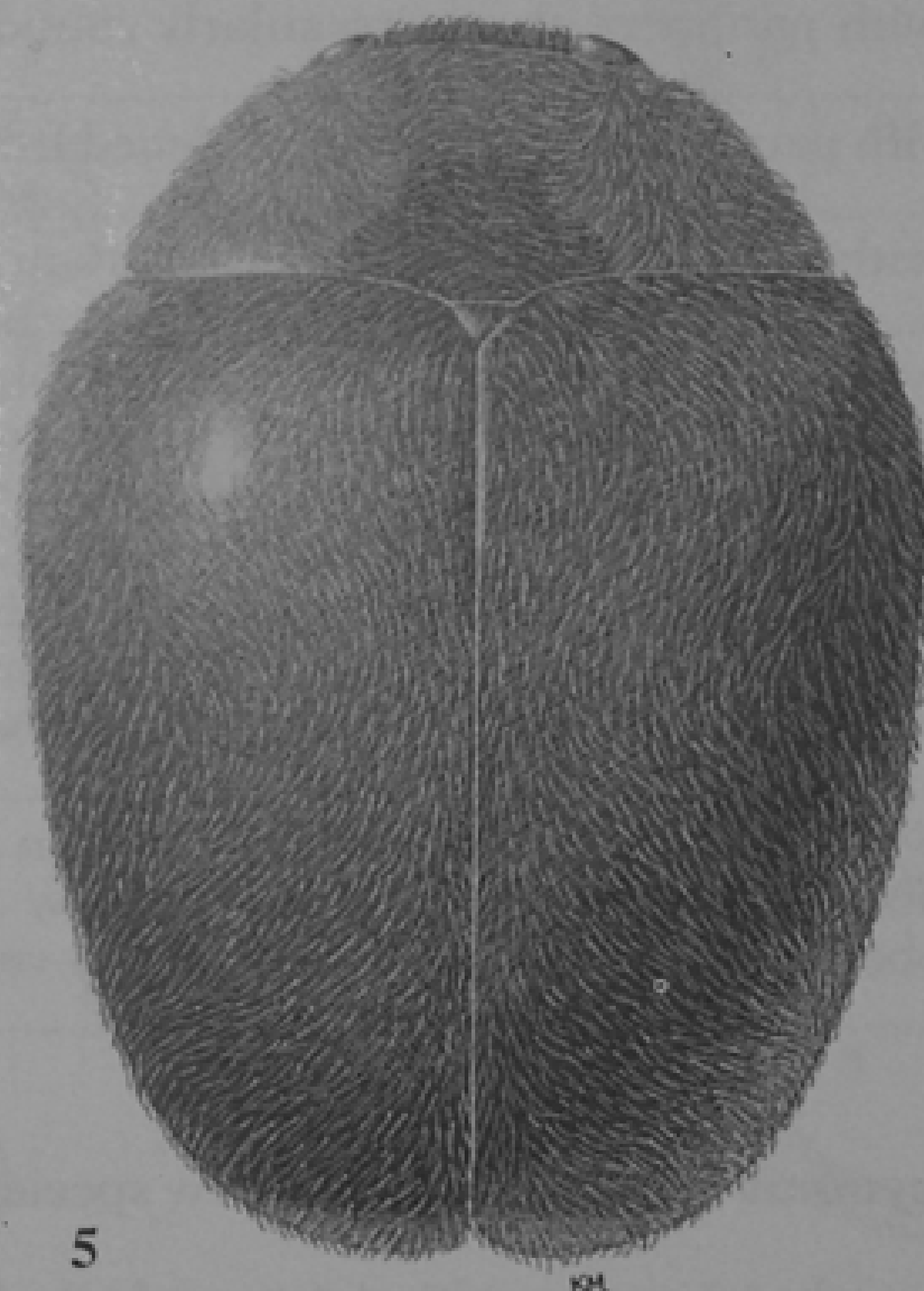


Fig. 5 - *Scymnus* (P.) habitus. *S. (P.) dozieri*.

- 13(10). Male genitalia without lateral alae ..... 14  
 Male genitalia with lateral alae ..... 17  
 14(13). Basal lobe of male genitalia slender, much longer than paramere (Fig. 15) ....  
 ..... *napoensis*, n. sp.  
 Basal lobe of male genitalia broad, slightly longer than paramere ..... 15  
 15(14). Basal lobe of male genitalia with ventral projection not dorsally barbed (Fig. 25) ..... *spanglerorum*, n. sp.  
 Basal lobe of male genitalia with ventral projection dorsally barbed (Fig. 43) ..... 16  
 16(15). Male genitalia with paramere short, almost round, spatulate (Fig. 47) .....  
 ..... *trulla*, n. sp.  
 Male genitalia with paramere elongate, sinuate (Fig. 43) ..... *hamatus*, n. sp.  
 17(13). Basal lobe of male genitalia with ventral projection barbed dorsally ..... 18  
 Basal lobe of male genitalia with ventral projection lacking dorsal barb .... 20  
 18(17). Male genitalia with paramere broadly oval, dorsal projection of basal lobe unmodified (Figs. 111, 112) ..... *calabazoensis*, n. sp.  
 Male genitalia with paramere slender, sinuate, dorsal projection of basal lobe modified ..... 19

- 19(18). Basal lobe of male genitalia with dorsal projection apically crested medially (Fig. 107) ..... *simillimus*, n. sp.  
 Basal lobe of male genitalia with dorsal projection gently rounded medially (Fig. 103) ..... *murilloi*, n. sp.
- 20(17). Lateral alae of male genitalia short, not developed, basal lobe much longer than ventral alae or paramere (Fig. 58) ..... *diekei*, n. sp.  
 Lateral alae of male genitalia nearly as long as, or longer than basal lobe, strongly developed ..... 21
- 21(20). Male genitalia with paramere short, irregularly rounded, or short, broad, widened from base to apex ..... 22  
 Male genitalia with paramere elongate, not rounded ..... 3
- 22(21). Male genitalia with paramere short, irregularly rounded (Fig. 67) ..... *demerarensis*, n. sp.  
 Male genitalia with paramere short, broad, widened from base to apex (Fig. 75) ..... *bennetti*, n. sp.
- 23(21). Male genitalia with lateral alae distinctly longer than basal lobe (Fig. 79) ..... *gachetensis*, n. sp.  
 Male genitalia with lateral alae shorter than basal lobe ..... 24
- 24(23). Basal lobe of male genitalia with dorsal projection short, area lateral to midline not pigmented in ventral view, forming clear "window" (Fig. 83), paramere short, broad, sinuate, apical 1/3 narrow ..... *menkei*, n. sp.  
 Basal lobe of male genitalia with dorsal projection short or not, area lateral to midline pigmented in ventral view, not clear, paramere elongate ..... 25
- 25(24). Male genitalia with lateral alae not fused to basal lobe (Fig. 62) ..... *andrewsi*, n. sp.  
 Male genitalia with lateral alae fused to basal lobe in basal 2/3 (Fig. 92) .. 26
- 26(25). Apex of basal lobe slender, triangular in ventral view ..... *kraussi*, n. sp.  
 Apex of basal lobe broad, rounded to blunt apex in ventral view (Fig. 70) ..... *fryi*, n. sp.

### **Scymnus (Pullus) gnomus, new species**

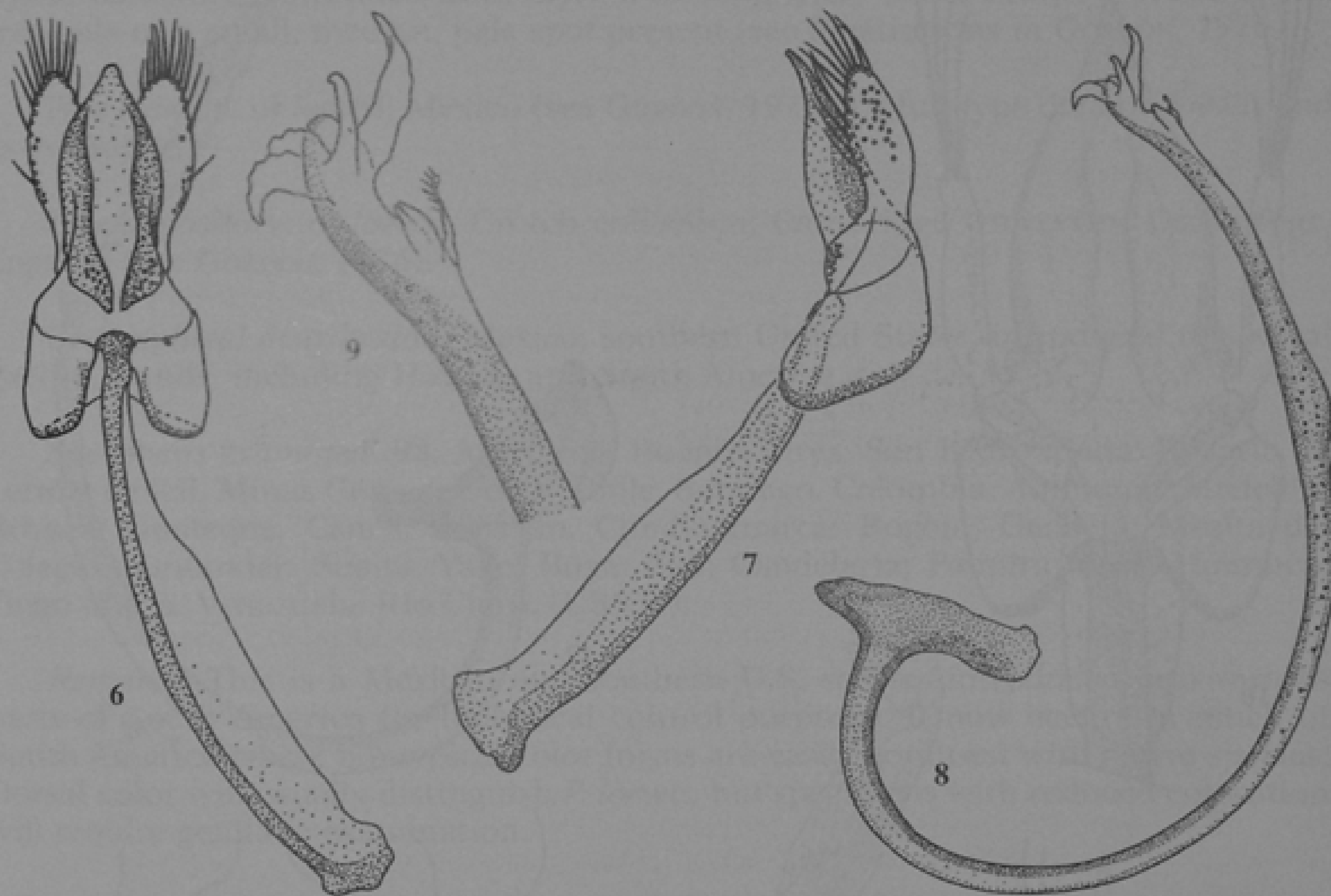
*Description:* Male, length 1.7 mm, width 1.4 mm; body form rounded, convex. Dorsal surface shiny, not alutaceous. Color piceous except head, narrow anterior pronotal border and lateral 1/6 of pronotum, mouthparts, legs, and abdomen brownish yellow. Head punctures fine, separated by about a diameter. Pronotal punctures larger than on head, separated by a diameter or less. Elytral punctures distinctly larger than on pronotum, deeply impressed, separated by a diameter or less, with subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, dense, nearly contiguous. Abdominal punctures on sterna 1-2 as large as metasternal punctures, separated by a diameter or less, punctures becoming finer toward apex. Dorsum with pubescence grayish white, decumbent, arranged in s-curve, individual hairs slightly shorter than length of scutellum. Prosternum with intercoxal carinae extended to apex of prosternum, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum extended to posterior margin of sternum, flat along base, sinuately angled to anterior sternal margin, apex extended to margin lateral to coxal depression. Fifth sternum with apex rounded; 6th sternum with apex truncate. Genitalia unmodified, phallobase short; basal lobe equal in length to paramere, broad, curved to bluntly pointed apex in apical 1/5; paramere broad, oval (Figs. 6, 7); siphon slender, strongly curved, trifurcate apex with median prong projecting upward (Figs. 8, 9).

*Female:* Not known.

*Type material:* Holotype male. (Brazil), Corumba, Matt. Grosso, Nunenmacher Collection (CAS).

*Etymology:* The specific name is from the Latin *gnomus* and refers to the small size of this species.

*Remarks:* Known only from the male holotype, *Pullus gnomus* is reasonably distinctive because of the small size, rounded, convex form, distinct subsutural row of punctures, and a postcoxal line that extends to the posterior margin of the 1st abdominal sternum. It is the only known South American species with unmodified section I type genitalia.



Figs. 6-9 - *Scymnus (P.) gnomus* genitalia. Male.

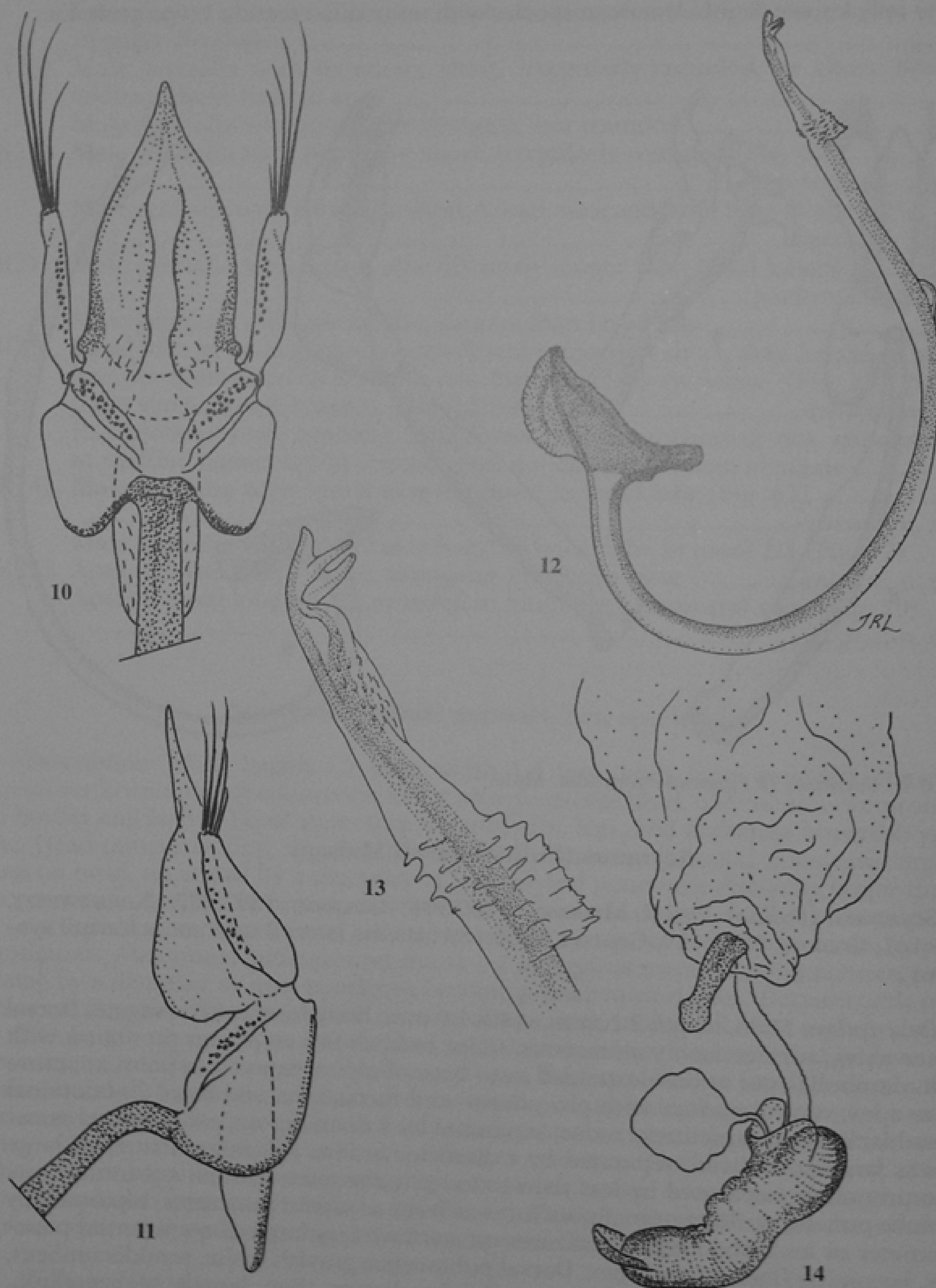
### ***Scymnus (Pullus) loewii* Mulsant**

*Scymnus (Pullus) loewii* MULSANT, 1850:908; GORHAM, 1897:227; KORSCHESKY, 1939:161; GORDON, 1976:119; GORDON, 1985:189 (see the latter 2 references for full synonymy).

*Description:* Male, length 2.2 mm, width 1.6 mm; body form oval, elongate. Dorsal surface shiny, surface feebly alutaceous. Color reddish brown except pronotum with black, parabolic spot at base extended onto base of elytra, tapered to point at suture before apex, ventral surface with pro-, meso- and metasterna and basal 2 abdominal sterna black. Head punctures coarse, separated by a diameter or less. Pronotal punctures as large as on head, separated by a diameter or less. Elytral punctures as large as on pronotum, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 as large as metasternal punctures, becoming finer toward apex. Dorsal pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs slightly shorter than length of scutellum. Prosternum with intercoxal carinae extended to apex of prosternum, strongly convergent from base to apex. Postcoxal line on 1st abdominal sternum evenly rounded, extended almost to posterior margin of sternum, apex reaching margin at outer end of



coxal depression. First sternum with median, triangular area feebly depressed medially, depression finely punctate throughout, bordered laterally with fringe of fine setae. Fifth sternum with apex broadly, feebly rounded; 6th sternum with apex slightly truncated. Genitalia with basal lobe much longer than paramere, flattened and wedge shaped in lateral view, basoventral projection strong, narrowed anteriorly; paramere



Figs. 10-14 - *Scymnus* (P.) *loewii* genitalia. 10-13, male; 14, female.

slightly narrowed toward apex,  $2/3$  as long as basal lobe (Figs. 10, 11); siphon robust, unevenly curved, trifurcate apex narrower than preceding portion (Figs. 12, 13).

*Female*: Similar to male except apices of 5th and 6th sterna evenly rounded. Genitalia with spermathecal capsule "pinched" medially; cornu beaked; ramus strongly developed; with elongate, sclerotized infundibulum (Fig. 14).

*Variation*: Length 1.7 to 2.3 mm, width 2.4 to 1.9 mm. Color pattern highly variable from that described above to having additional darkening on the elytral border elytra, darkening continued until elytron is completely black except a broad apical area pale or a small, median, pale spot present (see illustrations in GORDON, 1976).

*Type locality*: of *loewii*, Mexico (see GORDON, 1976, for full type data on *loewii* and its synonyms).

*Type depository*: of *loewii*, Crotch collection, Cambridge University, Cambridge, England (see GORDON, 1976).

*Geographical distribution*: Mexico, southern United States, introduced to several Pacific Islands, including Hawaii, and South America.

*Specimens examined*: 98. Argentina. Buenos Aires: San Isidro. Salta: Rosario de Lerma. Brazil. Minas Geraes: Vicosa. Chile. Santiago. Colombia. Antioquia: Medellín. Boyaca: Guateque. Cauca: Popayán. Cundinamarca: Bogota; Gachetá; Mesita del Colegio. Santander: Suaita. Valle: Buga; Cali; Candelaria; Palmira. Perú. Huanuco: Tingo Maria. Venezuela. Rio Ciaro. (USNM).

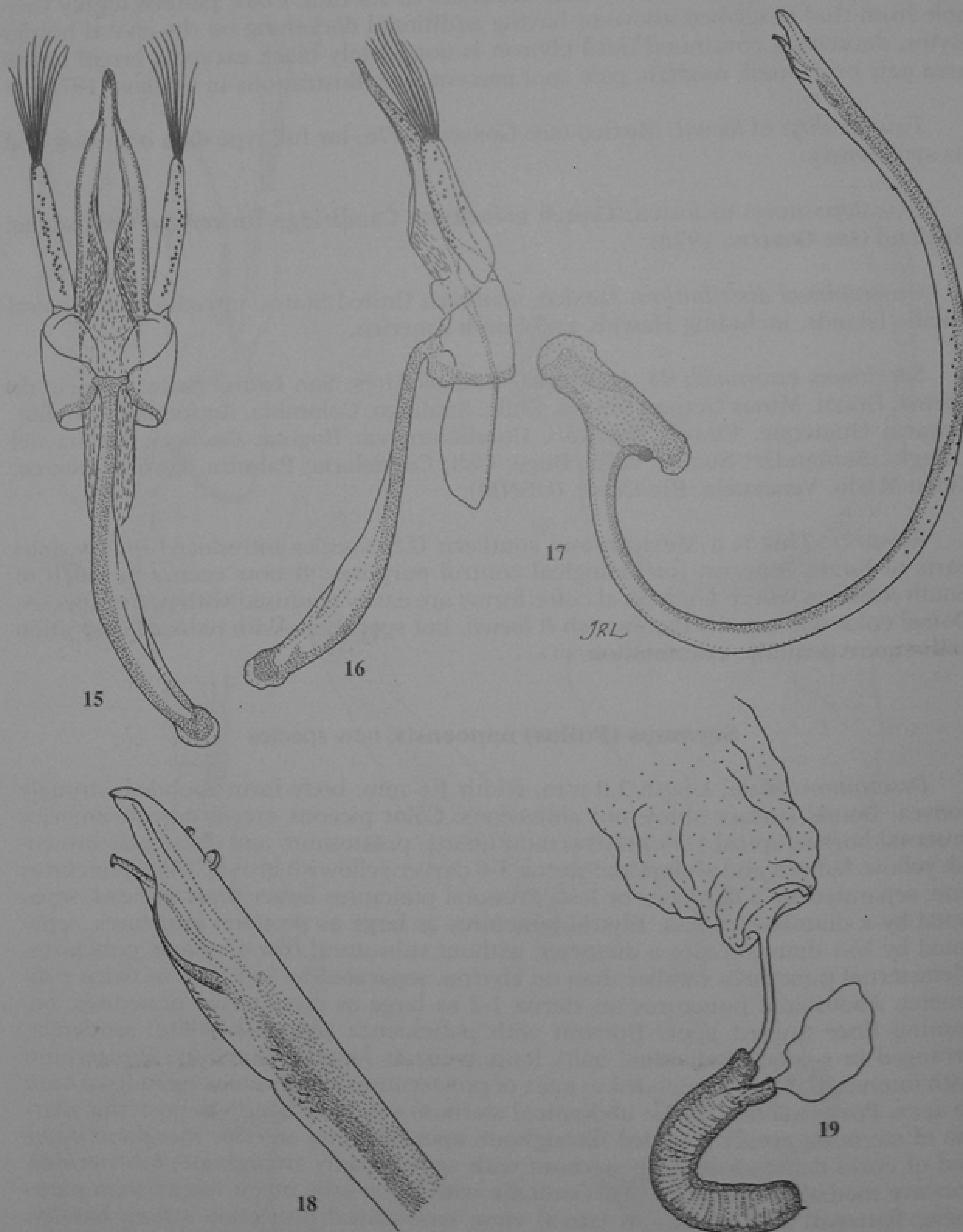
*Remarks*: This is a Mexican and southern U.S. species introduced into various parts of South America for biological control purposes. It now occurs in much of South America where nontypical color forms are easily confused with native species. Dorsal color will usually distinguish *P. loewii*, but specimens with reduced coloration will require genitalic examination.

### ***Scymnus (Pullus) napoensis*, new species**

*Description*: Male, length 2.0 mm, width 1.6 mm; body form rounded, strongly convex. Dorsal surface shiny, not alutaceous. Color piceous except narrow anterior pronotal border, apical  $1/8$  of elytra, mouthparts, prosternum and tibiae pale brownish yellow, femora and abdominal sterna 3-6 darker yellowish brown. Head punctures fine, separated by a diameter or less. Pronotal punctures larger than on head, separated by a diameter or less. Elytral punctures as large as pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures smaller than on elytron, separated by less than to twice a diameter. Abdominal punctures on sterna 1-2 as large as metasternal punctures, becoming finer toward apex. Dorsum with pubescence yellowish white, semierect, arranged in s-curve, individual hairs long, twice as long as scutellum. Prosternum with intercoxal carinae extended to apex of prosternum, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum extended nearly to posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin at outer end of coxal depression. Fifth sternum with apex broadly emarginate; 6th sternum concave medially, apex truncate. Genitalia with basal lobe much longer than paramere, flattened and sinuate in lateral view, basoventral projection strong basally; paramere slightly narrowed toward apex,  $2/3$  as long as basal lobe (Figs. 15, 16); siphon slender, more or less evenly curved, trifurcate apex as wide as preceding portion (Figs.

17, 18).

*Female*: Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermatheca abruptly bent, finely beaked; ramus pronounced; without sclerotized infundibulum (Fig. 19).



Figs. 15-19 - *Scymnus (P.) napoensis* genitalia. 15-18, male; 19, female.

*Variation:* Length 1.7 to 2.5 mm, width 1.5 to 1.7 mm. Elytral color varies from light reddish brown to almost piceous depending on specimen maturity.

*Type material:* Holotype male. Ecuador, Napo Prov., Huahua Sumaco, Km 45, on Hollin- Loreto Rd., XII-14-1989, Malaise Trap, MS/JS Wasbauer, H. Real (USNM). Allotype. Same data as holotype (CDA). Paratypes, 54; 52, same data as holotype; 1, Venezuela, Guatire Valley, 300 mtrs, 17-VI-1926, H. Box Collector, Bamboo; 1 Venezuela, Estado Aragua, P. Nac. Henri Pittier, Campo. Experimentl CENIAP, Pozo del Diablo, 400 m, FOG 17.14.v.1990, Gallery forest. *Mangifera indica* in fruit, J. G. Davies. (BM) (CDA) (USNM).

*Etymology:* This species is named for the Ecuadorean province where most type specimens were collected.

*Remarks:* Male genitalia are the only certain criteria for identification, but the long, semierect, almost golden dorsal pubescence is a useful recognition character. All Ecuadorean specimens were taken in a Malaise trap; one Venezuelan specimen was collected from bamboo.

### ***Scymnus (Pullus) cerinotum*, new species**

*Description:* Male, length 2.0 mm, width 1.6 mm; body form rounded, convex (Fig. 1). Dorsal surface shiny, weakly alutaceous. Color bright yellow except elytra black with apical 1/10 yellow, metasternum and median portion of abdominal sterna 1-3 piceous. Head punctures fine, dense, separated by a diameter or less. Pronotal punctures slightly larger than on head, separated by less than to twice a diameter. Elytral punctures much larger than pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, dense, nearly contiguous. Abdominal punctures on sterna 1-2 distinctly smaller than on metasternum, punctures becoming finer toward apex. Dorsum with pubescence grayish white, semierect, arranged in s-curve, individual hairs slightly longer than scutellum. Prosternum with intercoxal carinae extended to apex of prosternum, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum extended to posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex broadly, shallowly emarginate; 6th sternum with apex deeply emarginate, lateral angle abrupt. Genitalia with basal lobe much longer than paramere, not flattened in lateral view, basoventral projection strong basally; paramere wide, oval, 2/3 as long as basal lobe (Figs. 20, 21); siphon robust, short, sinuate, wide in apical 1/6, trifurcate apex wider than preceding portion (Figs. 22, 23).

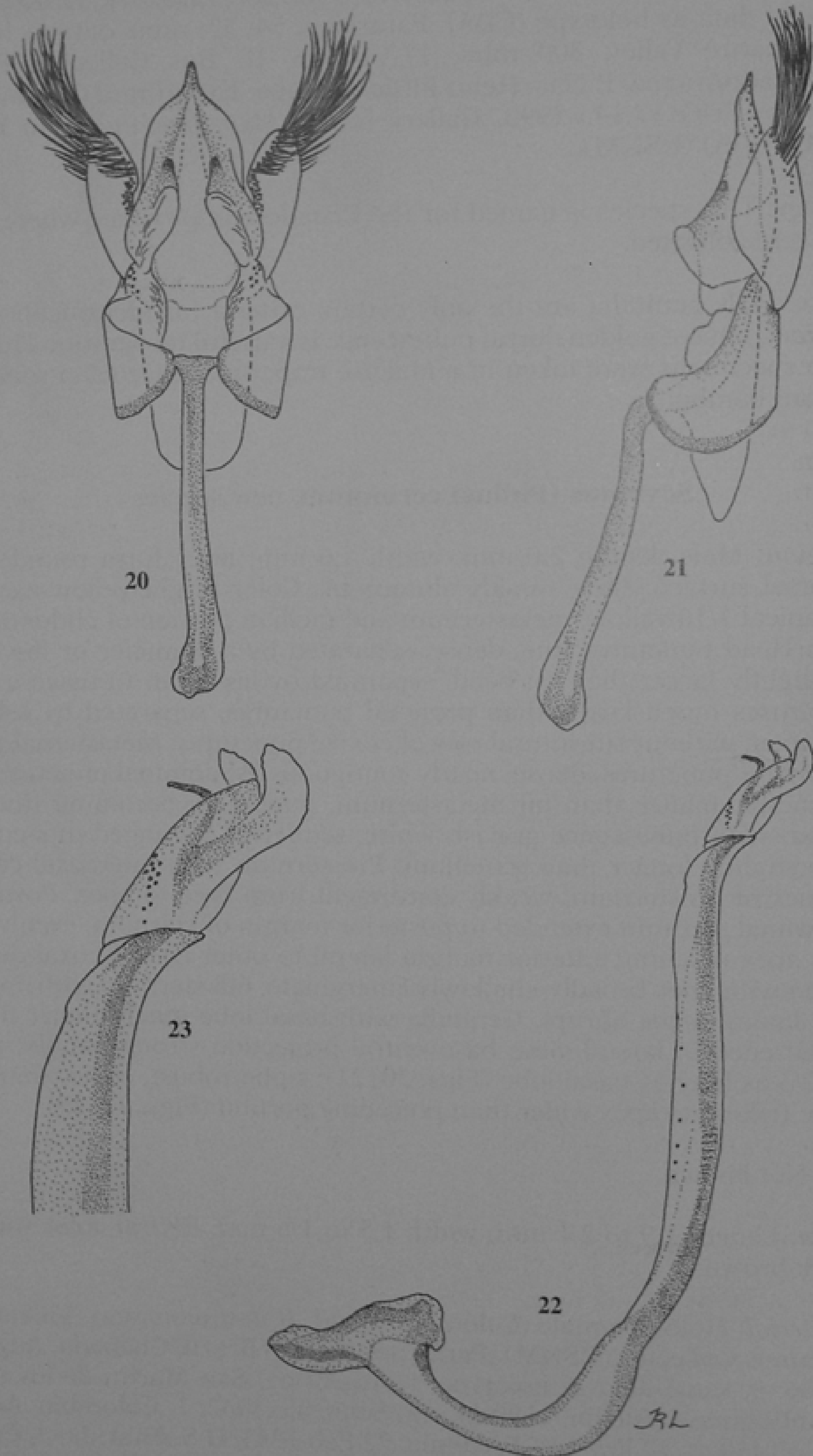
*Female:* Not known.

*Variation:* Length 1.9 to 2.1 mm, width 1.5 to 1.6 mm. Elytral color varies from black to dark brown.

*Type material:* Holotype male. Colombia, Cund. (Cundinamarca), Villeta, 28 Aug 1965, J.A. Ramos Collector (USNM). Paratypes, 48; 19, Brazil, Chapada, Augst., Oct., Acc. No. 2966; 9, same data as holotype; 1, Argentina, San Martin de los Andes; 2, Colombia, Antioquia, Medellin, 1500 m, leg. Schneble 1962; 1, Colombia, Antioquia, Queb. Honda, 1450 m, 12 km. SW. Fredonia, 22 Feb 1983, O.S. Flint, Jr.; 3, Colombia, Cundinamarca, Anolaima, 14 Aug, 10 Sept 1965, J.A. Ramos Collector; 2, Colombia, Cundinamarca, La Mesa, 14 Aug 1965, J.A. Ramos Collector; 1, Ecuador, Tinalandia, 2000', 8 mi. E Santo Domingo, V-5/12-1990, Coll. N.J. Smith, R. Kassabian, J.



Halstead; 1, Peru, Monzon (sic) Valley, Tingo Maria, X-26-1954, E.I. Schlinger, & E.S. Ross collectors; 5, Venezuela, Estado Aragua, P. Nac. Henri Pittier, Camp Experimentl CENIAP. Pozo del Diablo, 400 m., FOG 17.14.v. 1990, Gallery forest, Mangifera, In fruit, J.G. Davies; 1, Venezuela, Guatire Valley, 300 mtrs, 17-VI-1926, H. Box Collector;



Figs. 20-23 - *Scymnus (P.) cerinotum* genitalia. Male.

Bamboo.; 3, Venezuela, R. Nirgua, c 600 mts., 6-5-1949, H.E. Box. (BM) (CAS) (CDA) (CMP) (USNM).

*Etymology*: The species name is a noun from the Latin *cerinus*, meaning waxy yellow, and refers to the completely yellow pronotum and *notum* (upper side of a segment).

*Remarks*: Pronotal color, rounded form, and long, semierect pubescence distinguish this species from most others known from the same localities. Females remain unknown; all specimens examined were males. It is possible females may not have yellow pronota and thus are not associated with males in collections.

### ***Scymnus (Pullus) spanglerorum*, new species**

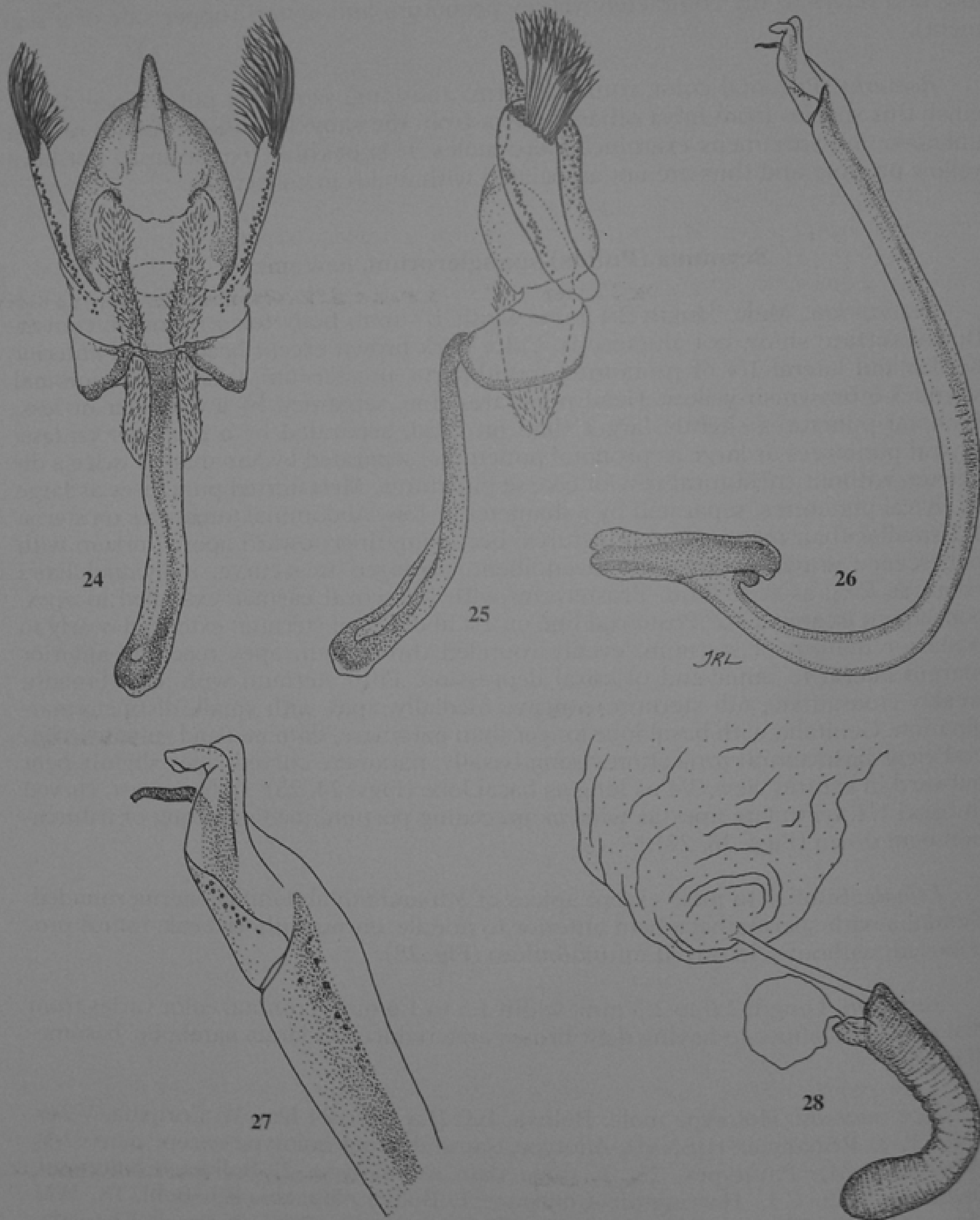
*Description*: Male, length 2.1 mm, width 1.7 mm; body form rounded, convex. Dorsal surface shiny, not alutaceous. Color dark brown except head, broad anterior border and lateral 1/4 of pronotum, mouthparts, prosternum, legs, and abdominal sterna 3-6 brownish yellow. Head punctures fine, separated by a diameter or less. Pronotal punctures slightly larger than on head, separated by a diameter or less. Elytral punctures as large as pronotal punctures, separated by less than to twice a diameter; without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 smaller than metasternal punctures, becoming finer toward apex. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs about as long as scutellum. Prosternum with intercoxal carinae extended to apex, convergent in apical 1/2. Postcoxal line on 1st abdominal sternum extended nearly to posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex broadly, weakly emarginate; 6th sternum concave medially, apex with small, distinct emargination. Genitalia with basal lobe longer than paramere, flattened and sinuate in lateral view, basoventral projection strong basally; paramere curved, apex slightly bent outward in ventral view, 3/4 as long as basal lobe (Figs. 24, 25); siphon robust, curved in basal 1/2, trifurcate apex as wide as preceding portion, median prong of trifurcation bent down (Figs. 26, 27).

*Female*: Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermatheca bent anterior to middle; cornu without beak; ramus pronounced; without sclerotized infundibulum (Fig. 28).

*Variation*: Length 2.0 to 2.3 mm, width 1.5 to 1.6 mm. Pronotal color varies from that described above to having dark brown area reduced to large, parabolic, basomedian spot.

*Type material*: Holotype male. Bolivia, L.P. (La Paz), 24 Km. W. Coripata, V-2-6-1969, P. & P. Spangler (USNM). Allotype, same data as holotype except date "2-V-1969" (USNM). Paratypes, 28. 3, same data as allotype; 2, Bolivia, Chulumani, Tocarani, V-25, G.L. Harrington, Collector; 1, Bolivia, Huachi, Rio Beni, IX, WM Mann, Mulford Bio Exp. 1921-22; 2, Brazil, Chapada, Acc. 2966; 2, Brazil, Chapada, Acc. No. 2966; 12, Brazil, Rondonia, Fazenda Rancho Grande, 62 km S. Ariquemes, 165 m, S10,32 W62,48, 12-22 November 1991, E.M. Fisher collector; Peru, 40 mi. E. Tingo Maria, XII-12-1954, E.I. Schlinger & E.S. Ross collectors. (CAS) (CDA) (CMP) (USNM).

*Other specimens:* Total 4. 3, Ecuador, Napo, Limoncocha, 3 June 1977, 10 June 1977, W.E. Steiner; 1, Ecuador Napo, Limoncocha, 15 June 1977, P.J. Spangler & D.R. Givens. (USNM).



Figs. 24-28 - *Scymnus (P.) spanglerorum* genitalia. 24-27, male. 28, female.

*Etymology:* This species is named for Paul and Phyllis Spangler, collectors of the holotype specimen.

*Remarks:* *Pullus spanglerorum* lacks significant external characters so male genitalia must be examined for certain identification. Specimens from Limoncocha, Ecuador, have genitalia apparently identical to those of the type series, but are entirely light reddish brown dorsally and are not designated as paratypes.

***Scymnus (Pullus) triangularis*, new species**

*Description:* Male, length 1.7 mm, width 1.4 mm; body form slightly elongate, convex. Dorsal surface shiny, weakly alutaceous. Color black except head, narrow anterior pronotal margin, mouthparts, legs, and abdominal sterna 3-6 reddish yellow. Head punctures fine, separated by a diameter or less. Pronotal punctures smaller than on head, separated by a diameter or less. Elytral punctures much larger than pronotal punctures, separated by less than to twice a diameter, with subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures on sterna 1-2 smaller than on metasternum, becoming finer toward apex. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs about as long as scutellum. Prosternum with intercoxal carinae extended to apex, strongly convergent from base to apex. Postcoxal line on 1st abdominal sternum extended to posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex broadly, weakly emarginate; 6th sternum concave medially, apex with small, distinct emargination. Genitalia with basal lobe as long as paramere, triangular in ventral view, flattened in lateral view, basoventral projection weak; paramere straight, with dorsal ala at base, apical 1/2 flat in lateral view (Figs. 29, 30); siphon robust, curved in apical 1/2, trifurcate apex as wide as preceding portion (Figs. 31, 32).

*Female:* Not known.

*Type material:* Holotype male. Colombia, Valle, 33 mi. W. Cali, 1350 m, III-21-1955, E.I. Schlinger & E.S. Ross collectors (CAS).

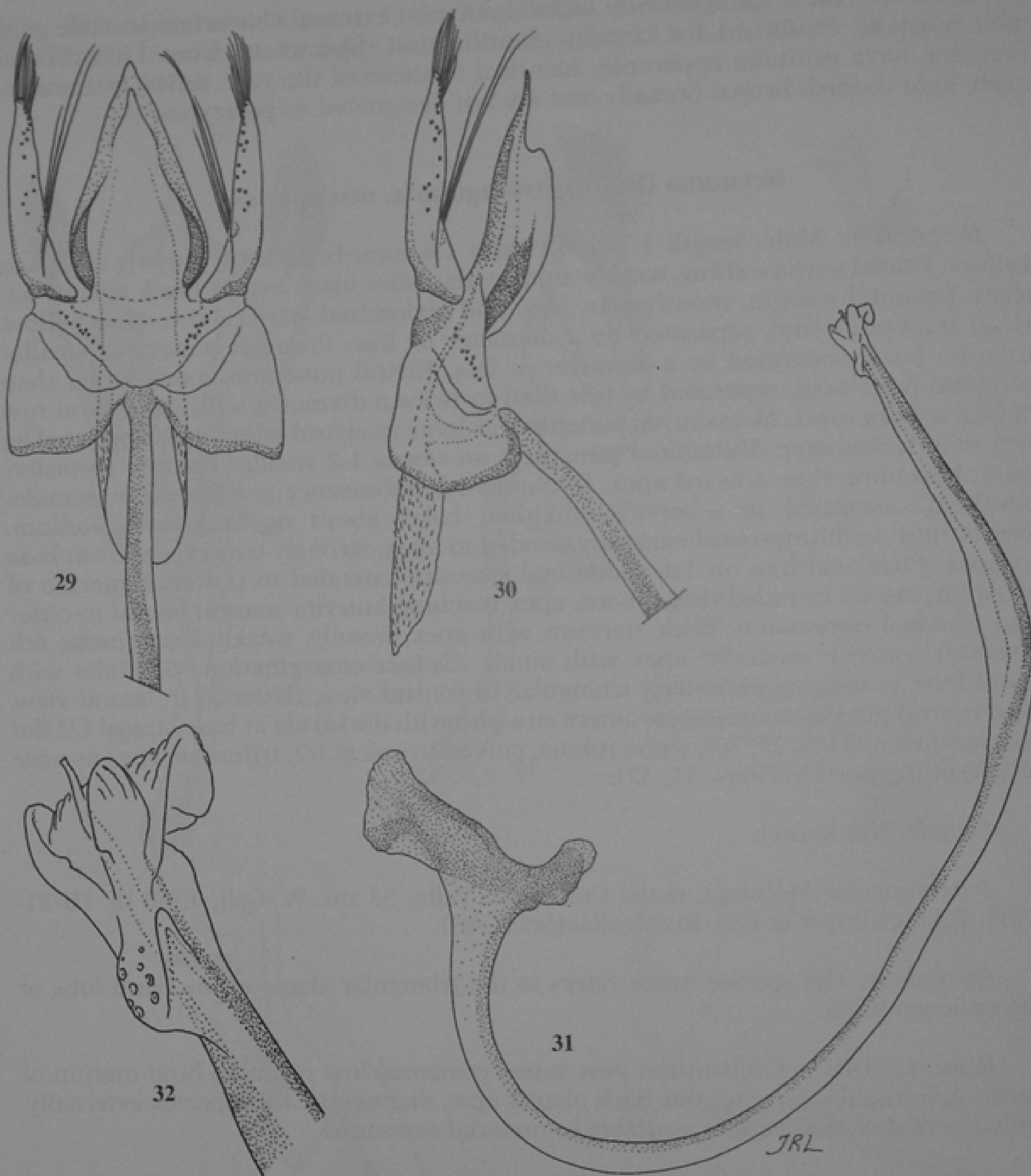
*Etymology:* The species name refers to the triangular shape of the basal lobe of the male genitalia.

*Remarks:* Distinct subsutural punctures, postcoxal line reaching hind margin of basal abdominal sternum, and dark elytral apex distinguish this species externally. Only the male holotype was available in material examined.

***Scymnus (Pullus) paprzyckii*, new species**

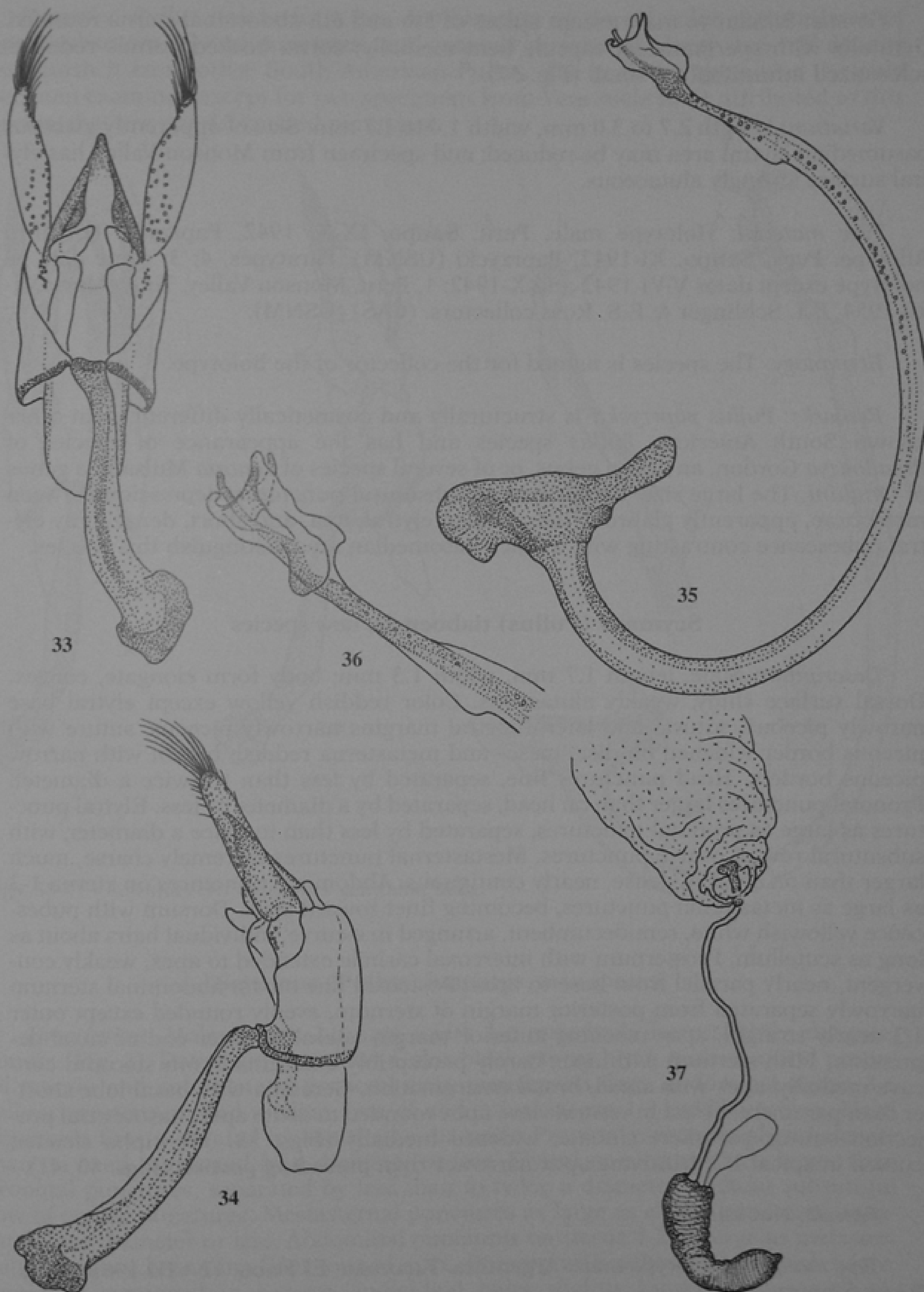
*Description:* Male, length 3.0 mm, width 2.7 mm; body form round, strongly convex. Dorsal surface feebly shiny, finely alutaceous. Color black except head, narrow anterior pronotal margin, mouthparts, legs, and abdomen, pro-, meso-, and metasterna dark reddish brown. Head punctures fine, separated by a diameter or less. Pronotal punctures as large as on head, separated by a diameter or less. Elytral punctures slightly larger than pronotal punctures, separated by less than to twice a diameter, with 2 irregular, distinct, subsutural rows of coarse punctures. Metasternal punctures larger than elytral punctures, separated by less than a diameter. Abdominal punctures on sterna 1-2 smaller than on metasternum, becoming finer toward apex. Dorsum with pubescence grayish white, not arranged in s-curve, dense and semidecumbent except large basomedian area with pubescence sparse, erect, surface ap-





Figs. 29-32 - *Scymnus (P.) triangularis* genitalia. Male.

pearing glabrous, individual hairs shorter than scutellum. Prosternum with intercoxal carinae extended to apex, strongly convergent from base to apex. Venter with large depression between metacoxae encompassing posterior portion of metasternum and anteromedian portion of 1st abdominal sternum. Postcoxal line on 1st abdominal sternum extended nearly to posterior margin of sternum, median 1/3 slightly flattened, outer 1/3 oblique, apex reaching anterior margin at outer end of coxal depression. Apices of abdominal sterna 5-6 broadly, feebly emarginate. Genitalia with basal lobe shorter than paramere, triangular in ventral view, flattened in lateral view, basoven-  
tral projection weak; paramere straight, broad, oval, flattened dorsoventrally (Figs. 33, 34); siphon robust, curved in basal 3/4, with short, membranous projection on each side before trifurcate apex (Figs. 36, 37).



Figs. 33-37 - *Scymnus (P.) paprzyckii* genitalia. 33-36, male. 37, female.

*Female*: Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent medially; cornu beaked; ramus reduced; sclerotized infundibulum small (Fig. 37).

*Variation*: Length 2.7 to 3.0 mm, width 1.4 to 1.7 mm. Size of apparently glabrous basomedian elytral area may be reduced; and specimen from Monson Valley has elytral surface strongly alutaceous.

*Type material*: Holotype male. Peru, Satipo, IX-X, 1942, Paprzycki (USNM). Allotype. Peru, Satipo, XI-1942, Paprzycki (USNM). Paratypes, 4; 3, same data as holotype except dates V-VI-1942 and X-1942; 1, Peru, Monson Valley, Tingo Maria, X-10-1954, E.I. Schlinger & E.S. Ross collectors. (CAS) (USNM).

*Etymology*: The species is named for the collector of the holotype.

*Remarks*: *Pullus paprzyckii* is structurally and cosmetically different from other known South American *Pullus* species and has the appearance of species of *Pseudoazya* Gordon, an *Azyini* genus, or of several species of *Zenoria* Mulsant, a genus of *Ortaliini*. The large size, double row of subsutural punctures, depression between metacoxae, apparently glabrous basomedian elytral area, and short, dense, gray elytral pubescence contrasting with a black basomedian area distinguish this species.

### ***Scymnus (Pullus) tiaboensis*, new species**

*Description*: Male, length 1.7 mm, width 1.3 mm; body form elongate, convex. Dorsal surface shiny, weakly alutaceous. Color reddish yellow except elytral base narrowly piceous, sutural and lateral elytral margins narrowly piceous, suture with piceous border widened on disc, meso- and metasterna reddish brown with narrow piceous borders. Head punctures fine, separated by less than to twice a diameter. Pronotal punctures larger than on head, separated by a diameter or less. Elytral punctures as large as pronotal punctures, separated by less than to twice a diameter, with subsutural row of coarse punctures. Metasternal punctures extremely coarse, much larger than on elytron, dense, nearly contiguous. Abdominal punctures on sterna 1-3 as large as metasternal punctures, becoming finer toward apex. Dorsum with pubescence yellowish white, semidecumbent, arranged in s-curve, individual hairs about as long as scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent, nearly parallel from base to apex. Postcoxal line on 1st abdominal sternum narrowly separated from posterior margin of sternum, evenly rounded except outer 1/3 nearly straight, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex barely perceptibly emarginate; 6th sternum concave medially, apex with small, broad emargination. Genitalia with basal lobe shorter than paramere, broad in ventral view, apex rounded to acute apex, basoventral projection strong; paramere sinuate, widened medially (Figs. 38, 39); siphon slender, curved in apical 1/2, trifurcate apex narrower than preceding portion (Figs. 40, 41).

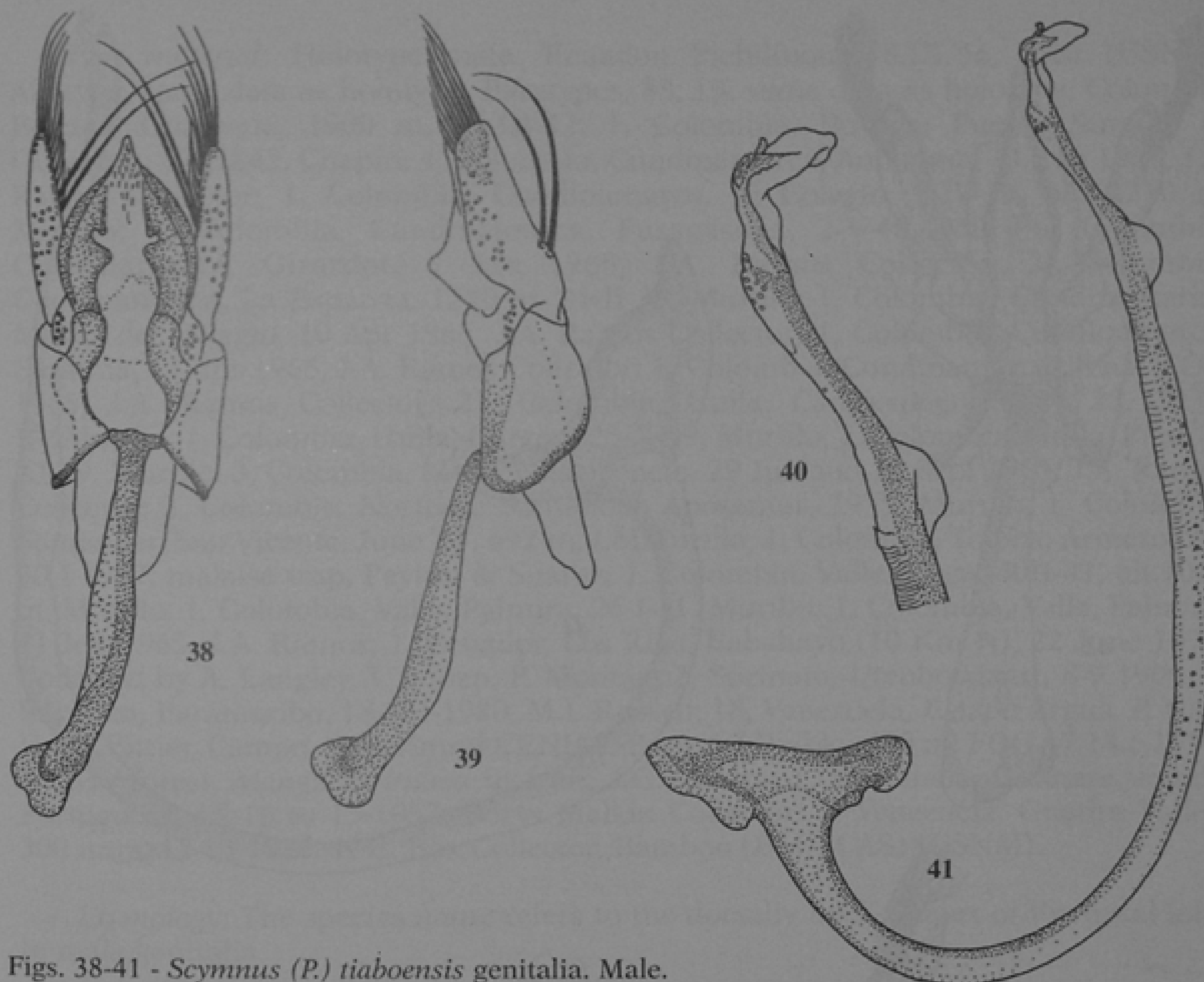
*Female*: Not known.

*Type material*: Holotype male. Argentina, Tucumán, El Tiabo, 12-VIII-1985, Col. J. Ricci, S/naranja (IML).

Other specimens: Venezuela, Parque Nacional Henri Pittier, Estado Aragua, Pozo del Diablo, 400 m, 17.IV. 1990, Gallery forest, *Mangifera indica*, J.G. Davies. (BM).

*Etymology*: The species is named for the type locality.

*Remarks:* *Pullus tiaboensis* has a combination of dorsal color pattern, row of coarse subsutural elytral punctures, and coarsely punctured venter that will usually distinguish it from other South American *Pullus*. The male holotype was the only specimen examined except for two specimens from Venezuela to be attributed to this species, that are not designated paratypes.



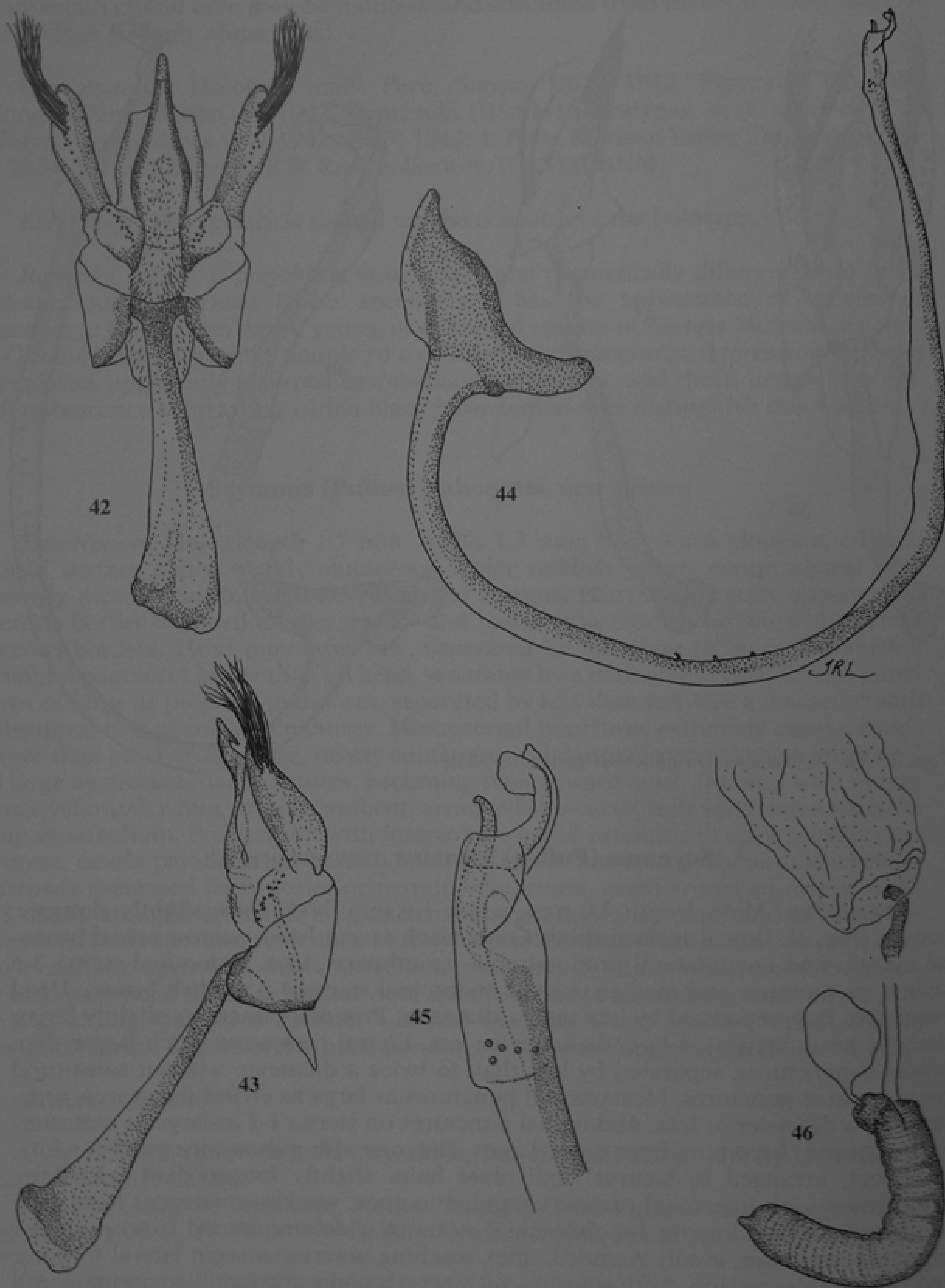
Figs. 38-41 - *Scymnus (P.) tiaboensis* genitalia. Male.

### ***Scymnus (Pullus) hamatus*, new species**

*Description:* Male, length 2.0 mm, width 1.6 mm; body form slightly elongate, convex (Fig. 2). Dorsal surface shiny. Color black except head, narrow apical pronotal margin and anterolateral pronotal area, mouthparts, legs, abdominal sterna 3-6 yellow, prosternum and median area of abdominal sterna 1-3 reddish brown. Head punctures fine, separated by less than a diameter. Pronotal punctures slightly larger than on head, separated by a diameter or less. Elytral punctures much larger than pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Mestasternal punctures as large as elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 as large as metasternal punctures, becoming finer toward apex. Dorsum with pubescence grayish white, semierect, arranged in s-curve, individual hairs slightly longer than scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum widely separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex broadly, distinctly emarginate; 6th sternum concave medially, apex with small, distinct emargination. Genitalia with



basal lobe longer than paramere, narrow in ventral view, abruptly narrowed at apical 1/4 to acute apex, apex dorsally barbed in lateral view, basoventral projection strong; paramere sinuate, twisted, upper surface concave (Figs. 42, 43); siphon slender, curved in apical 1/2, trifurcate apex as wide as preceding portion (Figs. 44, 45).



Figs. 42-46 - *Scymnus (P.) hamatus* genitalia. 42-45, male. 46, female.

*Female*: Similar to male except apex of 5th abdominal sternum truncate, apex of 6th sternum rounded. Genitalia with spermathecal capsule bent medially; cornu with beak; ramus produced; with sclerotized infundibulum (Fig. 46).

*Variation*: Length 1.6 to 2.1 mm, width 1.4 to 1.6 mm. Dorsal color varies from typical (mature form) to almost entirely reddish brown (teneral form).

*Type material*: Holotype male. Ecuador, Pichilique, 8.IX.'56, Yust (USNM). Allotype, same data as holotype. Paratypes, 88; 13, same data as holotype; Colombia, Boyaca, Guateque, 1900 m, 13-III-42; 1, Colombia, Boyaca, Puente Sunuba nr Guateque, 12,III,42, Chapin; 4, Colombia, Cundinamarca, Anolaima, 14 Aug 1965, J.A. Ramos Collector; 1, Colombia, Cundinamarca, El Colegio, 8-IV-39, alt. 1210 m; Murillo; 1, Colombia, Cundinamarca, Fusagasugá, 2-V-40, Murillo; Colombia, Cundinamarca, Girardot, 3 Jun 1965, J.A. Ramos Collector; 2, Colombia, Cundinamarca, La Espanza, 1280 m, 21-II-38, Murillo; 1, Colombia, Cundinamarca, Mesita del Colegio, 10 Apr 1965, J.A. Ramos Collector; 1, Colombia, Cundinamarca, Sasaima, 14 Apr 1965, J.A. Ramos Collector; 1, Colombia, Cundinamarca, Tena, 9 Oct 1965, J.A. Ramos Collector; 21, Colombia, Huila, Campoalegre, Mar. 23, 1939, LMMurillo; 1, Colombia, Huila, Garzón, 25-X-39, Murillo; 2, Colombia, Huila, Pital, 2-XI-39, Murillo; 3, Colombia, Meta, Villavicencio, 29 Jun and 18 Sept 1965, J.A. Ramos Collector; 3, Colombia, Norte de Santander, Aposentos, 1935, Murillo; 1, Colombia, Santander, San Vicente, June '35, 692 m, LMMurillo; 1, Colombia, Toluca, Armero, 26-30 I 1977, malaise trap, Peyton & Suarez; 1, Colombia, Valle, Buga, 40II-41, alt.1010 m, Murillo; 1, Colombia, Valle, Palmira, 26-I-41, Murillo; 1, Colombia, Valle, Palmira, 21 Jun 1965, J.A. Ramos; 1, Ecuador, Los Rios, Babahayo (10 Km N), 22 June 1975, Collected by A. Langley, J. Cohen, P. Monnig; 2, Surinam, Utenboogaart, 8-9 1900; 1, Surinam, Paramaribo, 18-VII-1980, M.I. Russell; 18, Venezuela, Estado Argua, P. Nac. Henri Pittier, Campo. Experimntl CENIAP, Pozo del Diablo, 400 m, FOG 17.14.c.1990, Gallery forest, *Mangifera indica* in fruit, J.G. Davies; 1, Venezuela, Guanare, estado Portuguesa, IX-10 to 13-1957, Borys Malkin Collector; 3, Venezuela, Guatire Valley, 300 mtrs, 17-VI-1926, H.E. Box Collector, Bamboo (BM) (CAS) (USNM).

*Etymology*: The species name refers to the dorsally barbed apex of the basal lobe in male genitalia.

*Remarks*: Two specimens from Surinam that are not fully mature have the color pattern described under "Variation" above. This form cannot be identified without reference to male genitalia.

### **Scymnus (Pullus) trulla**, new species

*Description*: Male, length 2.0 mm, width 1.6 mm; body form slightly elongate, convex. Dorsal surface shiny, weakly alutaceous. Color light reddish brown except pronotum piceous with narrow anterior margin and broad anterolateral area light reddish brown, elytron with basal margin narrowly piceous, scutellum piceous, pro-, meso-, and metasterna piceous, mouthparts, legs, and abdomen yellow. Head punctures fine, separated by about a diameter. Pronotal punctures as large as on head, separated by less than to twice a diameter. Elytral punctures much larger than pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Mestasternal punctures as large as elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 as large as metasternal punctures, becoming finer toward apex. Dorsum with pubescence yellowish white, semi-erect, arranged in s-curve, individual hairs as long as scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal

line on 1st abdominal sternum widely separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex truncate; 6th sternum concave medially, apex with wide, distinct emargination. Genitalia with basal lobe longer than paramere, wide in ventral view, abruptly rounded at apical 1/3 to acute apex, apex dorsally barbed in lateral view, basoventral projection strong; paramere short, almost round, spatulate, truncate apically (Figs. 47, 48); siphon short, robust, curved in apical 1/2, trifurcate apex wider than preceding portion (Figs. 49, 50).

*Female*: Similar to male except apex of 6th sternum rounded. Genitalia with spermathecal capsule bent medially; cornu with beak; ramus produced; infundibulum very small, sclerotized (Fig. 51).

*Type material*: Holotype male. Ecuador, Los Rios, Quevedos, 11 May 1975, at blacklight. Collected by Spangler, Gurney, Langley, & Cohen (USNM). Allotype, same data as holotype (USNM).

*Etymology*: The species name is a noun from the Latin *trulla*, meaning spoon, in reference to the short, spatulate paramere of the male genitalia.

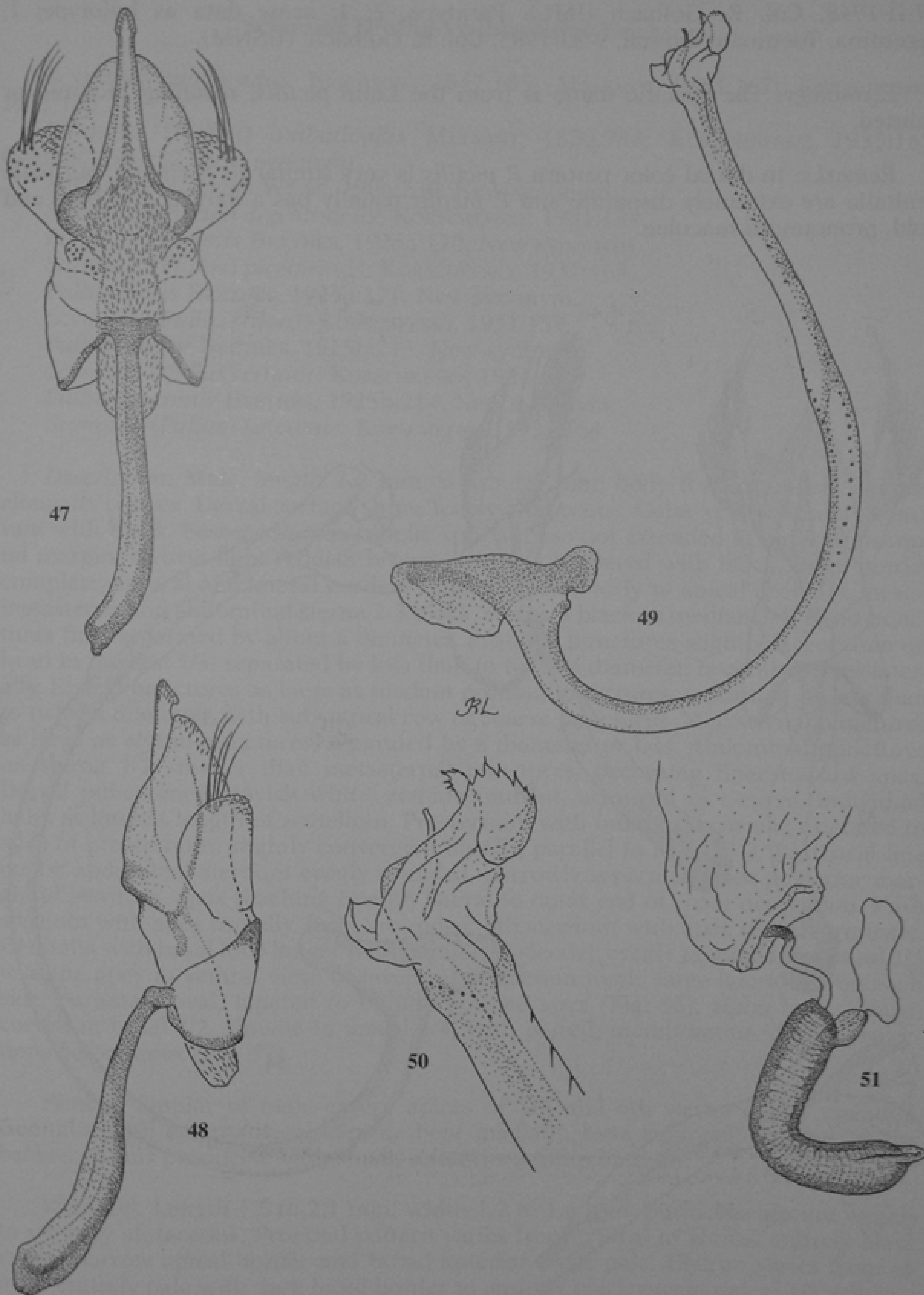
*Remarks*: *Pullus trulla* can be distinguished from most other South American *Pullus* by the pale elytral color contrasted with a dark pronotum and presence of yellowish white dorsal pubescence.

#### ***Scymnus (Pullus) pictilis*, new species**

*Description*: Male, length 1.6 mm, width 1.2 mm; body form slightly elongate, slightly convex. Dorsal surface shiny, weakly alutaceous. Color light reddish brown except pronotum with poorly defined, brown basomedian area occupying median 1/3 of pronotum, elytron with basal, lateral, and sutural margins with broad brown border, sutural border narrowed posteriorly to just short of apex, lateral border irregular, widest medially, median 2/3 of elytron with irregular brown vitta extended from base to apical declivity, meso-, and metasterna dark brown. Head punctures fine, dense, nearly contiguous. Pronotal punctures as large as on head, separated by less than to 3 times a diameter. Elytral punctures larger than pronotal punctures, separated by less than to 3 times a diameter, with subsutural row of coarse punctures. Metasternal punctures larger than elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 smaller than metasternal punctures, finer toward apex. Dorsum with pubescence yellowish white, semierect, arranged in s-curve, individual hairs as long as scutellum. Prosternum with intercoxal carinae extended to apex, strongly convergent from base to apex. Postcoxal line on 1st abdominal sternum narrowly separated from posterior margin of sternum, median 1/3 flattened along posterior margin, outer 1/3 obliquely angled, apex reaching anterior margin nearly at lateral sternal margin. Apices of abdominal sterna 5-6 truncate apically. Genitalia with basal lobe slightly longer than paramere, triangular in ventral view, tapered to acute apex in apical 1/2, basoventral projection weak, small lateral ala on each side; paramere wide basally, tapered to bluntly pointed apex (Figs. 52, 53); siphon short, robust, curved throughout, trifurcate apex wider than preceding portion, with large membranous alae (Figs. 54, 55).

*Female*: Not known.

*Variation*: Length 1.6 to 1.8 mm, width 1.2 to 1.3 mm.



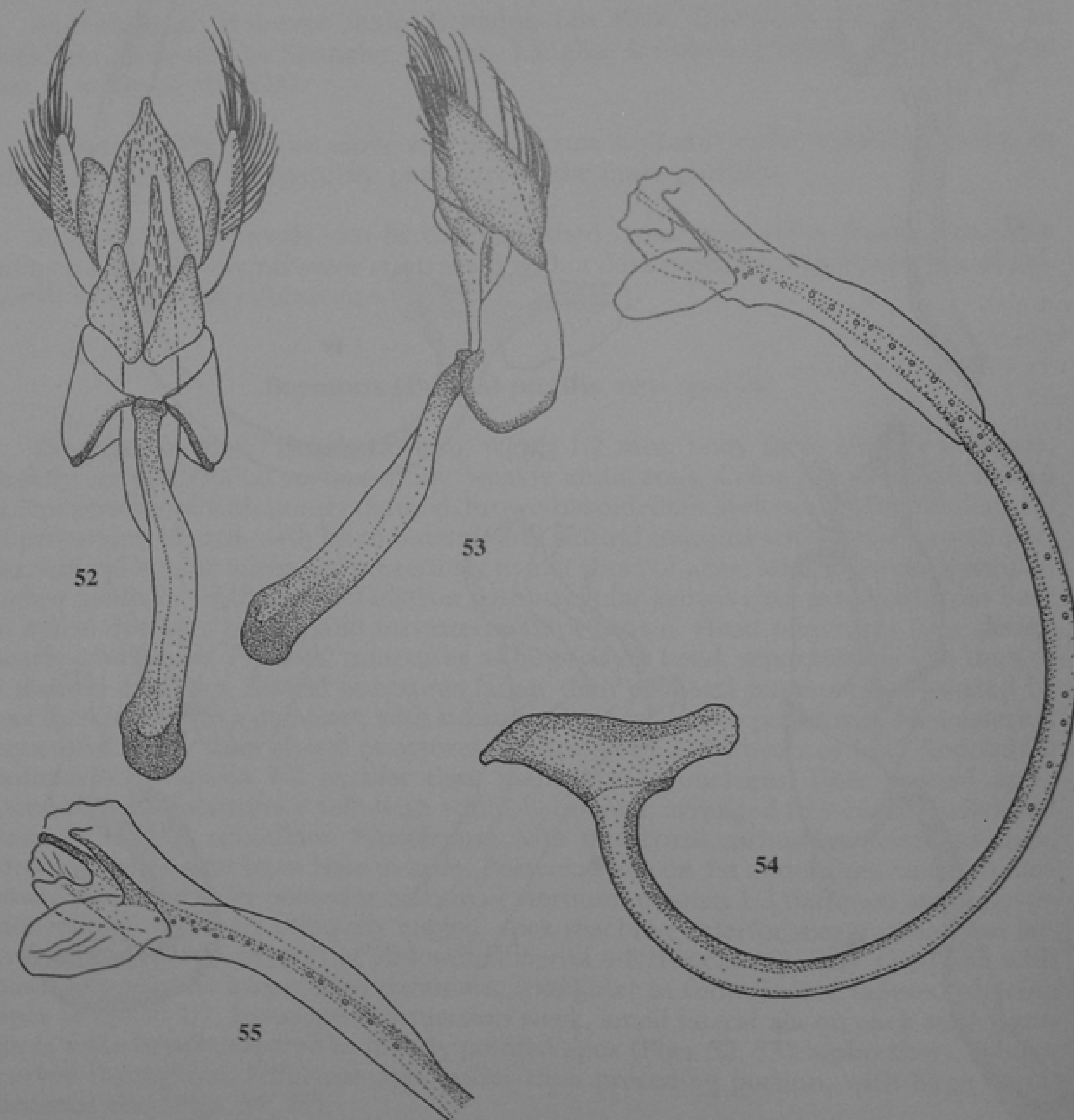
Figs. 47-51 - *Scymnus (P.) trulla* genitalia. 47-50, male. 51, female.



*Type material:* Holotype male. Argentina, Dpto. Burruyaco, Villa Padre Montí, 18-I-7-II-1948, Col. R. Golbach (IML). Paratype, 2; 1, same data as holotype; 1, Argentina, Tucumán, Capital, 9-XI-1985, Col. R. Golbach. (USNM).

*Etymology:* The specific name is from the Latin *pictilis*, meaning pictured or painted.

*Remarks:* In dorsal color pattern *P. pictilis* is very similar to *P. citreus*, but male genitalia are extremely disparate and *P. pictilis* usually has a dark elytral base and bold, pronounced maculae.



Figs. 52-55 - *Scymnus (P.) pictilis* genitalia. Male.

**Scymnus (Pullus) rubicundus** Erichson

*Scymnus rubicundus* ERICHSON, 1847:185; MULSANT, 1853:167; KORSCHESKY, 1931:165.

*Scymnus (Pullus) limbaticollis* MULSANT, 1850:988; KORSCHESKY, 1935:165; GORDON, 1987:32. New synonym.

*Pullus argentinus* WEISE, 1906:230. New synonym.

*Scymnus (Pullus) argentinus*: KORSCHESKY, 1931:154.

*Pullus piceipennis* BRETHÈS, 1925a:170. New synonym.

*Scymnus (Pullus) piceipennis*: KORSCHESKY, 1931:164.

*Pullus hians* BRETHÈS, 1925a:171. New synonym.

*Scymnus (Pullus) hians*: KORSCHESKY, 1931:159.

*Pullus errator* BRETHÈS, 1925b:213. New synonym.

*Scymnus (Pullus) errator*: KORSCHESKY, 1931:158.

*Pullus percomis* BRETHÈS, 1925b:214. New synonym.

*Scymnus (Pullus) percomis*: KORSCHESKY, 1931:164.

*Description*: Male, length 2.0 mm, width 1.5 mm; body form rounded, slightly elongate, convex. Dorsal surface shiny, feebly alutaceous. Color yellow except pronotum with black, basomedian, parabolic spot at base not extended to anterior pronotal margin, elytron light reddish brown narrowly bordered with black, basal border complete, sutural and lateral borders extended posteriorly to apical declivity, meso-, metasterna and abdominal sterna 2-3 black, sterna 3 black in median 3/4. Head punctures fine, separated by about a diameter. Pronotal punctures slightly larger than on head in median 1/3, separated by less than to twice a diameter, becoming finer laterally. Elytral punctures as large as median pronotal punctures, separated by less than to twice a diameter, with subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 smaller than metasternal punctures, becoming finer toward apex. Dorsal pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs as long as length of scutellum. Prosternum with intercoxal carinae extended to apex of prosternum, slightly convergent basally, parallel in apical 1/2. Postcoxal line on 1st abdominal sternum evenly rounded, narrowly separated from posterior margin of sternum, apex reaching margin lateral to outer end of coxal depression. Fifth sternum with apex broadly, feebly rounded; 6th sternum with apex slightly truncate. Genitalia with basal lobe longer than paramere, slender, evenly tapered from basal 1/3 to acute apex in ventral view, basoventral projection weak, large lateral ala on each side; paramere oval, tapered to bluntly pointed apex (Fig. 56); siphon long, robust, curved in basal 1/2, sinuate in apical 1/4, with paired, membranous, dorsal projections before apex (Fig. 57).

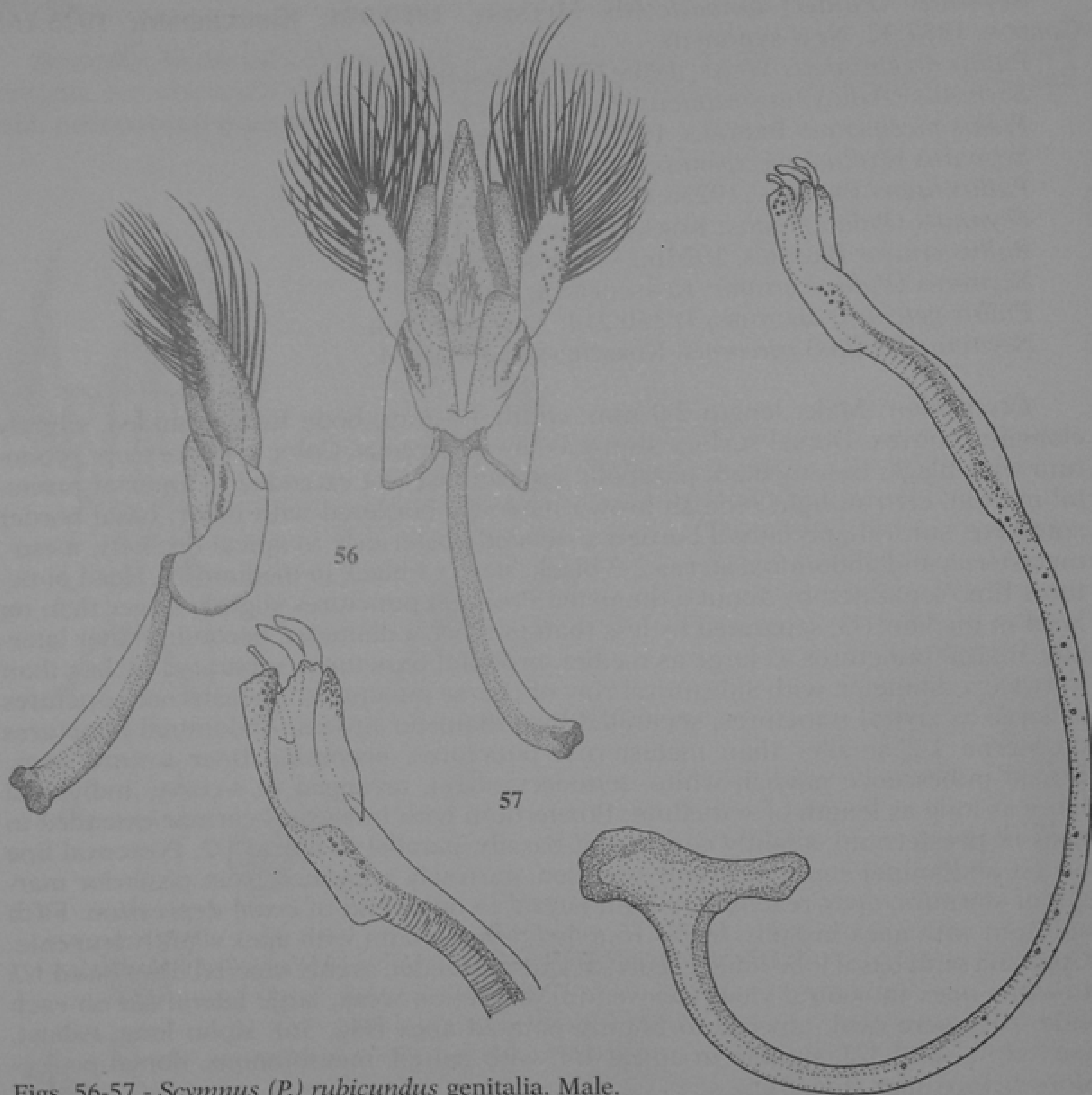
*Female*: Similar to male except apices of 5th and 6th sterna evenly rounded. Genitalia with spermathecal capsule bent medially, base enlarged, bulbous; cornu beaked; ramus produced; with small, sclerotized infundibulum.

*Variation*: Length 1.5 to 2.1 mm, width 1.2 to 1.6 mm. Surface sculpture weakly to strongly alutaceous. Pronotal pattern varies from typical to almost entirely black except narrow apical border and broad anterior angle pale. Elytron varies from almost entirely pale with dark basal border to entirely black except apical 1/8 yellow.

*Type locality*: of *rubicundus*, Lima (Peru) (lectotype here designated); of *limbaticollis*, "Nouvelle Grenada" (Colombia) (lectotype previously designated by GORDON 1987); of *argentinus*, Prov. Buenos Aires, (Argentina) (lectotype here designated); of *piceipennis*, Argentina, Bahia Blanca; of *hians*, Brazil, Rio Janeiro (lectotype here des-

ignated); of *errator* and *percomis* (lectotype here designated), Argentina, Estancia la Noria, Rio San Javier, Santa Fe.

The above lectotypes are here designated to fix and stabilize the status of these names.



Figs. 56-57 - *Scymnus (P.) rubicundus* genitalia. Male.

*Type depository:* of *rubicundus*, ZMHB; of *limbaticollis*, UCCC; of *argentinus*, MBR; of *piceipennis*, *hians*, *errator*, and *percomis*, BMNH.

*Geographical distribution:* Nearly all of South America except Chile and southern Argentina.

*Specimens examined:* 1600+. Specimens present in every collection examined.

*Remarks:* This is the most widely distributed and most frequently collected species of South American *Pullus*. The extremely variable color pattern is difficult to use for identification, although the black color of abdominal sterna 1 and 2 is useful in many instances. Therefore, male genitalia, which are completely diagnostic (except

for *P. bicolor*), should be examined. In general, specimens from coastal Ecuador and Peru exhibit the pale color form of typical *P. rubicundus* described above, although this pattern also occurs in some high-altitude Peruvian specimens. Specimens from high altitudes in Colombia and Peru, and from low altitudes in eastern Brazil tend to be mostly dark dorsally, often black with only elytral apices and anterior pronotal margins yellow. Typical *P. limbaticollis* has an intermediate color pattern consisting of mostly yellow pronota with variable, dark basomedian areas, and chestnut brown elytra bordered with black in basal 1/2. The latter form predominates in Argentina, most of central Brazil, and Venezuela.

The lectotype of *S. rubicundus* is a female labeled "55632/Typus (red paper)/*rubicundus* Er. Lima v. Tachodi/Zool. Mus. Berlin". Two additional cotypes in the ZMHB are designated and labeled as paralectotypes. The lectotype of *P. argentinicus* is labeled "Rep. Argentina, Prov. Buenos Aires, V-1894, C. Bruch/TYPUS/*Pullus argentinicus* Weise". The lectotype of *P. hians* is a female labeled "Type(orange bordered disc)/type!/Rio Janeiro, Brazil. C. Darwin/Darwin Coll. 1885.-119./Rio/*Pullus hians* (in Brèthes handriting)". The lectotype of *P. percomis* is a male labeled "Syntype (blue bordered disc)/Estancia La Noria, San Javier, San Javier, Argentina, G.E. Bryant, 12.XII.1911/ G. Bryant Col., 1919-117/*Pullus percomis* Brèthes (in Brèthes handwriting)". One additional syntype bearing identical labels is designated and labeled as a paralectotype. The type specimens of *P. piceipennis* and *P. errator* are holotypes because Brèthes stated he had one specimen of each.

Type material of the Caribbean species *Scymnus (Pullus) phloeus* Mulsant was examined along with numerous other specimens of that species, and *P. phloeus* may also be synonymous with *P. rubicundus*. Male genitalia are extremely similar but the basal lobe of *P. phloeus* is slightly shorter and broader than in South American specimens of *P. rubicundus*; therefore these names are not synonymized at this time.

### ***Scymnus (Pullus) bicolor* (Philippi)**

*Coccinella bicolor* PHILIPPI, 1854:335.

*Scymnus (Pullus) bicolor*: BRETHÈS, 1923:456; BRETHÈS, 1925a:171; KORSCHESKY, 1931:155; BLACKWELDER, 1945:444.

*Description*: Male, length 2.0 mm, width 1.5 mm; body form elongate, convex. Dorsal surface shiny, feebly alutaceous. Color yellow except elytra, meso-, metasterna, and basal 2 abdominal sterna black, elytron with apical 1/8 yellow. Head punctures fine, separated by about a diameter. Pronotal punctures equal in size to head punctures in median 1/3, separated by less than to twice a diameter, becoming finer laterally. Elytral punctures as large as median pronotal punctures, separated by less than to twice a diameter, with indistinct subsutural row of coarse punctures. Metasternal punctures larger than elytral punctures, separated by a diameter or less. Abdominal punctures on sterna 1-2 smaller than metasternal punctures, becoming finer toward apex. Dorsal pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs as long as scutellum. Prosternum with intercoxal carinae extended to apex of prosternum, strongly convergent from base to apex. Postcoxal line on 1st abdominal sternum evenly rounded, narrowly separated from posterior margin of sternum, apex reaching margin lateral to outer end of coxal depression. Abdominal sterna 5-6 with apices truncate. Genitalia as described for *P. rubicundus*.

*Female*: Similar to male except apices of abdominal sterna 5-6 evenly rounded. Genitalia as described for *P. rubicundus*.

*Variation*: Length 1.6 to 2.1 mm, width 1.3 to 1.6 mm.



*Type locality:* Chile. Lectotype here designated

*Type depository:* MHNS

*Geographical distribution:* Chile, from Choapa Province south to Chiloe Province.

*Specimens examined:* 106. (BM) (USNM).

*Remarks:* This Chilean species is the most easily recognized of all South American *Pullus* because of the striking contrast between completely yellow head and pronotum and black elytra. Despite the distinctive color pattern of *P. bicolor*, its genitalia do not differ at all from those of *P. rubicundus* and the species could be considered synonymous or only subspecifically distinct. There are 5 syntypes of *P. bicolor* in the MHNS collection, one of which, labeled "Chile/Central(Hofmann handwritten)/Sintipo/*bicolor* /P.G.(Germain handwritten)/*Coccinella bicolor* Germain" is designated the lectotype. Four other syntypes with similar labels are designated paralectotypes.

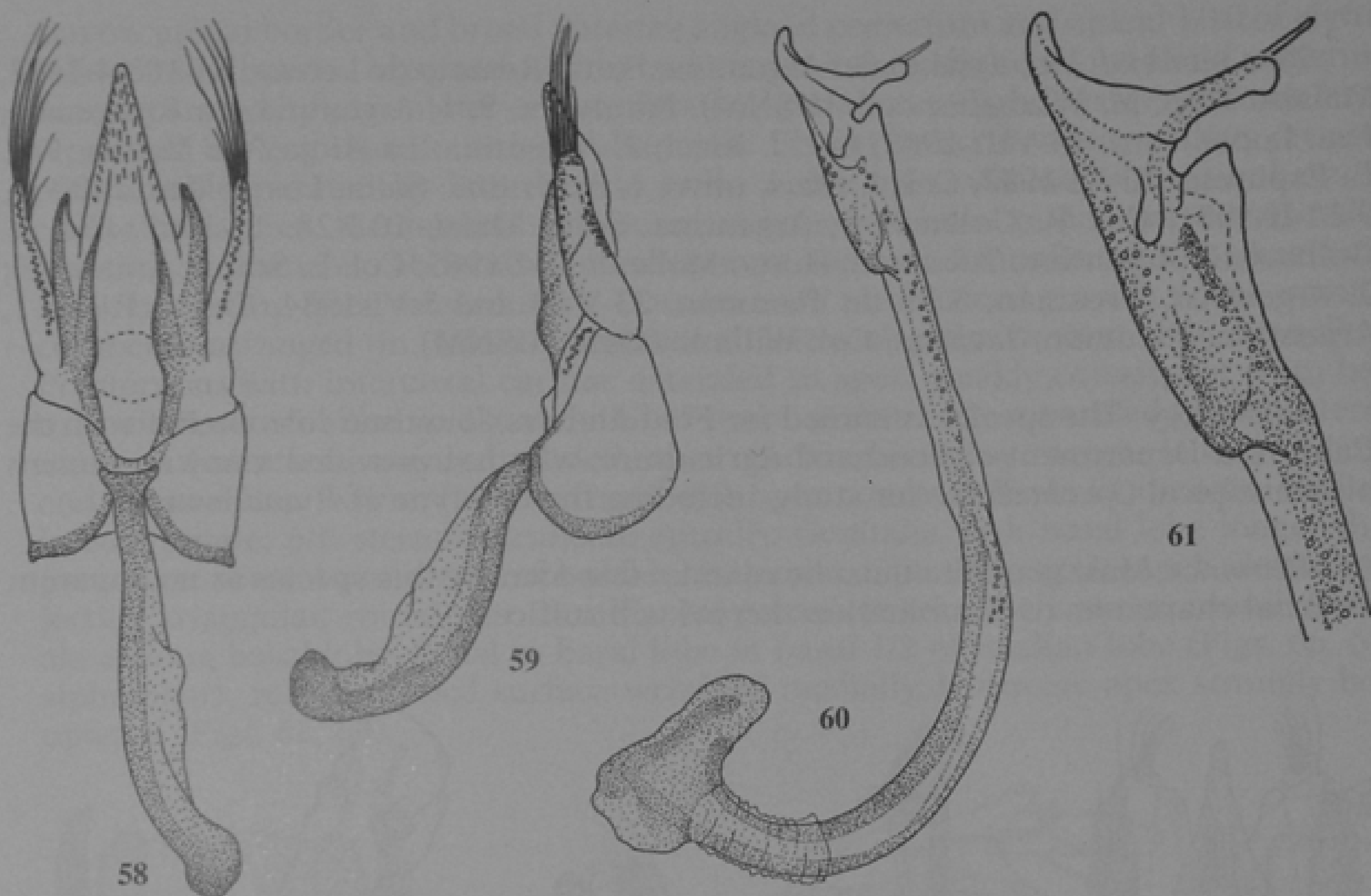
### ***Scymnus (Pullus) diekei*, new species**

*Description:* Male, length 1.8 mm, width 1.3 mm; body form round, convex. Dorsal surface shiny, weakly alutaceous. Color reddish brown except pronotum with large, indistinct, piceous basomedian area, elytral disc with short, narrow, ill-defined piceous vitta on sutural margin, meso-, metasterna dark brown, mouthparts, legs, abdomen yellow. Head punctures fine, separated by a diameter or less. Pronotal punctures larger than on head, separated by a diameter or less. Elytral punctures as large as pronotal punctures, separated by less than to twice a diameter, with indistinct subsutural row of coarse punctures. Metasternal punctures as large as on elytron, dense, nearly contiguous. Abdominal punctures on sterna 1-2 smaller than metasternal punctures, becoming finer toward apex. Dorsum with pubescence yellowish white, semierect, arranged in s-curve, individual hairs longer than scutellum. Prosternum with intercoxal carinae extended to apex, nearly parallel from base to apex. Postcoxal line on 1st abdominal sternum narrowly separated from posterior margin of sternum, median 1/3 slightly flattened, apex reaching anterior margin nearly at lateral margin of sternum. Fifth sternum with apex broadly, feebly emarginate; 6th sternum concave medially, apex with narrow, distinct emargination. Genitalia with basal lobe longer than paramere, tapered from base to acute apex in ventral view, basoventral projection weak, lateral alae fused to basal lobe for most of length; paramere slender, curved, tapered to acute apex in apical 1/2 (Figs. 58, 59); siphon short, robust, bent in basal 1/3, apex with trifurcations bent abruptly upward, ventral sclerotized process robust, distinct (Figs. 60, 61).

*Type material:* Holotype male. Colombia, Valle, E. Buenaventura, 0 m, VIII-13-1956, G.H. Dieke, on vegetation (USNM).

*Etymology:* The species is named for Gerhard Dieke, a coccinellid researcher and collector of the holotype.

*Remarks:* *Pullus diekei* has genitalia very similar to those of *P. rubicundus* except the paramere is slender, curved; lateral alae fused to basal lobe nearly to apex of alae; siphon short, robust, siphonal apex with trifurcations abruptly bent upward. In addition, the 6th abdominal sternum is distinctly notched apically. Only the male holotype was available for study.



Figs. 58-61 - *Scymnus (P.) diekei* genitalia. Male.

***Scymnus (Pullus) andrewsi*, new species**

*Description:* Male, length 1.8 mm, width 1.5 mm; body form slightly elongate, convex. Dorsal surface feebly shiny, alutaceous. Color pale reddish yellow except meso- and metasterna slightly darker reddish brown. Head punctures fine, separated by a diameter or less. Pronotal punctures slightly smaller than on head, separated by less than to twice a diameter. Elytral punctures larger than pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures on sterna 1-2 smaller than on metasternum, becoming finer toward apex. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs about as long as scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum extended to posterior margin of sternum, evenly rounded except median 1/3 flattened, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave medially, broadly, weakly emarginate; 6th sternum narrowly, weakly emarginate apically. Genitalia with basal lobe as long as paramere, ventral projection of basal lobe slender, tapered to acute apex in apical 2/3, dorsal projection triangular, gradually tapered to rounded apex; paramere ovate, gradually tapered to rounded apex; lateral ala nearly as long as paramere, not fused to basal lobe (Figs. 62, 63); siphus slender, curved in basal 3/4, area preceding and ventral to trifurcate apex much wider than preceding portion (Figs. 64, 65).

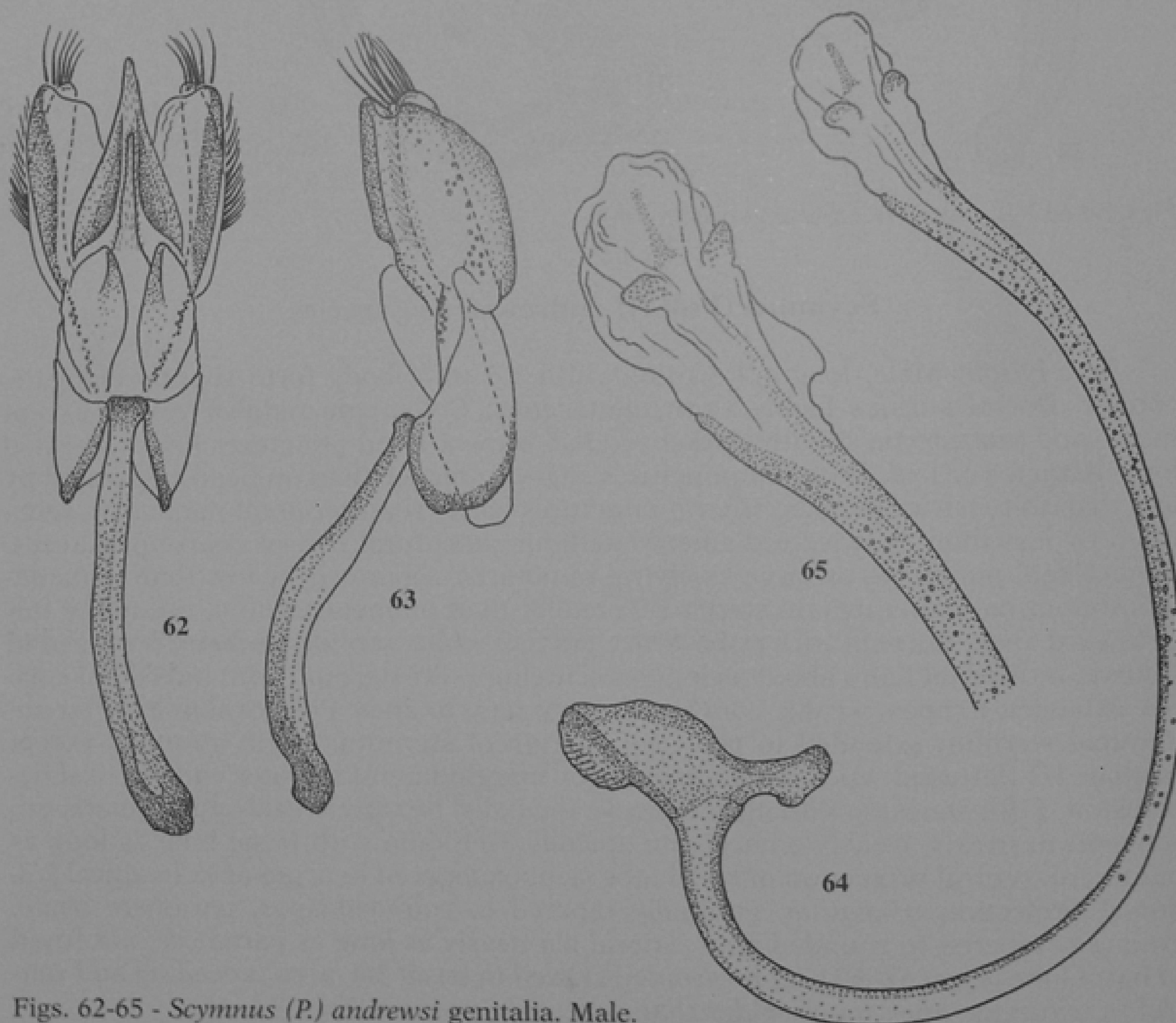
*Female:* Not known.

*Variation:* Length 1.8 to 2.0 mm, width 1.5 to 1.6 mm. Some specimens slightly darker reddish yellow than holotype with sutural margin narrowly piceous from base to apical declivity.

*Type material:* Holotype male. Argentina, Salta, Rosario de Lerma, XI-10/14-1983, Malaise Trap, M. Wasbauer coll. (USNM). Paratypes, 9; 1, Argentina, La Rinconada, Fca. Lopez Toro, 14-VIII-1985, Col. J. Ricci; 1, Argentina, La Rioja, Via Mazan, Fra. E. Espinosa, 20-XI-1987, Col. J. Ricci, olivo; 1, Argentina, Salta, Los Toldos, 2400 m, 9-21-II-1951, Col. R. Golbach; 1, Argentina, Salta, Orán, 10-I-28. 11-1967, Col. R. Golbach; 2, Argentina, Tucumán, Horco Molle, 8-15-I-1965, Col. L. Stange, (malaise); 2, Argentina, Tucumán, S.M. de Tucumán, 23-V-84 and 5-VI-1984. Col. J. Ricci; 1, Argentina, Tucumán, Tacanas, Col. Willink. (IML) (USNM).

*Etymology:* The species is named for Fred Andrews, longtime coleopterist with the California Department of Food and Agriculture, who has provided many specimens of neotropical *Coccinellidae* for study, including the holotype of *P. andrewsi*.

*Remarks:* Male genitalia must be examined to identify this species as no apparent external characters or combination thereof will suffice.

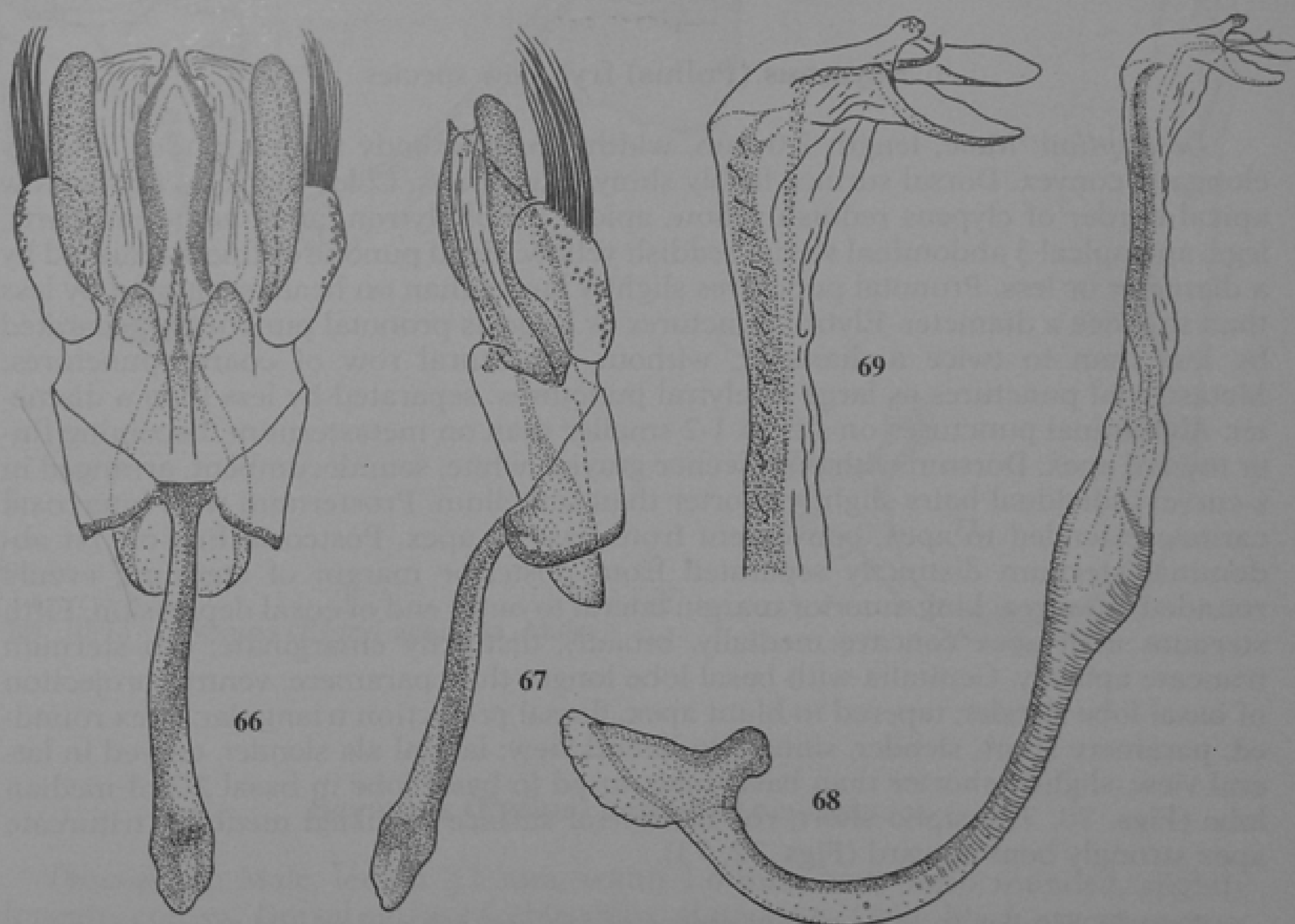


Figs. 62-65 - *Scymnus (P.) andrewsi* genitalia. Male.

### ***Scymnus (Pullus) demerarensis*, new species**

*Description:* Male, length 1.7 mm, width 1.4 mm; body form rounded, slightly elongate, convex. Dorsal surface feebly shiny, alutaceous. Color black except head,

narrow apical border and broad anterior angle of pronotum and apical 1/10 of elytron yellow, mouthparts, legs, and abdominal sterna 3-6 reddish yellow. Head punctures fine, separated by a diameter or less. Pronotal punctures slightly larger than on head, separated by less than to twice a diameter. Elytral punctures larger than pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures on sterna 1-2 smaller than on metasternum, becoming finer toward apex. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs slightly shorter than scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, medially broadly, distinctly emarginate; 6th sternum truncate apically. Genitalia with basal lobe longer than paramere, ventral projection of basal lobe slender, tapered to acute apex, dorsal projection triangular, rounded to acute apex; paramere extremely short, round; lateral ala as long basal lobe, fused to basal lobe in basal 1/2 of median lobe (Figs. 66, 67); siphon short, robust, dorsal surface wrinkled medially, trifurcate apex strongly bent upward (Figs. 68, 69).



Figs. 66-69 - *Scymnus (P.) demerarensis* genitalia. Male.

*Female*: Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent medially, cylindrical basally, cornu beaked; ramus well developed; sclerotized infundibulum slender, elongate.

*Variation*: Length 1.6 to 1.7 mm.



*Type material:* Holotype male. British Guiana (Guyana), Demerara River Bank 1 mile Frm Georgetown, Sep 22'18, HMorrison (USNM). Allotype. Brazil, Bahia, Salvador, X-1961. Paratypes, 16; 1, Bolivia, B'Vista, 3.29, W. Wittmer; 1, Bolivia, Rosario, Lake Rogagua, Oct. 28-Nov. 9, 1921, WMMann, Mulford BioEpl 1921-22; 1, Brazil, Bahia, Salvador, X-1961, Krauss; 1, Brazil, Rio de Janeiro, Murundu Campo, VIII.1978, M. Alvarenga; 1, Guyana, Georgetown, 9-VI-1999, R.G. Booth; 1, Peru, Dpto. Cuzco, Prov. Quispicanchis, Quincemil, 6-11-X-1976, Robert Gordon; 1, Peru, Tingo Maria, 2 miles E. of town, 4-VIII-1971, Roadside veg., Forested eastern foothills of the Andes, 2000 ft; 1, Surinam, Paramaribo, 20-VII-1980, M. I. Russell; 1, Venezuela, Macuto, 9-VI-84, F.D. Bennett. (BM) (CMP) (USNM).

*Etymology:* The species name refers to the holotype locality.

*Remarks:* *Pullus demerarensis* is a widespread species apparently restricted to low altitudes. It is the only South American *Pullus* other than *P. rubicundus* known from the northeastern coast of Brazil; both Peru localities are also low altitude. Male genitalia are highly distinctive because of the round paramere and "wrinkled" dorsal siphonal margin. Genitalia must be examined for species identification as there are no apparent external distinguishing characters.

#### **Scymnus (Pullus) fryi, new species**

*Description:* Male, length 2.0 mm, width 1.6 mm; body form rounded, slightly elongate, convex. Dorsal surface feebly shiny, alutaceous. Color black except narrow apical border of clypeus reddish yellow, apical 1/8 of elytron, antenna, mouthparts, legs, and apical 3 abdominal sterna reddish yellow. Head punctures fine, separated by a diameter or less. Pronotal punctures slightly larger than on head, separated by less than to twice a diameter. Elytral punctures as large as pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures on sterna 1-2 smaller than on metasternum, becoming finer toward apex. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs slightly shorter than scutellum. Prosternum with intercoxal carinae extended to apex, convergent from base to apex. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave medially, broadly, distinctly emarginate; 6th sternum truncate apically. Genitalia with basal lobe longer than paramere, ventral projection of basal lobe slender, tapered to blunt apex, dorsal projection triangular, apex rounded; paramere short, slender, sinuate in lateral view; lateral ala slender, curved in lateral view, slightly shorter than basal lobe, fused to basal lobe in basal 2/3 of median lobe (Figs. 70, 71); siphon short, robust, dorsal surface wrinkled medially, trifurcate apex strongly bent upward (Figs. 72, 73).

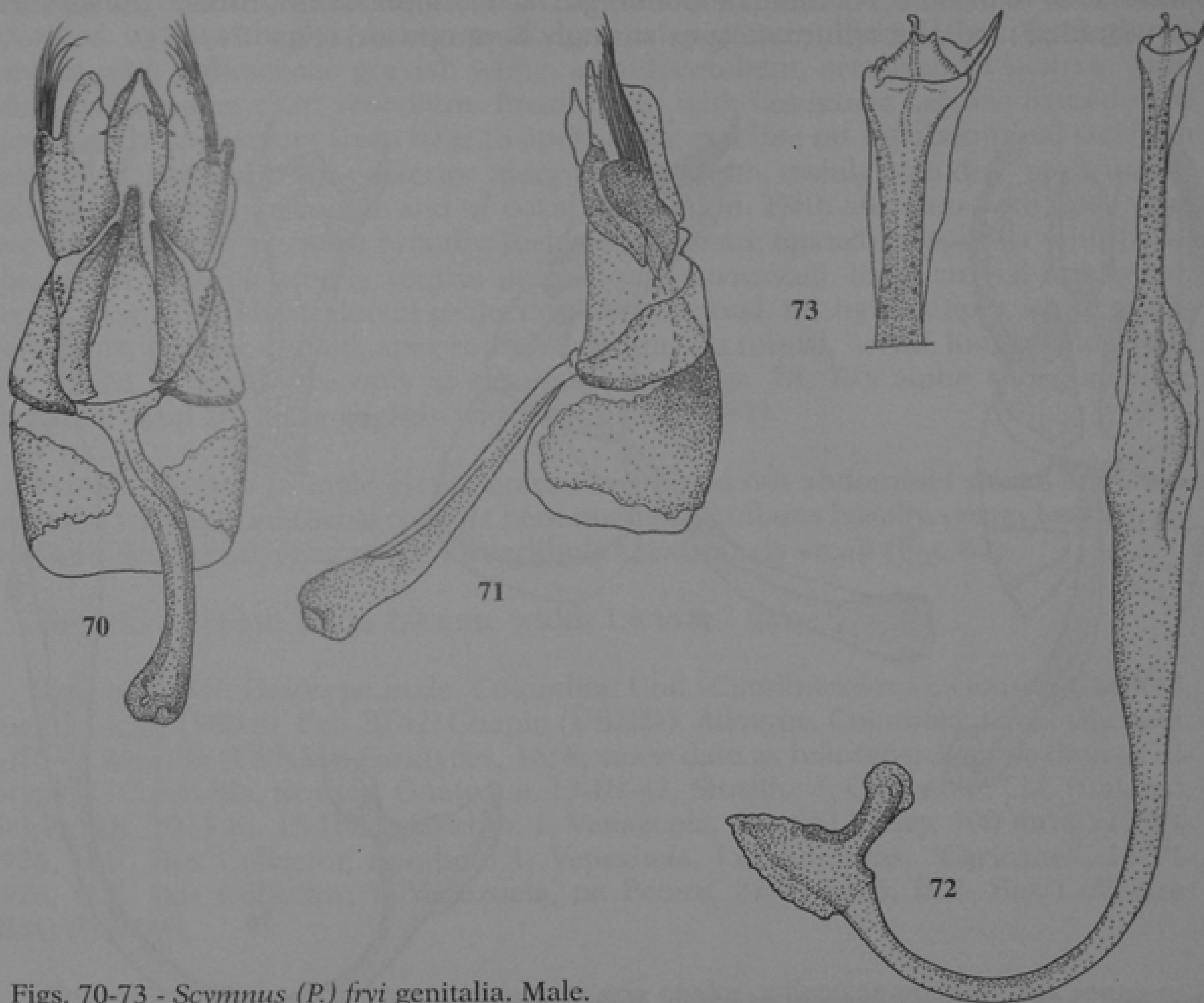
*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded; genitalia as described for *P. demerarensis*.

*Variation:* Length 1.9 to 2.0 mm.

*Type material:* Holotype male. Brazil, Rio Jan (Rio de Janeiro), Fry, Fry Coll. 1905.100 (BM). Allotype. Same data as holotype except 2nd label not decipherable (BM). Paratypes, 1, same data as holotype. (BM).

*Etymology:* This species is named for the collector of the holotype specimen.

*Remarks:* *Pullus fryi* closely resembles *P. demerarensis* and *P. bennetti*. Male genitalia are the only defining characters for these species, particularly the parameral and lateral ala structures in lateral view. *Pullus demerarensis* has a short, nearly round paramere and lateral ala as long as basal lobe; *P. fryi* has a slender, elongate, sinuate paramere and lateral curved ala slightly shorter than basal lobe; and *P. bennetti* has a short, broad paramere tapered from base to apex, and curved lateral ala slightly shorter than basal lobe.

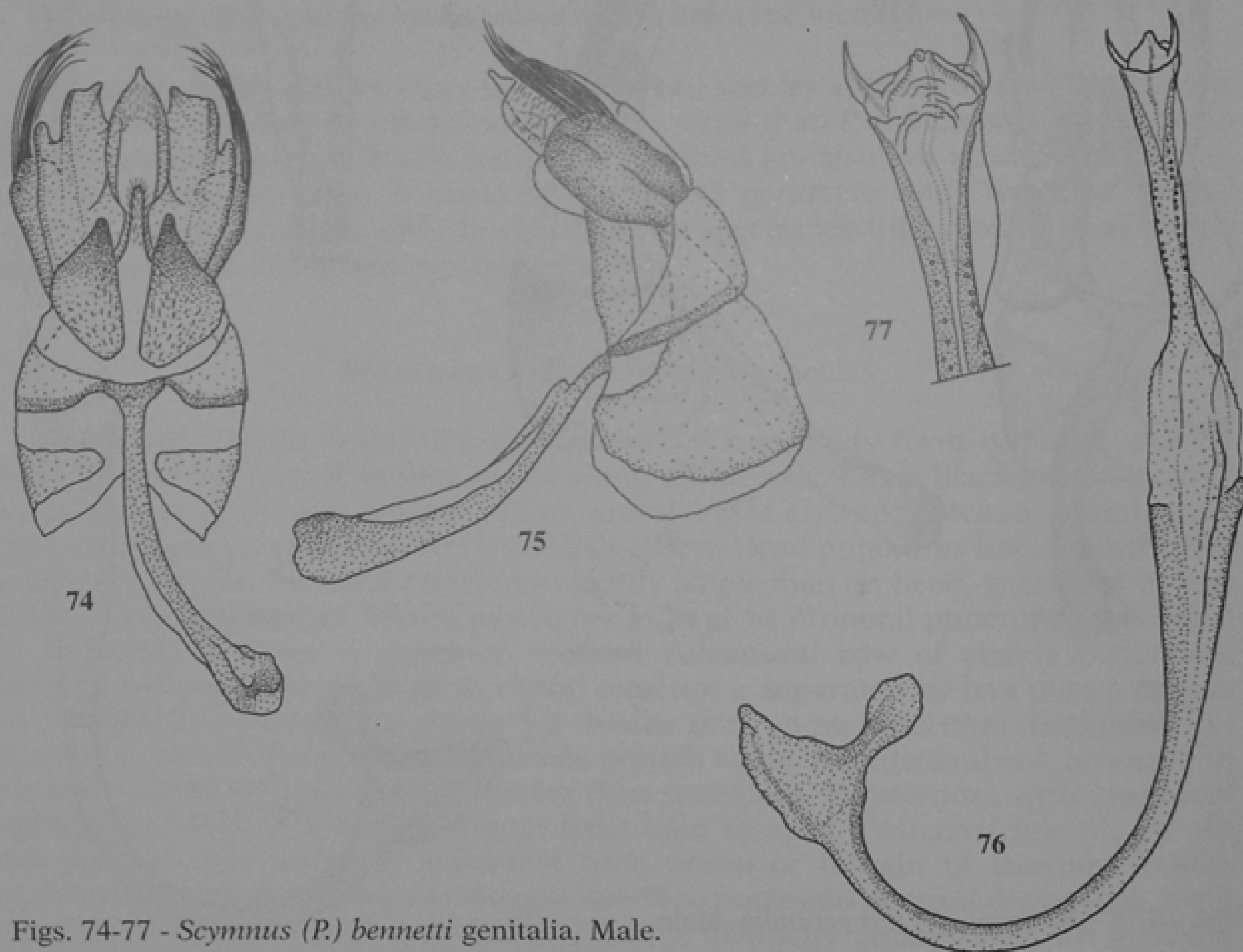


Figs. 70-73 - *Scymnus (P.) fryi* genitalia. Male.

### ***Scymnus (Pullus) bennetti*, new species**

*Description:* Male, length 2.1 mm, width 1.6 mm; body form rounded, slightly elongate, convex. Dorsal surface feebly shiny, alutaceous. Color black except narrow apical border of clypeus reddish yellow, discal area of elytron dark brown, apical 1/8 of elytron, antenna, mouthparts, legs, and apical 3 abdominal sterna yellow. Head punctures fine, separated by a diameter or less. Pronotal punctures slightly larger than on head, separated by less than to twice a diameter. Elytral punctures as large as pronotal punctures, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures on sterna 1-2 smaller than on metasternum, becoming finer toward apex. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs slightly shorter than scutellum.

Prosternum with intercoxal carinae extended to apex, convergent from base to apex. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, medially broadly, distinctly emarginate; 6th sternum very slightly emarginate apically. Genitalia with basal lobe longer than paramere, ventral projection of basal lobe slender, rounded to blunt apex, dorsal projection triangular, apex rounded; paramere short, broad, widened from base to apex; lateral ala slender, curved in lateral view, slightly shorter than basal lobe, fused to basal lobe in basal 2/3 of median lobe (Figs. 74, 75); siphon short, robust, dorsal surface wrinkled medially, trifurcate apex strongly bent upward (Figs. 76, 77).



Figs. 74-77 - *Scymnus (P.) bennetti* genitalia. Male.

*Female*: Not known.

*Variation*: None observed.

*Type material*: Holotype male. Brazil, Sao Paulo, XI.1961, FD Bennett, On *Baccharis mesoneura*, C.I.E. Coll. no. 18/9 (BM). Paratype, 1; same data as holotype. BM.

*Etymology*: This species is named for the collector of the holotype.

*Remarks*: *Pullus bennetti* resembles *P. demerarensis* and *P. fryi*; see remarks under *P. fryi*.

**Scymnus (Pullus) gachetensis**, new species

*Description:* Male, length 2.3 mm, width 1.6 mm; body elongate, slightly flattened dorsoventrally. Dorsal surface feebly shiny, alutaceous. Color black except apical 2/3 of head, lateral 1/4 of pronotum, propleuron, mouthparts, legs, and abdominal sterna 5-6 yellow. Head punctures large, separated by a diameter or less. Pronotal punctures smaller than on head, separated by less than to twice a diameter. Elytral punctures as large as on head, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures larger than elytral punctures, separated by less than a diameter. Abdominal punctures fine, dense throughout. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs longer than scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin at outer end of coxal depression. Fifth sternum with apex concave medially; 6th sternum broadly, feebly emarginate apically. Genitalia with basal lobe longer than paramere, ventral projection pronounced, long, curved upward in lateral view, apex blunt, dorsal projection short, broad, triangular, apex acute; paramere short, slender, curved, apex rounded; lateral ala robust, broad, longer than basal lobe, fused to basal lobe only at extreme base (Figs. 78, 79); siphon short, slender, curved in basal 1/3, apex slightly widened (Figs. 80, 81).

*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent medially, bulbous basally, cornu beaked; ramus well developed; sclerotized infundibulum extremely small (Fig. 82).

*Variation:* Length 2.0 to 2.4 mm, width 1.6 to 1.7 mm.

*Type material:* Holotype male. Colombia, Cnd (Cundinamarca), Guasca-Gachetá, Puente Licio, 1900 m, Feb 20'42. Chapin (USNM). Allotype. Colombia, Cnd., Gachetá, 3-III-40, Murillo (USNM). Paratypes, 16; 8, same data as holotype; 3, same data as allotype; 1, Colombia, Boyaca, Guateque, 13-III-42, Murillo; 1, Colombia, Cld. (Caldas), Neirea, alt. 2025 m, 15-II-41, Murillo; 1, Venezuela, Guatire Valley, 300 mtrs., 17-VI-1926, H.E. Box Collector, Bamboo; 1, Venezuela, Las Adjuntas, "Caricuao", 13-VI-1926, H.E. Box Collector; 1, Venezuela, nr. Petare, 22-VI-1926, H.E. Box Collector. (BM) (USNM).

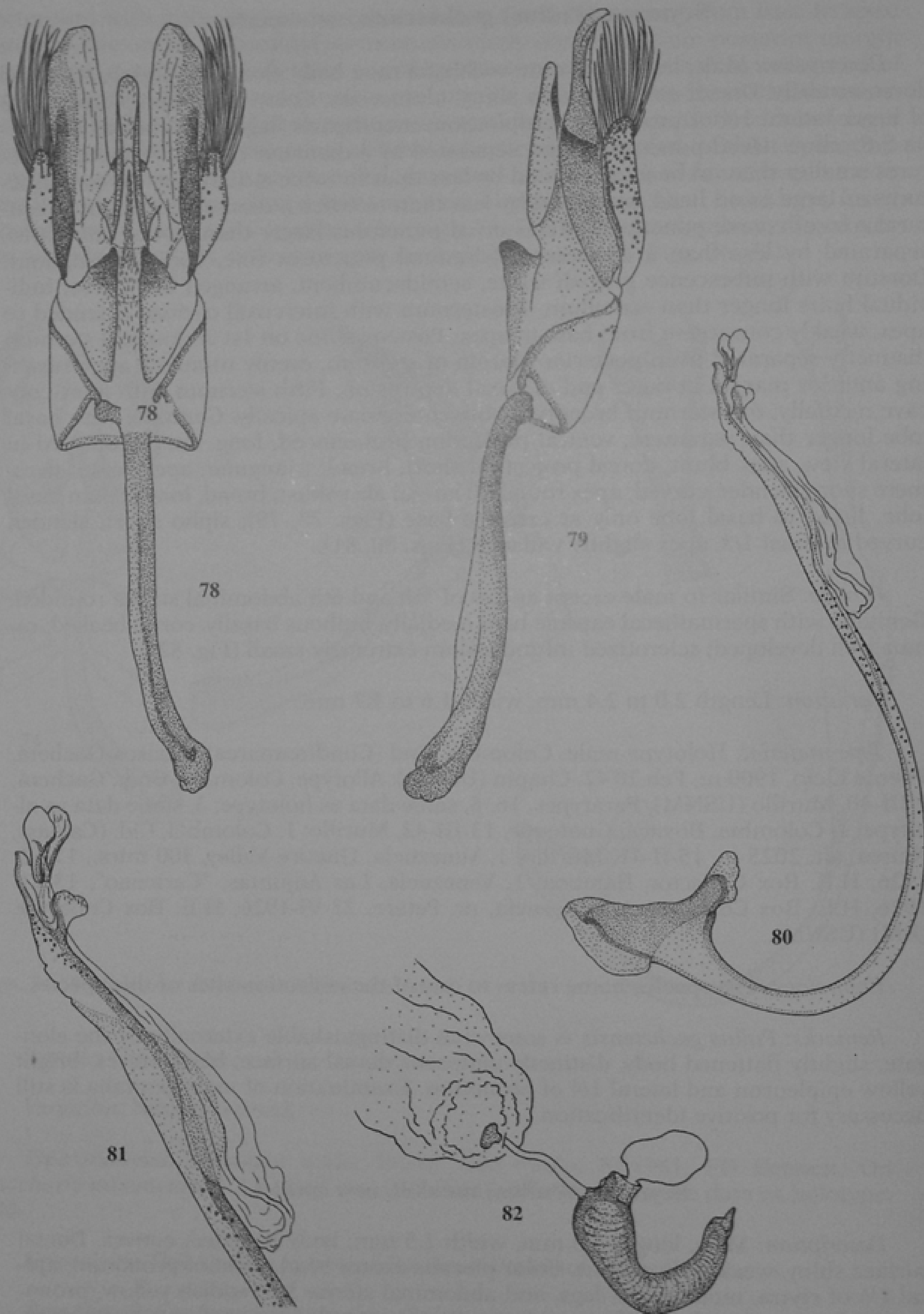
*Etymology:* The species name refers to one of the collection sites of this species.

*Remarks:* *Pullus gachetensis* is somewhat distinguishable externally by the elongate, slightly flattened body, distinctly alutaceous dorsal surface, black vertex, bright yellow epipleuron and lateral 1/4 of pronotum. Examination of male genitalia is still necessary for positive identification.

**Scymnus (Pullus) menkei**, new species

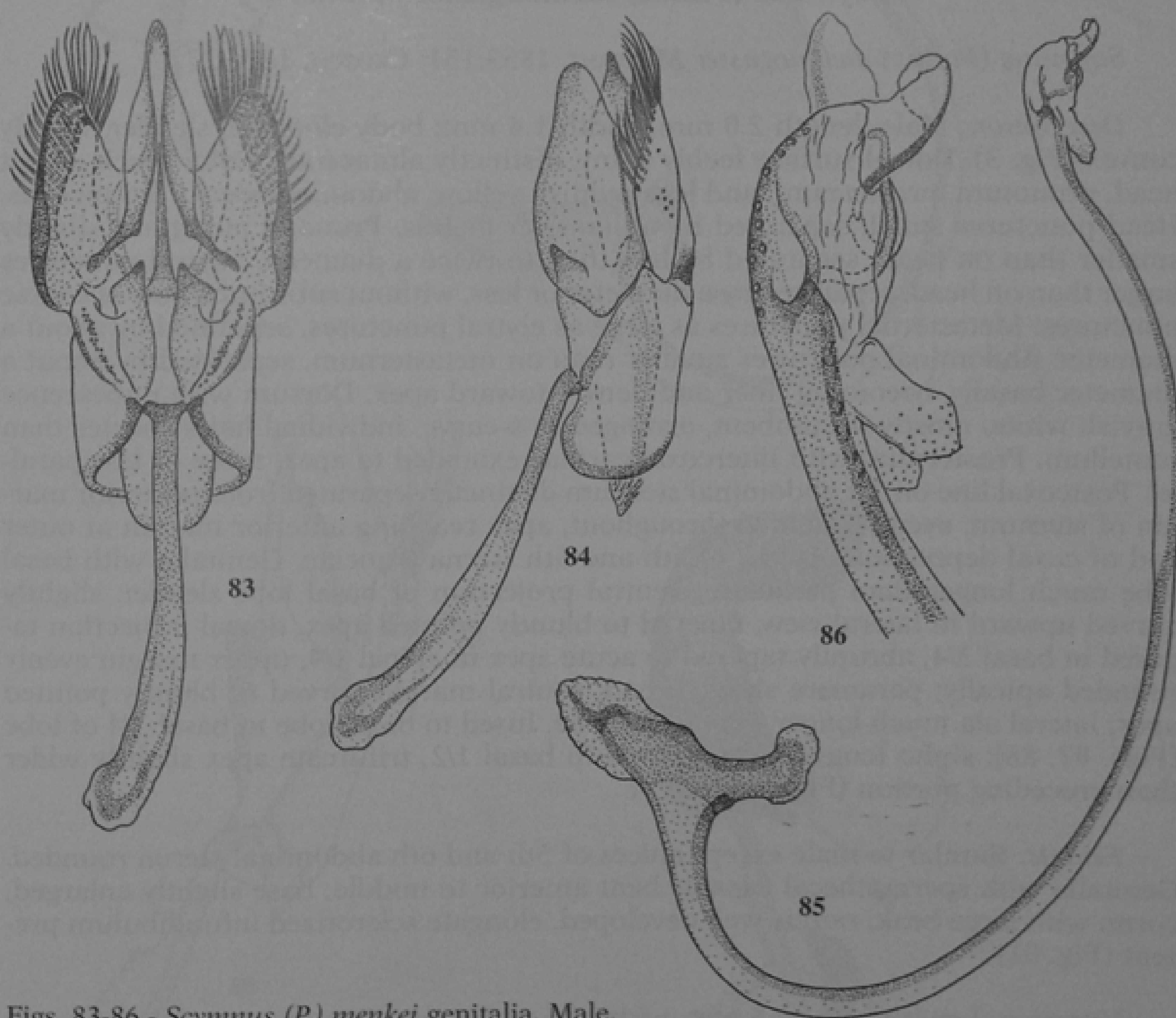
*Description:* Male, length 1.8 mm, width 1.5 mm; body rounded, convex. Dorsal surface shiny, weakly alutaceous. Color piceous except head, most of pronotum, apical 1/6 of elytra, mouthparts, legs, and abdominal sterna 3-6 reddish yellow, pronotum with large, dark brown basomedian area not extended to anterior pronotal margin, elytron brown with basal, sutural, and lateral margins broadly piceous. Head punctures small, separated by a diameter or less. Pronotal punctures as large as on





Figs. 78-82 - *Scymnus* (P.) *gachetensis* genitalia. 78-81, male; 81, female.

head, separated by less than to twice a diameter. Elytral punctures larger than on pronotum, separated by a diameter or less, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures larger than on metasternum, separated by a diameter or less. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs as long as scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum narrowly separated from posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, broadly emarginate; 6th sternum narrowly, abruptly emarginate apically. Genitalia with basal lobe much longer than paramere, ventral projection of basal lobe slender, tapered to acute apex, not recurved, dorsal projection short, broad, tapered to acute apex in apical 1/4, in ventral view area lateral to midline not pigmented, forming clear "window"; paramere short, broad, sinuate, apical 1/3 narrow; lateral ala slightly shorter than basal lobe, broad, fused to basal lobe in basal 2/3 (Figs. 83, 84); siphon long, slender, curved in basal 3/4, bent down and sinuate in apical 1/4, trifurcate apex small (Fig. 85, 86).



Figs. 83-86 - *Scymnus (P.) menkei* genitalia. Male.

*Female:* Not known.

*Variation:* Length 1.7 to 1.9 mm, width 1.3 to 1.5 mm. Pronotal color varies from a large, median piceous area extended to anterior pronotal margin to having a small,

nebulous, reddish brown basomedian area. Elytral color varies from typical to having median portion light reddish yellow.

*Type material:* Holotype male. Venezuela, Aragua, Puerto de Cata, 10-11 June 1976, A.S. Mendke & D. Vincent (USNM). Paratypes, 6; 2, same data as holotype; 1, Venezuela, Estado del Aragua, P. Nac. Henri Pittier, Campo. Experimentl CENIAP, Pozo de Diablo, 400 m, J.G. Davies, FOG 17.14.v. 1990, Gallery forest, *Mangifera indica*, in fruit, J.G. Davies; 1, Venezuela, Lara, 20 km. E. Carora, 24-VI-1976, A.S. Menke & D. Vincent; 1, Venezuela, Sucre, Carupano, 22-VI-1968, J. Maldonado C.; 1, Venezuela, Zulia, Rosario, 14 June 1976, A.S. Menke & D. Vincent. (BM) (USNM).

*Etymology:* *Pullus menkei* is named for Arnold Menke, a noted hymenopterist and a collector of the holotype.

*Remarks:* Male genitalia must be examined for positive recognition of this species.

### ***Scymnus (Pullus) melanogaster* Mulsant**

*Scymnus (Pullus) melanogaster* Mulsant, 1853:151; Crotch, 1874:272.

*Description:* Male, length 2.0 mm, width 1.4 mm; body elongate, slender, weakly convex (Fig. 3). Dorsal surface feebly shiny, distinctly alutaceous. Color black except head, pronotum, prosternum, and legs reddish yellow, abdominal sterna 3-6 piceous. Head punctures small, separated by a diameter or less. Pronotal punctures slightly smaller than on head, separated by less than to twice a diameter. Elytral punctures larger than on head, separated by a diameter or less, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by about a diameter. Abdominal punctures smaller than on metasternum, separated by about a diameter basally, becoming finer and denser toward apex. Dorsum with pubescence grayish white, mostly decumbent, arranged in s-curve, individual hairs shorter than scutellum. Prosternum with intercoxal carinae extended to apex, more or less parallel. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin at outer end of coxal depression. Apices of 5th and 6th sterna truncate. Genitalia with basal lobe much longer than paramere, ventral projection of basal lobe slender, slightly curved upward in lateral view, tapered to bluntly pointed apex, dorsal projection tapered in basal 3/4, abruptly tapered to acute apex in apical 1/4, upper margin evenly rounded apically; paramere short, broad, ventral margin curved to bluntly pointed apex; lateral ala much longer than basal lobe, fused to basal lobe in basal 3/4 of lobe (Figs. 87, 88); siphon long, robust, curved in basal 1/2, trifurcate apex slightly wider than preceding portion (Figs. 89, 90).

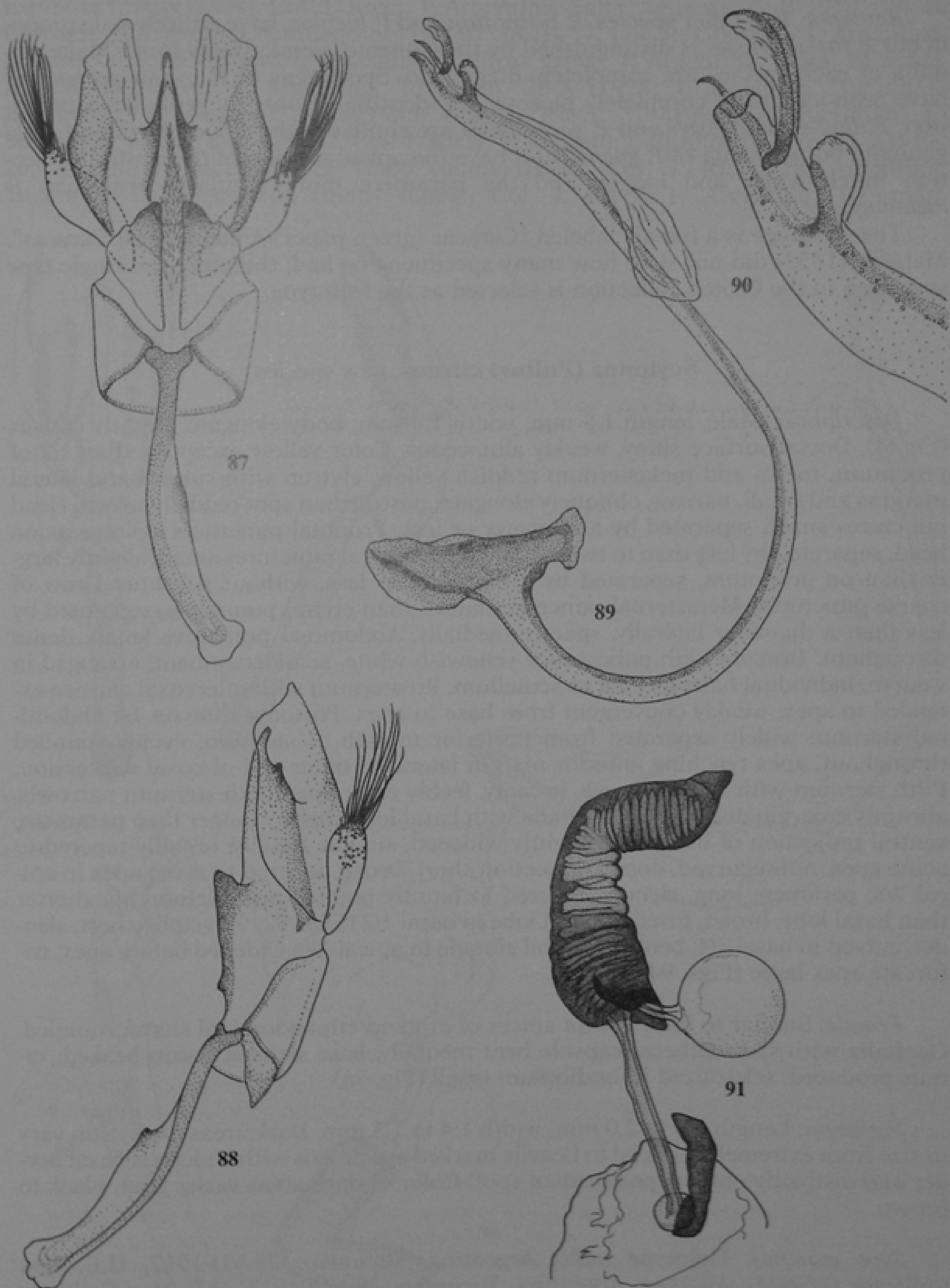
*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent anterior to middle, base slightly enlarged, cornu with large beak; ramus well developed, elongate sclerotized infundibulum present (Fig. 91).

*Variation:* Length 2.0 to 2.5 mm, width 1.6 to 1.7 mm. Two specimens have a nebulous, piceous, basomedian pronotal spot, and two specimens from Aposentos have completely piceous pronota except for narrow apical and lateral margins. Elytral surface sculpture varies from weakly alutaceous to strongly alutaceous and very dull.

*Type locality:* "Les environs de Caracas (Colombie) (collect. Deyrolle)" (Venezuela). Lectotype here designated to fix and stabilize the status of this name.

Type depository: UMZC.

Geographical distribution: Colombia and Venezuela.



Figs. 87-91 - *Scymnus* (P.) *melanogaster* genitalia. 87-90, male; 91, female.



*Specimens examined:* 23. Colombia. Bogota; Boyaca, Tunja; Cundinamarca, Anolaima, Tabio; Lago da Tota; Nueva Santander, Aposentos. Venezuela. Type locality. (BM) (USNM) (UMZC).

*Remarks:* Two other species, *P. cerinotum* and *P. bicolor*, have entirely pale pronota but *P. melanogaster* is distinguished by the elongate, slender body form. Male genitalia of each species are completely diagnostic. Specimens of *P. melanogaster* that have pronota almost completely piceous are identifiable only by genitalic examination. *Pullus melanogaster* and *P. gachetensis* are similar both in body form and male genitalia but genitalia of *P. gachetensis* have the apical portion of the ventral projection much wider and longer, and the paramere more regularly oval than *P. melanogaster*.

The lectotype is a female labeled "Caracas (green paper)/A/melanogast Caracas". Mulsant (1853) did not state how many specimens he had; therefore the single type specimen in the Crotch collection is selected as the lectotype.

### *Scymnus (Pullus) citreus*, new species

*Description:* Male, length 1.8 mm, width 1.4 mm; body elongate, slightly convex (Fig. 4). Dorsal surface shiny, weakly alutaceous. Color yellow except median 1/2 of pronotum, meso- and metasternum reddish yellow, elytron with sutural and lateral margins and small, narrow, obliquely elongate, postmedian spot reddish brown. Head punctures small, separated by a diameter or less. Pronotal punctures as large as on head, separated by less than to twice a diameter. Elytral punctures small, slightly larger than on pronotum, separated by a diameter or less, without subsutural row of coarse punctures. Metasternal punctures larger than elytral punctures, separated by less than a diameter laterally, sparser medially. Abdominal punctures small, dense throughout. Dorsum with pubescence yellowish white, semidecumbent, arranged in s-curve, individual hairs as long as scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum widely separated from posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, broadly, feebly emarginate; 6th sternum narrowly, abruptly emarginate apically. Genitalia with basal lobe slightly longer than paramere, ventral projection of basal lobe slightly widened, sinuate basally, broadly tapered to acute apex, not recurved, dorsal projection short, broad, tapered to acute apex in apical 7/8; paramere long, slender, tapered to bluntly pointed apex; lateral ala shorter than basal lobe, broad, fused to basal lobe in basal 1/2 (Figs. 92, 93); siphon short, slender, curved in basal 3/4, bent down and sinuate in apical 1/4, widened before apex, trifurcate apex large (Figs. 94, 95).

*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent medially, base slender, cornu beaked; ramus produced; sclerotized infundibulum small (Fig. 96).

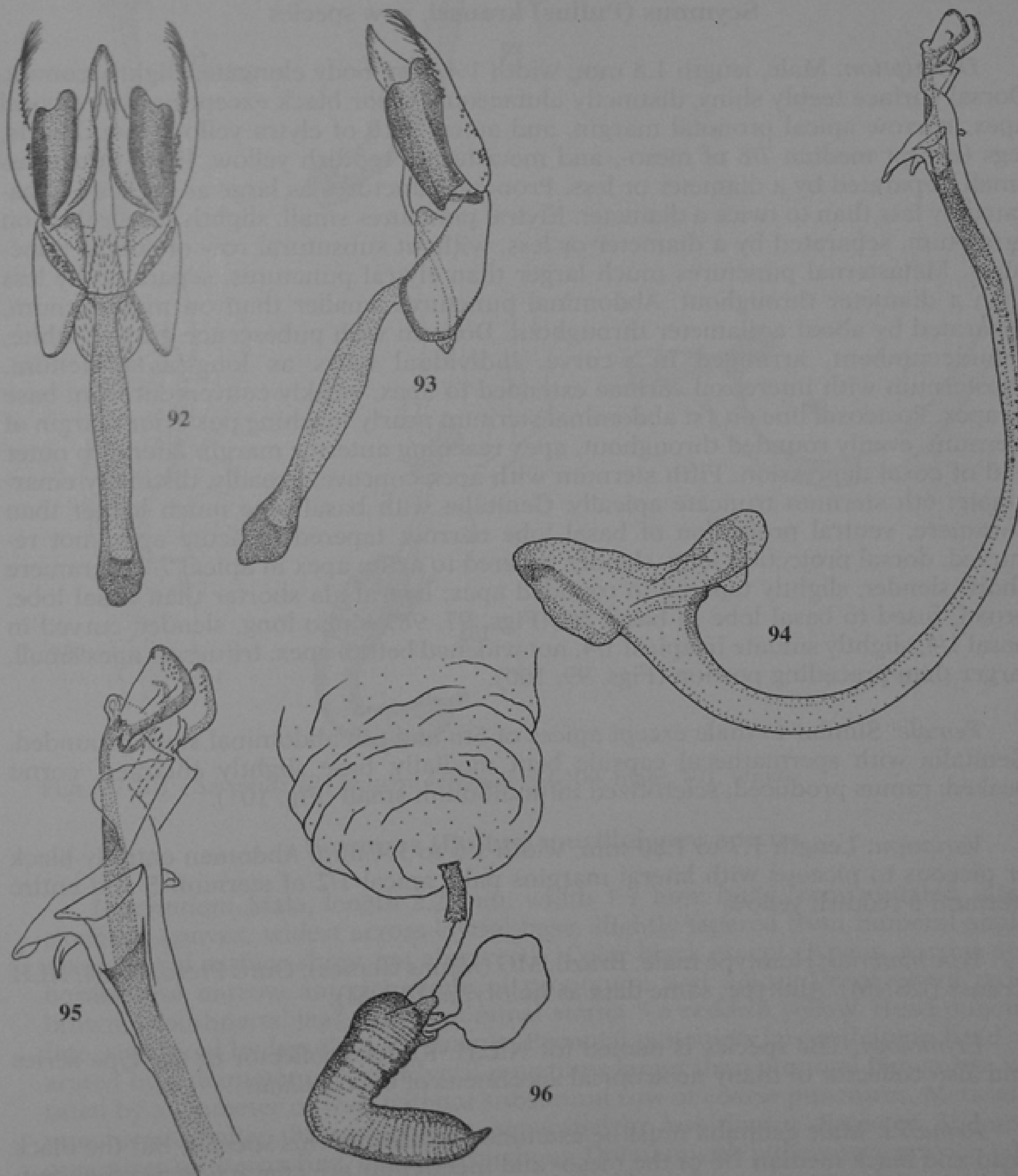
*Variation:* Length 1.8 to 2.0 mm, width 1.4 to 1.5 mm. Dark areas on elytron vary in size from extremely reduced to heavily marked specimens with a piceous basal border and distinctly oblique postmedian spot. Color of dark areas varies from black to brown.

*Type material:* Holotype male. Argentina, Tucumán, 28-VII-1917, H.E. Box Collector (USNM). Allotype. Argentina, Tucumán, 28-VII-1917, H.E. Box Collector (USNM). Paratypes, 86; 3, same data as allotype; 1, Argentina, Catamarca, Sumalao,

30-1-5-II-1958  
Daguerre, I.  
La Rioja, C.  
Espinosa (m)  
Golbach, I.  
Betania de  
X.1958,  
Burrupacu,  
Menentiel, C.  
26, Argenti  
Tucumán, I.



30-I-5-II-1958, Col. R. Golbach; 1, Argentina, Chaco, Dep. Resistencia, X-XII-935, J.B. Daguerre; 1, Argentina, Corrientes, Sauce, 26-III-1951, W. Wittmer; 2, Argentina, 1, La Rioja, Capital, 1944, Daguerre; 17, Argentina, La Rioja, Villa Mazan, Fra. E. Espinosa (many dates), Col. J. Ricci; 1, Argentina, Salta, Aguaray, 19-II-1950, Col. R. Golbach; 1, Argentina, Santiago del Estero, 28-III-57, Col. R. Golbach; 1, Argentina, Betania de Salta, 15-13-27, MKisliuk, in citrus grove; 1, Argentina, Salta, El Aybal, X.1958, Daguerre; 1, Argentina, Tucumán, 26-X-11928; 1 Argentina, Tucumán, Burruyacu, El Cajon, 22-VIII-1985, Col. J. Ricci; 3, Argentina, Tucumán, El Menentiel, 6-X-82 and 9-12-82, Col. J. Ricci; 1, Argentina, El Alto, 1000 m, 11-XII-58; 26, Argentina, Tucumán, El Tiabo (many dates), Col. J. Ricci; 18, Argentina, Tucumán, La Rinconada (many dates), Col. J. Ricci; 1, Argentina, Tucumán,



Figs. 92-96 - *Scymnus (P.) citreus* genitalia. 92-95, male; 96, female.

Quebrada la Tama de Tafi Viejo, 21-XII-1950, Col. R. Golbach; 1, Argentina, Tucumán, Rio Colorado, 22-XII-1953, Col. R. Golbach; 1, Argentina, Tucumán, Tapia, 2-X-1968, A. Terán Coll; 1, Argentina, Tucumán (label illegible); 2, Argentina (label illegible). (CAS) (IML) (MBR) (USNM).

*Etymology:* The species name is from the Latin *citreus*, in reference to the lemon yellow color of this species.

*Remarks:* Dorsal color is an excellent identification character because only *P. pictilis* has a similar pattern. See remarks under *P. pictilis*.

### ***Scymnus (Pullus) kraussi*, new species**

*Description:* Male, length 1.8 mm, width 1.4 mm; body elongate, slightly convex. Dorsal surface feebly shiny, distinctly alutaceous. Color black except narrow clypeal apex, narrow apical pronotal margin, and apical 1/10 of elytra yellow, mouthparts, legs (except median 7/8 of meso-, and metasterna) reddish yellow. Head punctures small, separated by a diameter or less. Pronotal punctures as large as on head, separated by less than to twice a diameter. Elytral punctures small, slightly larger than on pronotum, separated by a diameter or less, without subsutural row of coarse punctures. Metasternal punctures much larger than elytral punctures, separated by less than a diameter throughout. Abdominal punctures smaller than on metasternum, separated by about a diameter throughout. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs as long as scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Postcoxal line on 1st abdominal sternum nearly reaching posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, broadly, distinctly emarginate; 6th sternum truncate apically. Genitalia with basal lobe much longer than paramere, ventral projection of basal lobe narrow, tapered to acute apex, not recurved, dorsal projection long, slender, tapered to acute apex in apical 7/8; paramere short, slender, slightly tapered to rounded apex; lateral ala shorter than basal lobe, broad, fused to basal lobe in basal 2/3 (Figs. 97, 98); siphon long, slender, curved in basal 1/4, slightly sinuate in apical 1/4, not widened before apex, trifurcate apex small, larger than preceding portion (Figs. 99, 100).

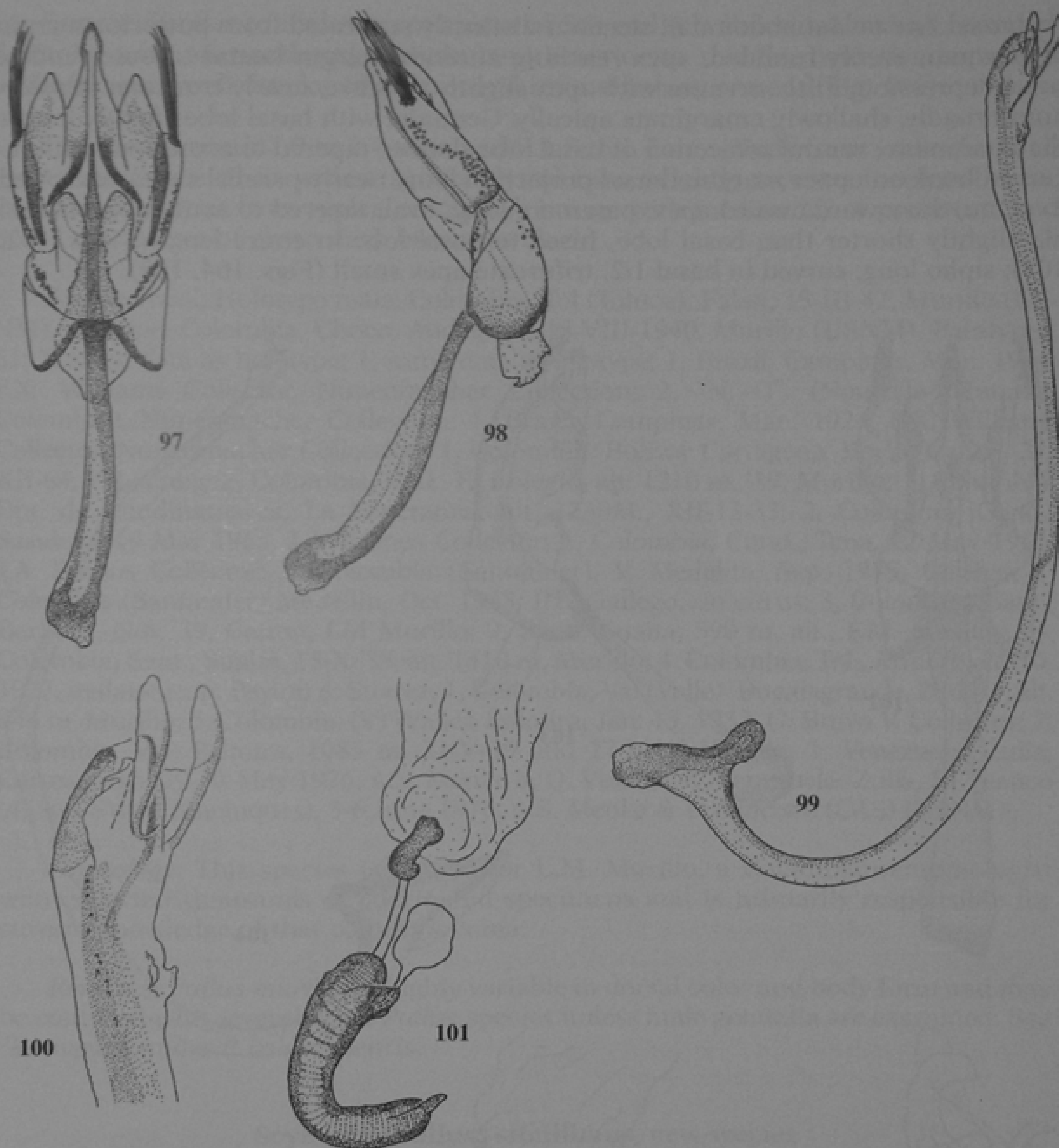
*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent medially, base slightly enlarged, cornu beaked; ramus produced; sclerotized infundibulum small (Fig. 101).

*Variation:* Length 1.7 to 1.80 mm, width 1.3 to 1.4 mm. Abdomen entirely black or piceous to piceous with lateral margins pale; apical 1/2 of sternum 5 and entire sternum 6 reddish yellow.

*Type material:* Holotype male. Brazil, MG (Minas Geraes), Ouro Preto, IV 54, NLH Krauss (USNM). Allotype, same data as holotype (USNM).

*Etymology:* The species is named for N.L.H. Krauss, collector of the type series and also collector of many neotropical specimens of *Coccinellidae*.

*Remarks:* Male genitalia must be examined to identify this species, but the black head and black median 7/8 of the meso- and metafemur are characters not frequently seen in South American *Pullus*.



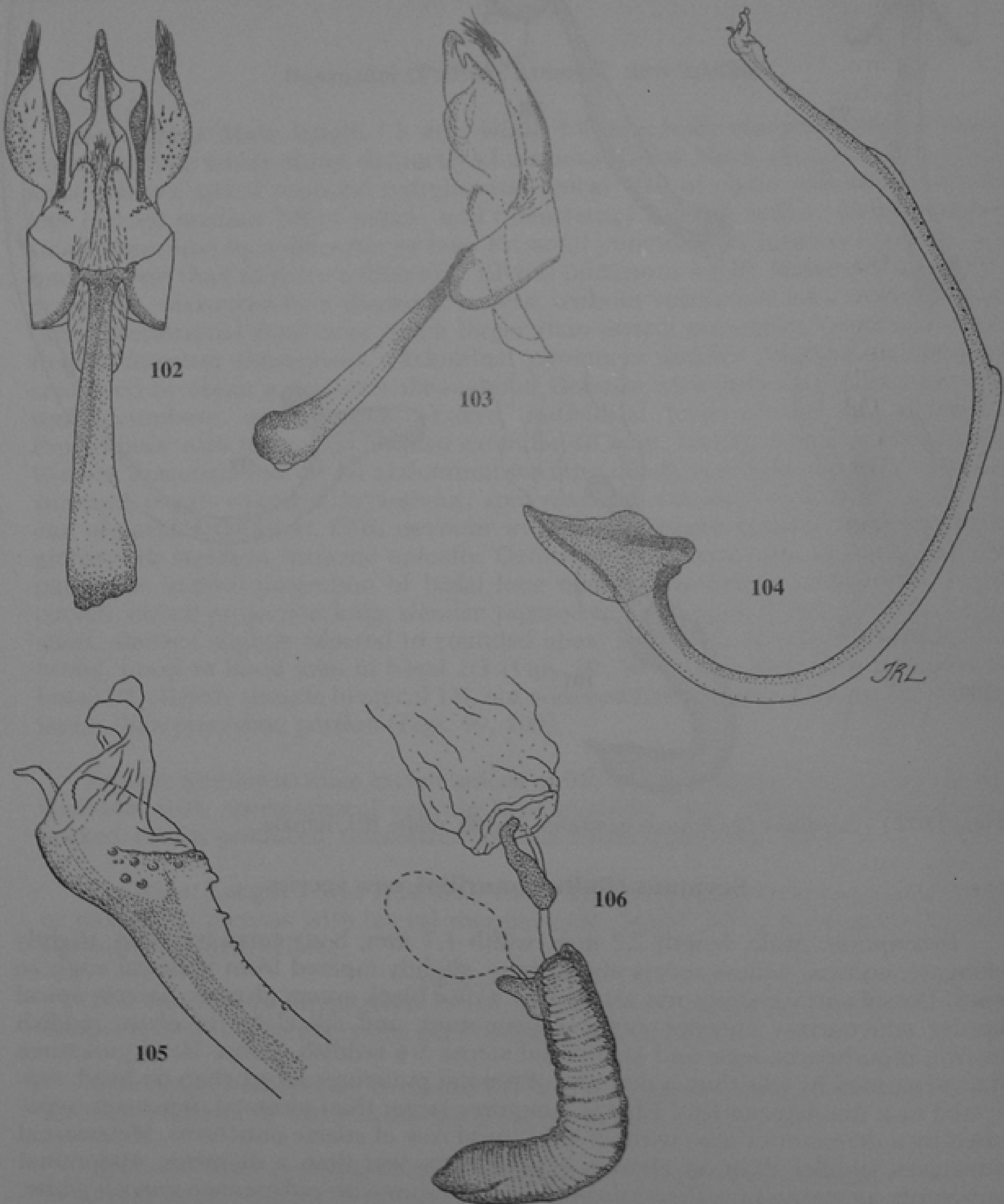
Figs. 97-101 - *Scymnus (P.) kraussi* genitalia. 97-100, male; 101, female.

***Scymnus (Pullus) murilloi*, new species**

*Description:* Male, length 2.2 mm, width 1.7 mm; body form rounded, slightly elongate, convex, widest across elytral base, slightly tapered from humeral angle to apex. Dorsal surface shiny, not alutaceous. Color black except clypeus, narrow apical border and narrow anterior angle of pronotum, and apical 1/6 of elytra reddish brown, mouthparts, legs, and abdominal sterna 5-6 reddish yellow. Head punctures fine, separated by less than a diameter. Pronotal punctures larger than on head, separated by a diameter or less. Elytral punctures larger than pronotal punctures, separated by a diameter or less, without subsutural row of coarse punctures. Metasternal punctures smaller than on elytron, separated by less than a diameter. Abdominal punctures on sterna fine, dense throughout. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs longer than scutellum. Prosternum with intercoxal carinae extended to apex, convergent from base to apex.



Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex slightly concave, nearly truncate; 6th sternum broadly, shallowly emarginate apically. Genitalia with basal lobe slightly longer than paramere, ventral projection of basal lobe slender, tapered to acute apex with re-curved hook on upper margin, dorsal projection long, nearly parallel sided, narrowed to acute, downward curved apex; paramere long, oval, tapered to acute apex; lateral ala slightly shorter than basal lobe, fused to basal lobe in entire length (Figs. 102, 103); siphon long, curved in basal 1/2, trifurcate apex small (Figs. 104, 105).



Figs. 102-106 - *Scymnus (P.) murilloi* genitalia. 102-105, male; 106, female.

*Female*: Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent anterior to middle, base slender, cornu beaked; ramus well developed, sclerotized infundibulum present (Fig. 106).

*Variation*: Length 2.0 to 2.4 mm, width 1.5 to 1.7 mm. Body form varies from almost regularly oval to widest across elytral base, slightly tapered to elytral apex. Dorsal color varies from typical to reddish brown with median 1/3 of pronotum and broad discal area of elytra dark brown or black.

*Type material*: Holotype male. Colombia, Tol (Toluca), Falan, 15-III-42, Murillo (USNM). Allotype. Colombia, Choco, Andagoya, 18-VIII-1940, Murillo (USNM). Paratypes, 61; 7, same data as holotype; 1, same data as allotype; 1, Brazil, Campinas, Mar., 1924, F.X. Williams Collector, Nunenmacher Collection; 2, "N. G". (Nouvelle Granada, Colombia), Nunenmacher Collection; 1, Brazil, Campinas, Mar., 1924, F.X. Williams Collector, Nunenmacher Collection; 1, Colombia, Bolivar Cartagena, Boca Grande, 21-XII-64, P.R. Craig; 2, Colombia, Cnd., El Colegio, alt. 1210 m, '39, Murillo; 1, Colombia, Dpt. de Cundinamarca, La Esperanza, Alt. 1230M., XII-12-33; 2, Colombia, Cund., Sasaima, 19 Mar 1965, J.A. Ramos Collector; 1, Colombia, Cund., Tena, 22 May 1965, J.A. Ramos Collector; 2, Colombia (Santander), V. Medellin, Sep. 1945, Gallego; 1, Colombia (Santander) Medellin, Oct. 1945, F.L. Gallego, on citrus; 3, Colombia, Sant., Barbosa, Nov '39, Cotton, LM Murillo; 9, Sant., Suaita, 590 m, alt., F.M. Murillo; 14, Colombia, Sant., Suaita, 15-X-'35, alt. 1610 m, Murillo; 4, Colombia, Tol., Armero, 26-30-1977, malaise trap, Peyton & Suarez; 1, Colombia, Val (Valle), Bugalagrande, 28-I-41, alt. 944 m, Murillo; 5, Colombia, (V) (Valle), Palmira, Jan. 15, 1957, G. Bravo V. Collector; 2, Colombia, Val, Palmira, 1085 m, 21-V-'39 and 27-I-'41, Murillo; 1, Venezuela, Zulia, Carrasquero, 29-30 May 1976, A.S. Menke & D. Vincent; 1, Venezuela, Zulia, El Tucuco (45 km SW of Machiques), 5-6 June 1976, A.S. Menke & D. Vincent. (CAS) (USNM).

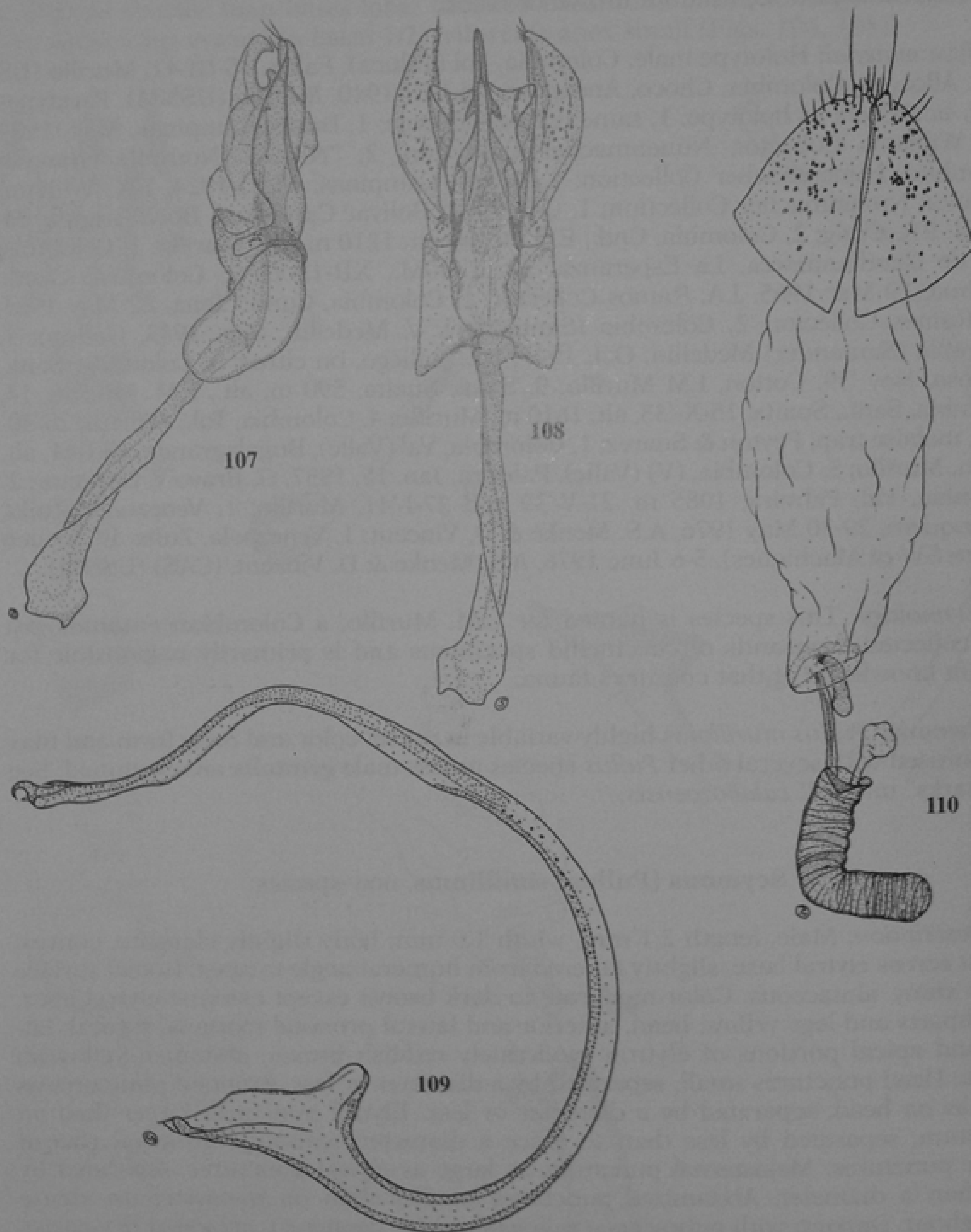
*Etymology*: This species is named for L.M. Murillo, a Colombian entomologist who collected thousands of coccinellid specimens and is primarily responsible for current knowledge of that country's fauna.

*Remarks*: *Pullus murilloi* is highly variable in dorsal color and body form and may be confused with several other *Pullus* species unless male genitalia are examined. See "Remarks" under *P. calaboensis*.

### ***Scymnus (Pullus) simillimus*, new species**

*Description*: Male, length 2.1 mm, width 1.6 mm; body slightly elongate, convex, widest across elytral base, slightly tapered from humeral angle to apex. Dorsal surface feebly shiny, alutaceous. Color moderate to dark brown except extreme elytral apex, mouthparts and legs yellow, head, anterior and lateral pronotal margins, sutural, lateral and apical portions of elytron moderately reddish brown, abdomen yellowish brown. Head punctures small, separated by a diameter or less. Pronotal punctures as large as on head, separated by a diameter or less. Elytral punctures larger than on pronotum, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures smaller than on metasternum, dense throughout. Dorsum with pubescence yellowish white, semierect, arranged in s-curve, individual hairs longer than scutellum. Prosternum with intercoxal carinae extended to apex, strongly convergent from base to apex. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, flattened in median 1/3, apical 1/3 oblique, straight, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, strongly, broadly emarginate; 6th ster-

num broadly, deeply emarginate apically. Genitalia with basal lobe slightly longer than paramere, ventral projection of basal lobe slender, tapered to acute apex with recurved hook on upper margin, dorsal projection long, nearly parallel sided, upper margin produced in anterior 1/4, with posteriorly directed barb, apex angled down; paramere long, slender, sinuate, tapered to acute apex; lateral ala slightly shorter than basal lobe, fused to basal lobe along entire length (Figs. 107, 108); siphon long, robust, curved in basal 3/4, bent down and sinuate in apical 1/4, trifurcate apex small (Fig. 109).



Figs. 107-110 - *Scymnus (P.) simillimus* genitalia. 107-109, male; 110, female.

*Female*: Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent anterior to middle, base slender, cornu beaked; ramus well developed, small sclerotized infundibulum present (Fig. 110).

*Variation:* Length 1.8 to 2.3 mm, width 1.4 to 1.7 mm. Dorsal color varies from entirely dark brown except apical 1/4 of elytra paler to entirely reddish brown with all intergrades between.

*Type material:* Holotype male. Ecuador, Napo, Santa Cecilia (42 Km S.W.), 16 May 1975, Spangler & Langley (USNM). Allotype. Ecuador, Man. (Manabi), Sto. Domingo de los Colorados, (59 Km W) 8 May 1975, Ashley B. Gurney (USNM). Paratypes, 39; 4, same data as holotype; 1, Bolivia, S.C. (Santa Cruz), Santa Cruz, 11-12-1969, P & P Spangler; 1, Ecuador, Los Rios, Babahoyo (10 Km N), 22 June 1975, Collected by A. Langley, J. Cohen, P. Monnig; 20, Ecuador, Limoncocha, 15 June 1977, P.J. Spangler & D.R. Givens, Collected in malaise trap; 1, Ecuador, N.-P (Napo). Santa Cecilia, III-25-31-1969, P. Spangler; 1, Peru, Dpt. Ayacucho, La Mar, Santa Rosa, 640 m, 8-15-IX-1976, Robert Gordon; 13, Peru, Satipo, V-VI, 1941, X, 1942, and 1943, Paprzycki. (USNM).

*Etymology:* The species name is from the Latin *simillimus*, meaning most similar to or like, and refers to the resemblance of this species to *P. murilloi*.

*Remarks:* See "Remarks" under *P. calabozoensis*

### ***Scymnus (Pullus) calabozoensis*, new species**

*Description:* Male, length 2.1 mm, width 1.6 mm; body slightly elongate, convex, widest across elytral base, slightly tapered from humeral angle to apex. Dorsal surface shiny, weakly alutaceous. Color dark brown except head, narrow anterior and broad lateral pronotal areas, and apical declivity of elytra reddish yellow, mouthparts, legs, and abdomen except median 1/3 of sternum 1 yellow.

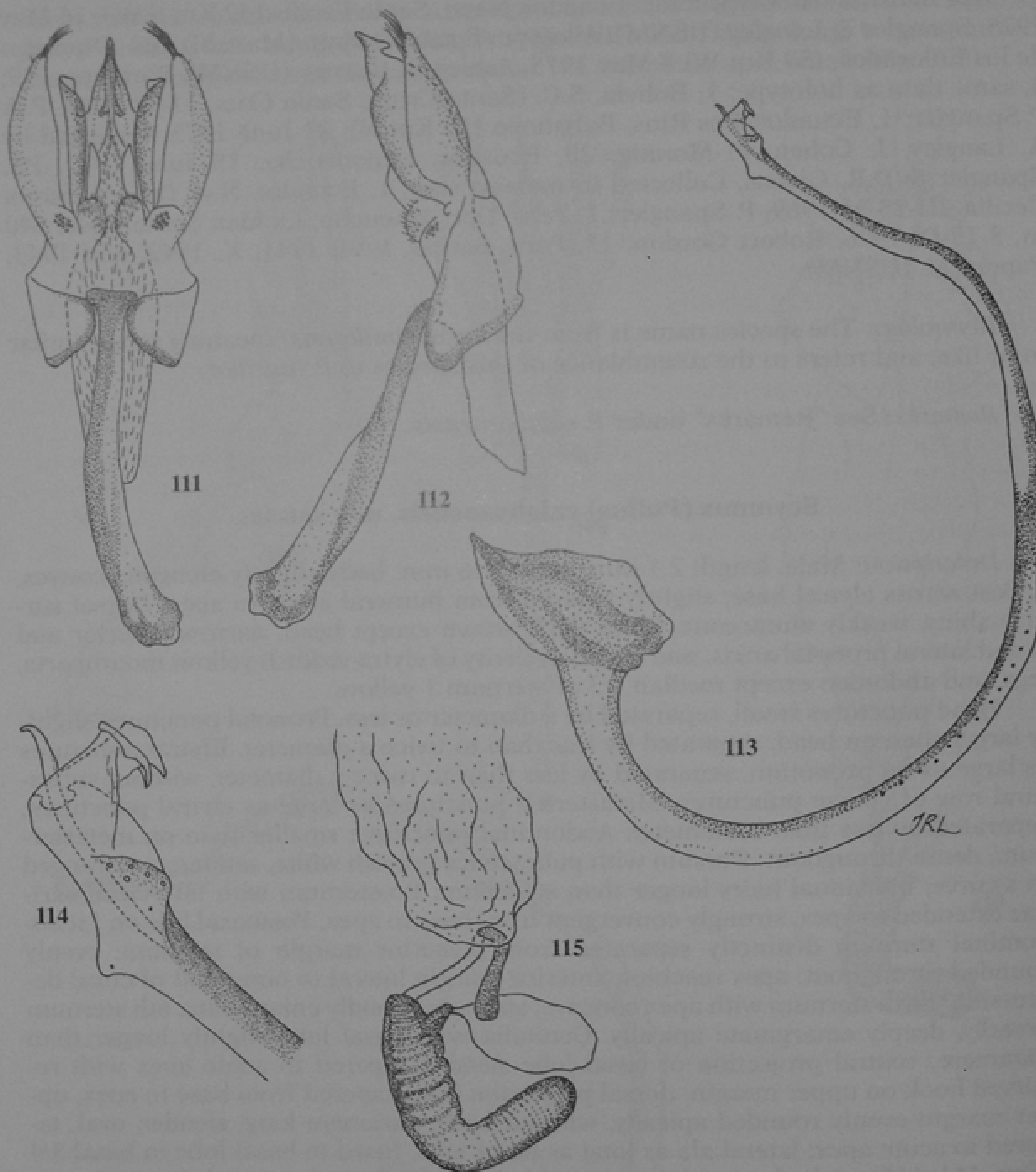
Head punctures small, separated by a diameter or less. Pronotal punctures slightly larger than on head, separated by less than to twice a diameter. Elytral punctures as large as on pronotum, separated by less than to twice a diameter, without subsutural row of coarse punctures. Metasternal punctures as large as elytral punctures, separated by less than a diameter. Abdominal punctures smaller than on metasternum, dense throughout. Dorsum with pubescence grayish white, semierect, arranged in s-curve, individual hairs longer than scutellum. Prosternum with intercoxal carinae extended to apex, strongly convergent from base to apex. Postcoxal line on 1st abdominal sternum distinctly separated from posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, strongly, broadly emarginate; 6th sternum broadly, deeply emarginate apically. Genitalia with basal lobe slightly longer than paramere, ventral projection of basal lobe slender, tapered to acute apex with recurved hook on upper margin, dorsal projection long, tapered from base to apex, upper margin evenly rounded apically, without barb; paramere long, slender, oval, tapered to acute apex; lateral ala as long as basal lobe, fused to basal lobe in basal 3/4 (Figs. 111, 112); siphon long, robust, curved in basal 3/4, bent down and sinuate in apical 1/4, trifurcate apex small (Figs. 113, 114).

*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent anterior to middle, base slender, cornu with extremely small beak; ramus well developed, elongate sclerotized infundibulum present (Fig. 115).

*Variation:* Length 2.1 to 2.3 mm, width 1.6 to 1.7 mm. A single, teneral female paratype is completely pale reddish brown dorsally.



*Type material:* Holotype male. Venezuela, Guar. (Guarico), Calabozo, 7-II-1969, P. & P. Spangler (USNM). Allotype, same data as holotype (USNM). Paratypes, 4; same data as holotype. (USNM).



Figs. 111-115 - *Scymnus (P.) calabozoensis* genitalia. 111-114, male; 115, female.

*Etymology:* *Pullus calabozoensis* is named for the type locality.

*Remarks:* *Pullus murilloi*, *P. simillimus*, and *P. calabozoensis* form a group of closely related species sharing a "broad shouldered", apically tapered body form. They are extremely similar in all respects except certain details of the male genitalia. *Pullus calabozoensis* differs in having an unmodified dorsal projection of the basal lobe and broadly oval parameres. *Pullus simillimus* has an apical crest on the dorsal

projection acutely pointed both anteriorly and posteriorly, and slender, sinuate parameres. *Pullus murilloi* has a dorsal projection with an anterior, downward-directed apex and slender, curved parameres.

***Scymnus (Pullus) dozieri*, new species**

*Description:* Male, length 2.2 mm, width 1.7 mm; body elongate, slightly convex, widest across base of elytra, tapered from base to apex (Fig. 5). Dorsal surface shiny, weakly alutaceous. Color black except head, pronotum (except small, basomedian spot), apical 1/8 of elytra, mouthparts, prosternum, legs, and abdominal sterna 3-6 reddish yellow. Head punctures small, separated by a diameter or less. Pronotal punctures as large as on head, separated by less than to twice a diameter. Elytral punctures small, slightly larger than on pronotum, separated by a diameter or less, without sub-sutural row of coarse punctures. Metasternal punctures much larger than elytral punctures, separated by less than a diameter throughout. Abdominal punctures smaller than on metasternum, becoming smaller posteriorly. Dorsum with pubescence grayish white, semidecumbent, arranged in s-curve, individual hairs shorter than scutellum. Prosternum with intercoxal carinae extended to apex, weakly convergent from base to apex. Basal abdominal sterna with flat, shiny, glabrous area surrounded by dense pubescence. Postcoxal line on 1st abdominal sternum narrowly separated from posterior margin of sternum, evenly rounded throughout, apex reaching anterior margin lateral to outer end of coxal depression. Fifth sternum with apex concave, truncate; 6th sternum with narrow, shallow emargination apically. Genitalia with basal lobe much longer than paramere, ventral projection of basal lobe narrow, strongly sinuate, tapered to bluntly pointed apex, not recurved, dorsal projection long, slender, tapered to rounded apex in apical 3/4; paramere short, slender, tapered to rounded apex; lateral ala slightly shorter than basal lobe, broad, fused to basal lobe in basal 7/8 (Figs. 116, 117); siphon short, robust, curved in basal 1/2, slightly sinuate in apical 1/4, not widened before apex, trifurcate apex small, as wide as preceding portion (Figs. 118, 119).

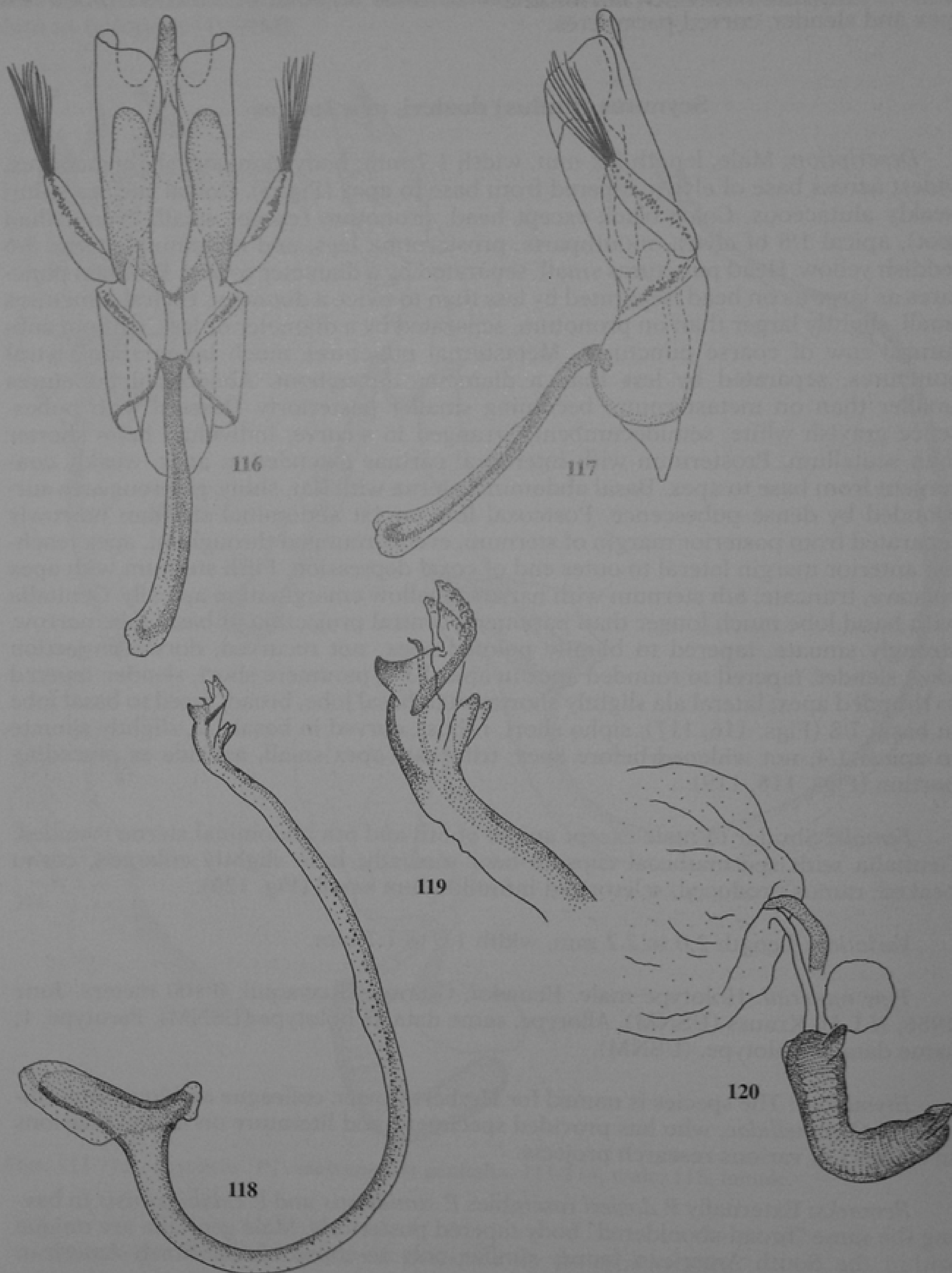
*Female:* Similar to male except apices of 5th and 6th abdominal sterna rounded. Genitalia with spermathecal capsule bent medially, base slightly enlarged, cornu beaked; ramus produced; sclerotized infundibulum small (Fig. 120).

*Variation:* Length 2.0 to 2.2 mm, width 1.5 to 1.7 mm.

*Type material:* Holotype male. Ecuador, Guayas, Guayaquil, 0-100 meters, June 1986, N.L.H. Krauss (USNM). Allotype, same data as holotype (USNM). Paratype, 1; same data as holotype. (USNM).

*Etymology:* The species is named for Herbert Dozier, colleague and long time student of *Coccinellidae*, who has provided specimens and literature on many occasions in support of various research projects.

*Remarks:* Externally *P. dozieri* resembles *P. simillimus* and *P. calaboensis* in having the same "broad-shouldered" body tapered posteriorly. Male genitalia are unique within the South American fauna, similar only to those of the North American *Scymnus (P.) caudalis* LeConte.



Figs. 116-120 - *Scymnus (P.) dozieri* genitalia. 116-119, male. 120, female.

## SUMMARY

The taxonomy of South American *Scymnus* (*Pullus*) species is revised. A key to species, illustrations, synonymies, and descriptions are provided. *Scymnus* (*P.*) *limbaticollis* Mulsant, *argentinicus* Weise, *piceipennis* Brethès, *hians* Brethès, *errator* Brethès, and *percomis* Brethès are recognized as junior synonyms of *S. (P.) rubicundus* Erichson. *Scymnus* (*P.*) *gilberti* Brethès and *S. (P.) electus* Brethès are transferred to the Coccidulini genus *Mimoscymnus* Gordon. *Scymnus* (*Pullus*) *inclytus* Mulsant is transferred to the Cephaloscymini genus *Prodilis* Mulsant. Twenty-three new species are recognized as follows: *S. (P.) gnomus*, *napoensis*, *cerinotum*, *spanglerorum*, *triangularis*, *paprzyckii*, *tiaboensis*, *hamatus*, *trulla*, *pictilis*, *diekei*, *andrewsi*, *demerarensis*, *fryi*, *bennetti*, *gachetensis*, *menkei*, *citreus*, *kraussi*, *murilloi*, *simillimus*, *calabozoensis* and *dozieri*.

## RIASSUNTO

Viene rivista la tassonomia delle specie sudamericane di *Scymnus* appartenenti al sottogenere *Pullus* e ne vengono fornite le chiavi dicotomiche, le descrizioni, le illustrazioni e le sinonimie. *Scymnus* (*Pullus*) *limbaticollis* Mulsant, *argentinicus* Weise, *piceipennis* Brethès, *hians* Brethès, *errator* Brethès e *percomis* Brethès sono considerati sinonimi di *S. (P.) rubicundus* Erichson. *Scymnus* (*P.*) *gilberti* Brethès e *S. (P.) electus* Brethès sono trasferiti al genere di Coccidulini *Mimoscymnus* Gordon, mentre *Scymnus* (*Pullus*) *inclytus* Mulsant è trasferito al genere di Cephaloscymini *Prodilis* Mulsant.

Vengono inoltre descritte 23 nuove specie: *S. (P.) gnomus*, *napoensis*, *cerinotum*, *spanglerorum*, *triangularis*, *paprzyckii*, *tiaboensis*, *hamatus*, *trulla*, *pictilis*, *diekei*, *andrewsi*, *demerarensis*, *fryi*, *benetti*, *gachetensis*, *menkei*, *citreus*, *krausi*, *murilloi*, *simillimus*, *calabozoensis* e *dozieri*.

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## REFERENCES

- BRÈTHES J., 1923 - Catalogue synonymique des Coccinellides du Chili. *Rev. Chilena Hist. Nat.* 25: 453-456.  
 BRÈTHES J., 1925a - Sur une collection de Coccinellides (et un Phalacridae) du British Muséum. *Anales del Museo Nacional de Historia Natural de Buenos Aires* 33: 145-175.  
 BRÈTHES J., 1925b - Coccinellides du British Muséum. *Nunquam Otiosus* IV: 1-11.  
 CASEY T.L., 1899 - A revision of the American Coccinellidae. *J New York Entom. Soc.* 7: 71-169.  
 CROTCH G.R., 1874 - A revision of the Coleopterous family Coccinellidae. *University Press, Cambridge*, 311 pp.  
 DAVIDSON W.M., 1923 - Biology of *Scymnus nubes* Casey (Coleoptera: Coccinellidae). *Trans. Am. Entomol. Soc.* 49: 155-163.



- ERICHSON G.F., 1847 - Conspectus Insectorum Coleopterorum, quae in Republica Peruana observata sunt. *Archiv. für Naturgeschichte* 13: 67-185.
- GOEZE J.A.E., 1777 - Entomologische Beiträge zu des Ritter Linné 12 Ausgabe des Natursystems, vol. 1, Leipzig, 736 pp.
- GORDON R.D., 1976 - The Scymnini (Coleoptera: Coccinellidae) of the United States and Canada: key to genera and revision of *Scymnus*, *Nephus* and *Diomus*. *Bull. Buffalo Acad. Sci.* 28: 1-362.
- GORDON R.D., 1985 - The Coccinellidae (Coleoptera) of America north of Mexico. *J. New York Entom. Soc.* 93: 1-912.
- GORDON R.D., 1987 - A catalogue of the Crotch collection of Coccinellidae (Coleoptera: Coccinellidae (Coleoptera)). *Occas. Papers Syst. Entom.* 3: 1-46.
- GORDON R.D., 1994 - South American Coccinellidae (Coleoptera), Part IV: definition of Exoplectrinae Crotch, Azyinae Mulsant, and Coccidulinae Crotch; a taxonomic revision of Coccidulini. *Rev. Brasileira Entomol.* 38: 681-775.
- GORDON R.D., 1999 - South American Coccinellidae (Coleoptera), Part VI: a systematic revision of the South American Diomini, new tribe (Scymninae). *Ann. Zool. Mus. Inst. Zool. Polish Acad. Sci.* 49 (supplement 1): 1-219.
- GORHAM H.S., 1897 - Biologia Centrali-Americana, Insecta, Coleoptera: Coccinellidae 7: 217-240.
- HORN G.H., 1895 - Studies in Coccinellidae. *Trans. Am. Entom. Soc.* 22: 81-114.
- KORSCHESKY R., 1931 - Coleopterorum Catalogus, Pars 118. Coccinellidae. I. Berlin, 224 pp.
- KUGELANN K.G., 1794 - Verzeichniss der in einigen Gegenden Preussens jetzt entdeckten Käferarten nebst kurzen Nachrichten von denselben. *Neues Magazin für Liebhaber der Entomologie* 2: 252-256, 3: 257-306, 4: 477-512, 5: 513-582.
- LECONTE J.L., 1852 - Remarks upon the Coccinellidae of the United States. *Proceed. Acad. Nat. Sci.*, Philadelphia 6: 129-145.
- MULSANT M., 1850 - Species de Coléoptères trimères sécuripalpes. *Ann. Sci. Phys. Natur.*, Lyon 1-1104.
- MULSANT M., 1853 - Supplément a la monographie des Coléoptères trimères sécuripalpes. *Opuscles Entomologiques* 3: 1-178.
- NUNENMACHER F.W., 1934 - Studies amongst the Coccinellidae, No. 6-New species. *Pan-Pacific Entomologist* 10: 17-21.
- PHILIPPI R.A., PHILIPPI F.H.E., 1864 - Beschreibung einiger neuen Chilenischen Käfer. *Stettiner Entomologische Zeitung* 25: 313-406.
- THUNBERG C.P., 1795 - Dissertatio entomologica sistens insecta Suecica 9: 105-113.
- WEISE J., 1906 - Hispinae, Coccinellidae et Endomychidae Argentina et vicinitate e collectione Bruchiana. *Revista del Museo de La Plata* 12: 227-231.
- WHITEHEAD V.G., 1965 - The validity of the higher taxonomic categories of the tribe Scymnini (Coleoptera: Coccinellidae). Unpublished dissertation, Graduate Division of the University of California, 312 pp.
- WINGO C.W., 1952 - The Coccinellidae (Coleoptera) of the upper Mississippi Basin. *Iowa State J. Sci.* 27: 15-53.