

New Neotropical Species of *Desmopachria*
(*Desmopachria s. str.*) Babington
(Coleoptera: Dytiscidae)

Frank N. Young
Biology Department
Indiana University
Bloomington, IN 47405

Abstract

New species of *Desmopachria* (*s. str.*) are described and male external genitalia figured to aid in identification. The new taxa are: *D. majusculus* (Guatemala); *D. zelota* (Brasil); *D. nitidoides* (Paraguay); *D. balfour-brownei* (Brasil); *D. striga* (Bolivia, Brasil); *D. subfasciata* (Bolivia); *D. geijskesi* (Surinam); and *D. margarita* from Pearl Islands, Panama (*nomen nova*) for *D. glabricula* Sharp, 1887, nec *D. glabricula* Sharp, 1882 from Mexico. Related species which may be confused with the newly described taxa are diagnosed and genitalia figured.

Introduction

The genus *Desmopachria* and its several so-called subgenera is confined to the New World and is most diverse in the tropical regions of South and Central America. The members of the subgenus *Desmopachria* (*s. str.*) are mostly small, seed-like creatures which are very difficult to identify without examination of the male external genitalia. A few, however, such as the members of the *D. signata-bifasciata* Group have distinctive lighter patterns on the elytra. It is hoped that the following descriptions and figures will aid in the identification of these difficult species until proper keys can be prepared.

Abbreviations used are as follows: NMNH (U.S. National Museum of Natural History, Washington, DC, USA). BMNH (British Museum, Natural History, London, U.K.). FSCA (Florida State Collection of Arthropods, Gaines-

ville, FLA. U.S.A.). MNd'NH (Museum National d' Histoire Naturelle, Paris, France).

This is a contribution from the Biological Laboratories of Indiana University aided by grants from the NSF, NIH, and the Indiana University Foundation.

Desmopachria (*s. str.*) *majusculus* sp. nov.

Diagnosis: A small species about 1.4 to 1.6 mm in total length. Distinguishable by the light bases of the elytra contrasting with darker parts of head, pronotum, and posterior parts of elytra, and by the male external genitalia (Fig. 1) of the *grana-convexa* type without sclerotized median aedeagus or other detectable structures separate from the parameres. (A pair of internal appendages are probably present, but cannot be distinguished from the dried and collapsed membranes.) No sutural stria detectable, but a short discal stria of impressed punctures present. Clypeal margin rounded not truncate in front. Prosternal process similar, pointed in both sexes. Metacalcarea not serrate.

Holotype Male: ovate, not attenuate behind, somewhat flattened dorso-ventrally. Total length 1.52 mm; greatest width near middle of elytra about 1.04 mm; width of pronotum at base about 0.76 mm; width of pronotum at apex about 0.48 mm; length of pronotum at midline about 0.36 mm. **Head** moderately finely and sparsely punctate on disk, punctures separated by 3 to 5 times diameter of each; more coarsely

and closely punctate in clypeal impressions and alongside eyes; clypeal margin fine, not truncate in front. **Pronotum** on disk with somewhat larger punctures than on head, but erratic and sparse; coarser, closer punctures on base on either side not reaching the outer margin and narrowly across behind anterior margin. **Elytral disk** with punctures similar to those on disk of pronotum, but closer together and in more regular rows; an impressed discal series of impressed punctures about middle of base each elytron and extending about 1/4 length of each; no sutural stria evident; punctures finer and sparser toward sides and apices. **Venter** with punctures on coxal laminae about as on disk of pronotum with sparse fine scratch-like sculpture irregularly distributes between punctures; abdominal sternites with fine punctures, the last visible sternite transversely impressed and with some slightly coarser punctures. **Color:** Head with base and disk reddish brown, the clypeus and sides brownish yellow. Pronotum light reddish brown with sides brownish yellow. Elytra brown with suture narrowly darker and bases brownish yellow. Epipleurae and sides of elytra brownish yellow. Venter with metasternum and coxal laminae brown with abdominal sternites light brownish yellow; prosternum and appendages brownish yellow.

Allotype Female: similar to male except lighter in color. (Fully mature specimens of both sexes are probably much darker ventrally.) Total length 1.44 mm; greater width near middle of elytra about 1.04 mm; width of pronotum at base about 0.72 mm; width of pronotum at apex about 0.56 mm; length of pronotum at midline about 0.32 mm. Neither male nor female with detectable microsculpture either above or below.

Holotype, allotype, and 12 paratypes from Guatemala: 10 mi. E. Guatemala City, 8 Aug. 1965, P. J. Spangler, U. S. National Museum of Natural History (NMNH).

Desmopachria (s. str.) balfour-brownei
sp. nov.

Diagnosis: A small species with distinctively patterned elytra and distinctive male external genitalia (Fig. 6). Length about 1.36 to 1.44 mm; greatest width near middle of elytra about 0.88 mm. Dorsum finely and rather sparsely punctate; elytra without either sutural or discal striae. Prosternal process truncate, similar in the sexes. Metacalcarea not serrate, the inner (lower) less than 1/2 length of other.

Holotype Male: Body form ovate, attenuate behind, not greatly flattened. Total length 1.36 mm; greater width near basal 1/3 of elytra about 0.88 mm; width of pronotum at base about 0.72 mm; width of pronotum at apex about 0.40 mm; length of pronotum at midline about 0.28 mm. **Head** with fine punctures sparsely distributed and separated by 2 to 5 times the diameter of each puncture; clypeus distinctly margined, not truncate. **Pronotum** punctate much like head, but with a few coarser punctures, irregularly distributed toward base and along anterior margin. **Elytra** with slightly coarser punctures than disk of pronotum, but punctures shallow and irregularly distributed and not at all striate. All discal punctuation fine, shallow, and inconspicuous compared to that of many other species of the subgenus. **Venter** with coxal laminae and abdominal sternites inconspicuously punctate, smooth and shining. **Color:** Head and pronotum largely light brownish yellow, somewhat darker along base of each. Elytra with dark brown suture and two transverse fasciae of lighter markings representing the unmelanized portion of the cuticle; one fascia across base with some irregular dark marks and a dark humeral mark, but not reaching suture of elytra (Fig. 10); one made up of two small transverse spots on the middle of each elytron. Venter and appendages yellowish brown darker in irregular areas. Elytra also with apical lightening extending up sides and alongside the suture.

Allotype (Paratype Female): Very similar to holotype, but slightly larger; total length 1.44

mm; greatest width near basal 1/3 of elytra 0.88 mm; width of pronotum at base about 0.64 mm; width of pronotum at apex about 0.48 mm; length of pronotum at midline about 0.28 mm.

Holotype, allotype, and 19 paratypes from Brasil: Amazonas, Igarape des tres Casas, 10-12 Nov. 1941, H. Sioli with label reading in German "Zw. *Tobercorona* wurzeln am Ufer" or roughly "Among *Tobercorona* rooted on the bank." in BMNH.

Desmopachris (s. str.) *zelota* sp. nov.

Diagnosis: A small species about 1.2 mm in length by about 0.8 mm in greatest width near middle of elytra, distinguishable from other members of the *nitida* group by the male external genitalia (Fig. 2). Parameres of male external genitalia are less conspicuously bifid than in related species, and the aedeagus is diagnostic.

Holotype Male: Ovate, somewhat attenuate behind. Total length 1.2 mm; greatest width near middle of elytra about 0.80 mm; width of pronotum at base 0.65 mm; width of pronotum at apex about 0.38 mm; length of pronotum at midline about 0.24 mm. **Head** finely, somewhat sparsely punctate; clypeal impressions inconspicuous; anterior edge of clypeus distinctly margined but margin not truncate in middle. **Pronotum** with disk punctate about as on head; a few coarser, irregular punctures along base and anterior margin. **Elytra** distinctly more coarsely punctate on bases near suture than on head or pronotum; puncture in moderately regular rows, but no indication of sutural or discal striae; punctures becoming finer and shallower toward sides and apex. **Venter** with coxal laminae and abdominal sternites finely but sparsely and shallowly punctate; last visible sternite appearing nearly smooth; metatrochanters larger than in *granoides* Young. **Color:** Head and pronotum largely brownish yellow; elytra slightly darker with dark markings along suture and lighter along side edges. Coxal laminae about same color as elytra; abdomen contrastingly lighter brownish yellow.

Allotype Female: Very similar to male nearly same size and similar in punctation and color.

Holotype from Brasil: Mato Grosso, Cuiaba (Cuyaba), Agriculture Experiment Station, 10 May 1972, ultraviolet light trap, W. H. Whitcomb in FSCA. **Allotype** from Brasil: Mato Grosso, Jacare, Parque Nacional Xingu, Nov. 1965, M. Alvarenga and W. C. A. Bokermann in FSCA. **Paratypes:** Same data as holotype, 3 males, 1 female. Same data as allotype, 35 males and females. Brasil, Mato Grosso, Corumbá, at light, Zimmermann Collection, Munich, 2 males. Paratypes will be distributed to various museums in the United States and abroad.

Desmopachria (s. str.) *subfasciatus* sp. nov.

Diagnosis: A small, smooth species about 1.04 to 1.08 mm in total length by about 0.72 mm in width at basal 1/3 of elytra. Elytra vaguely patterned with yellow brown spots and markings against a slightly darker background. Metacalcarea not serrate, the lower about 1/2 length of other. Prosternal process with small protuberant apex, similar in the sexes. Male external genitalia diagnostic (Fig. 8).

Holotype Male: Body form ovate, not greatly flattened. Total length 1.04 mm; greatest width near basal 1/3 of elytra 0.72 mm; width of pronotum at base about 0.56 mm; width of pronotum at apex about 0.40 mm; length of pronotum at midline about 0.20 mm. **Head** finely and sparsely punctate, clypeal impressions not evident indicated by closer rows of fine punctures; clypeus distinctly margined, not truncate in front. **Pronotum** disk punctate much as front of head, with a few coarser punctures along base toward the sides. **Elytra** punctate much like pronotum, but with a distinct discal stria of coarser, closer punctures. No indication of a sutural stria. Punctuation of dorsal surface fine and irregular, more so than in many members of the subgenus. **Venter** with coxal laminae and abdominal sternites finely punctate, shining; last visible sternite with irregular tubercles toward middle. **Color:** Head light

brownish yellow, darker alongside of eyes due to lack of underlying tissue. Pronotum about same color as head. Elytra darker with brownish yellow markings of a spot on base near suture and another vague spot near the humerus; apices also lighter with narrow lighter stripes running up sides and along suture; all markings vague and variable.

Allotype (Paratype Female): Very similar to male except slightly larger. Total length 1.08 mm; greatest width near basal 1/3 of elytra about 0.72 mm; width of pronotum at base about 0.56 mm; width of pronotum at apex about 0.44 mm; length of pronotum at midline about 0.20 mm.

Holotype, allotype and 21 paratypes from Trinidad, Bolivia. Holotype collected 8 Aug. 1937, allotype 7 Aug. 1937, paratypes collected on various dates 7 Aug. to 7 Sept. 1937, by H. E. Hinton. One female paratype from Santa Ana, Bolivia, 14 Aug. 1937, H. E. Hinton. In (BMNH).

Desmopachria (s. str.) signata
Zimmermann

Desmopachria signata Zimmerman, 1921, Archiv f. Naturges, 87, Abt. A, 3 Heft, p. 192 (Brasil: Mato Grosso, Corumba).

Diagnosis: A small species 0.96 to 1.5 mm in length with elytra with a distinctive but variable pattern of light markings and distinctive male external genitalia (Fig. 9). *D. signata* is widely distributed from Panama and Colombia to Brasil (Mato Grosso and Goias).

The male external genitalia resemble those of some members of the *Grana-Convexa* group, but the aedeagus is distinctly bifid.

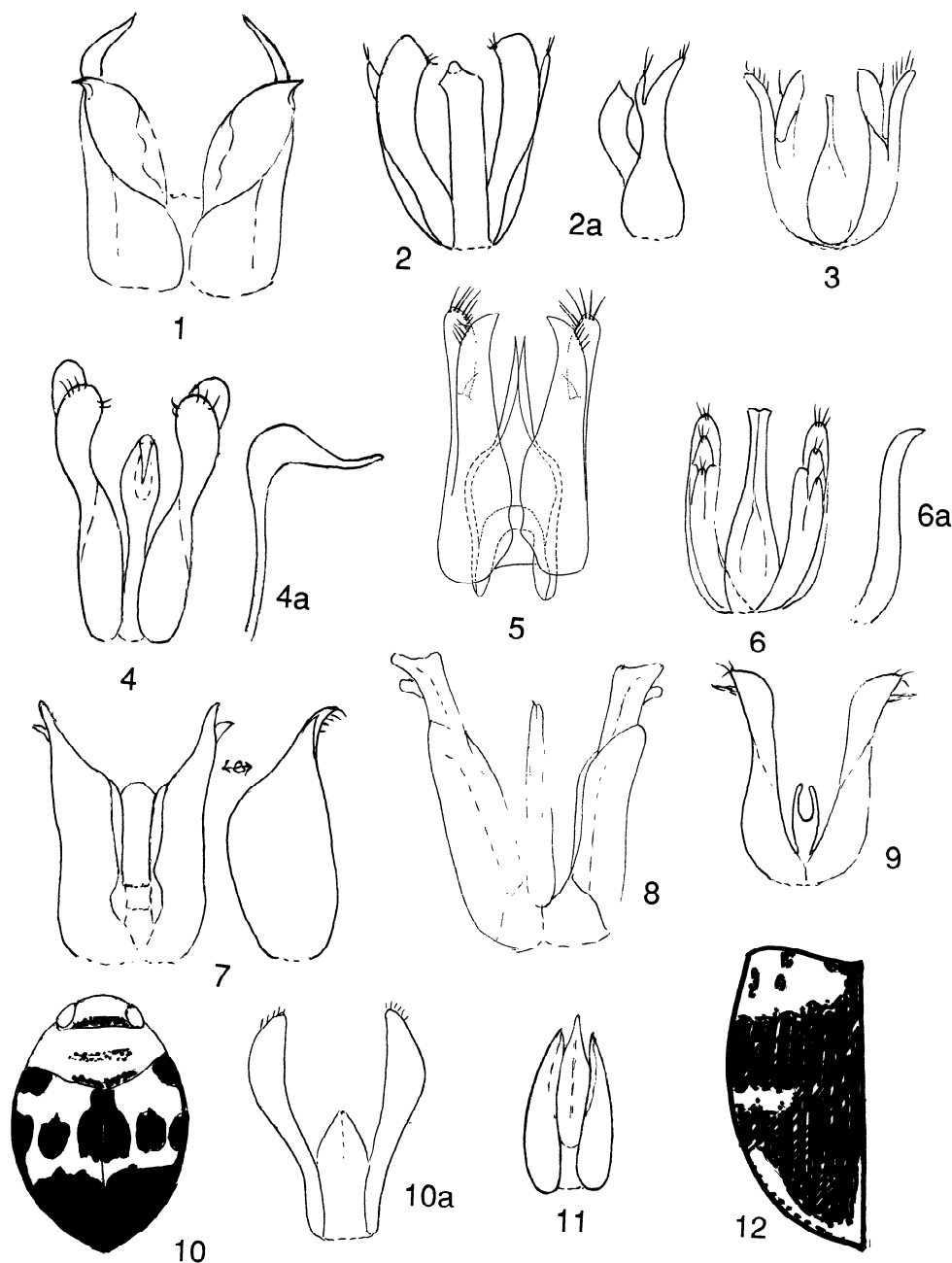
The elytral pattern although basically similar to Fig. 9 is quite variable. In the species from the Mato Grosso the light areas are reduced by melanization. Teneral specimens have more extended light markings.

Desmopachria (s. str.) striga sp. nov.

Diagnosis: A small species with maculate elytra. Total length 1.1 to 1.3 mm; greatest width near middle of elytra about 0.72 to 0.80 mm. Male external genitalia distinctive (Fig. 7). Prosternum pointed in both sexes. Metacalcarea not serrate.

Holotype Male: Ovate, not greatly flattened. Total length 1.20 mm; greatest width near middle of elytra about 0.80 mm; width of pronotum at base about 0.56 mm; width of pronotum at apex about 0.40 mm; length of pronotum at midline about 0.20 mm. **Head** finely punctate on disk punctures separated by about 2 to 5 times the diameter of a single puncture, rather erratically and sparsely distributed; clypeal impressions not conspicuous, not marked by rows of coarser punctures; clypeal margin broadly rounded, not at all truncate in front. **Pronotum:** A little more coarsely punctate than head on disk, punctures not much coarser, but somewhat closer along behind anterior margin and on either side of suture along base. **Elytra** with moderately coarse punctures near suture at bases and punctures in more or less regular rows, becoming finer and sparser laterally and toward the apices; no indication of impresses sutural or discal striae. **Venter** with fine sparse punctures on coxal lamina and metasternum; some scratch-like fine sculpture on coxal laminae forming irregular polygons; abdominal sternites inconspicuously punctate; last visible sternite transversely impressed, but almost impunctate. **Color:** Head brownish yellow; pronotum about same color as head on disk darker brown along anterior edge and on either side of suture at base; elytra reddish brown with indistinct brownish yellow maculae and lighter along edges with irregular maculae at base laterally and apically. (Some paratypes are more darkly colored and some lighter.)

Allotype Female: Very similar to male and almost identical in measurements. Color somewhat lighter, the elytral markings more conspicuous.



Figures 1-12. Male external genitalia and diagrammatic color patterns of some species of *Desmopachria* (s. str.). 1) External genitalia of male of *D. majusculus* Young ventral aspect in copulatory position; 2) Same of *D. zelota* Young. 2a. Same, lateral aspect of aedeagus and paramere; 3) Same as Fig. 1 of *D. nitidoides* Young; 4) Same as Fig. 1 of *D. bimaculata* Young; 4a) Same, lateral aspect of aedeagus; 5) Same as Fig. 1 of *D. margarita* Young; 6) Same as Fig. 1 of *D. balfour-brownei* Young; 6a) Same, aedeagus lateral aspect 7) Same as Fig. 1 of *D. striga* Young; 7a) Same, lateral aspect of paramere; 8) Same as Fig. 1 of *D. subfasciata* Young 9) Same as Fig. 1 of *D. signata* Zimmermann 10) Diagrammatic representation of color pattern of *D. bifasciata* Zimmermann; 10a) Same as Fig. 1 of *D. bifasciata*; 11) Same as Fig. 1 of *D. geijskesi* Young; 12) Same as Fig. 10, left elytron only of *D. balfour-brownei*.

Holotype from Peru; Loreto, Estiron, 13-27 Nov. 1961, at light Borys Malkin in FSCA. **Allotype** from Peru: Loreto, Yarinacocho (Pucallpa), 3 Nov. 1961, at light, Borys Malkin in FSCA. **Paratypes** in FSCA and distributed in other museums are designated as follows: Bolivia: Santa Cruz, Sara 3 kms. south of Santa Rosa, 2 Feb. 1969, ultraviolet light trap, A. Martinez and R. E. Woodruff, 1. Brasil: Amazonas, Igarape Belem, near confluence of Rio Solimoes, 5-30 Apr. 1966, Borys Malkin, 7; Para, Aldeia Aracu-Igarape Gurupi-Umirape, 50 km east of Caninde, 1-31 May 1963, Borys Malkin.

Desmopachria (s. str.) *geijskesi* sp. nov.

Diagnosis: A small species about 1.1 to 1.36 mm in length by about 0.72 to 0.96 mm in greatest width near middle of elytra. Elytra with indefinite lighter colored markings on humeri and along sides not reaching suture at base and tending to break up into elongate spots or stripes toward middle and apical portions of elytra. Prosternal process lanceolate in both sexes. Metacalcarea not serrate. Metatarsal "hairs" long and conspicuous. Dorsum and venter without any evident microsculpture. Male external genitalia simple, but distinctive (Fig. 11).

Holotype Male: Ovate, not attenuate behind, somewhat flattened. Total length 1.2 mm; greatest width near middle of elytra about 0.72 mm; width of pronotum at base about 0.64 mm; width of pronotum at apex about 0.4 mm; length of pronotum at midline about 0.28 mm. **Head** with disk moderately finely, sparsely and irregularly punctate; punctures separated by 2 to 5 times the diameter of a single puncture; clypeal impressions indistinct; punctures closer and somewhat coarser at sides above antennae; anterior margin rather thick, feebly truncate in front. **Pronotum** with discal punctation about like that of disk of head; a row of coarser, closer punctures just behind anterior margin; more coarsely and closely punctate toward sides but punctures not conspicuous. **Elytra** at base finely and shallowly punctate, but a discal stria detectable at base of each; punctures a little coarser on humeri and down sides of each elytron. **Venter**

with metasternum and cosal lamina finely and shallowly punctate; microsculpture not evident, possibly represented by a few erratic scratch-like structures; abdominal sternites appearing almost impunctate; last visible sternite not transversely impressed nor conspicuously punctate. **Color** light reddish brown with lighter brownish yellow markings on the elytra; head brownish yellow, somewhat darker along base; pronotum light reddish brown, lighter at sides and darker brown along base at middle; elytra reddish brown with indefinite yellow markings on base not reaching suture, and extending onto middle and apical portion of each elytron as elongate spots or yellowish stripes. Venter with appendages, prosternum, and abdominal sternites brownish yellow; metasternum and coxal lamina light reddish brown.

Allotype Female: Very similar to holotype and elytral pattern showing similar stripes. Total length 1.36 mm; greatest width near middle of elytra about 0.8 mm; width of pronotum at base about 0.65 mm; width of pronotum at apex about 0.44 mm; length of pronotum at midline about 0.28 mm.

Holotype, allotype, and three paratypes from Surinam: Mondir, Fabihr, 8 Aug. 1939, D. C. Geijskes, in Rijksmuseum voor Natuurlijke Historie, Leiden, Netherlands.

Desmopachria (s. str.) *bifasciatus*
Zimmermann

Desmopachria bifasciata Zimmermann, 1921, Archiv fur Naturgeschichte, Vol. 87, Abt. A, 3 Heft, p. 192 (Brasil, Mato Grosso, Corumbá).

Diagnosis: A large species for the subgenus about 1.9 mm in total length. Male external genitalia diagnostic (Fig. 10a). Elytral dark pattern also characteristic (Fig. 10). This species is one of the commoner insects taken in light trap collections in the Mato Grosso. It apparently responds to both white light and ultra violet (so-called "black light").

Desmopachria (s. str.) *pulvis* Guignot

Desmopachria pulvis Guignot, 1958, Revue Française d'entomologie, 25: 35, Figs. 2,3. (Brasil, Mato Grosso, Salobra, leg. M. Perreira.)

Diagnosis: Similar to *D. signata* Zimmermann, but somewhat larger than most. Male external genitalia somewhat similar to those of *D. signata*, but with the bifid aedeagus as long as or longer than the parameres. Head and thorax brownish yellow, elytra dark brown with basal yellow spots. Holotype about 1.4 mm in total length.

I have seen only a paratype female in the Guignot Collection (MNd'NH).

Desmopachria (s. str.) *nitidoides* sp. nov.

Diagnosis: Similar in shape to *D. nitida* Babington, but smaller and with punctuation of elytra about as coarse but not as dense; hind coxal lamina somewhat less coarsely punctate. Similar in size to *D. granoides* Young and *D. liosomata* Young, but smaller and with somewhat coarser punctuation. Very similar to *D. margarita* Young (= *D. glabricula* Sharp, 1887, nec Sharp, 1882), of which it may be only a subspecies. The male external genitalia of *D. margarita* differ in detail as indicated in the figures, however, the separation of the tip of the aedeagus in Fig. 3 (delineated by J. Balfour-Browne) is an artifact produced by the method of mounting.

Holotype Male: Ovate, not greatly flattened. Total length 1.28 mm; greatest width near middle of elytra about 0.80 mm; width of pronotum at base about 0.64 mm; width of pronotum at apex about 0.48 mm; length of pronotum at midline about 0.28 mm. **Head** finely, sparsely, and irregularly punctate on disk; clypeal impressions inconspicuous; rows of slightly coarser punctures along inner margins of eyes present, but not conspicuous; clypeal margin thickened and distinctly margined, but not at all truncate anteriorly. **Pronotal disk** punctate about as on disk of head with slightly coarser punctures

forming a transverse band just behind the front margin and coarser punctures along base and on sides; lateral punctures not as coarse as those along base in middle. **Elytra** with relatively coarse punctures on bases becoming finer and sparser laterally and apically as usual; no indication of discal striae and only a vague indication of a sutural stria near the middle of the left elytron only. **Venter** with metasternum and coxal lamina irregularly and sparsely punctate the punctures about the same size as those on the pronotal base; indistinct indications of microsculpture between punctures. Abdominal sternites finely, irregularly punctate; last visible sternite feebly transversely impressed, but not conspicuously punctate. **Color:** Head, pronotum, epipleurae, venter, and appendages brownish yellow; elytra reddish brown, contrasting with lighter head and pronotum.

Holotype and two **paratypes** from Paraguay, Puerto. P. Stoessner, 5-6 Jan. 1966, leg. Mahunta, in Termesztudományi Múzeum (Hungarian Natural History Museum), Budapest.

Desmopachria (s. str.) *margarita*
nomen nova

Desmopachria glabricula Sharp, 1887, Biologia-Centralia Americana, 1, pt. 2; 752 (Panama, David, San Miguel in Pearl Islands, Champion) nec. *D. glabricula* Sharp, ibid. p. 18 (Mexico).

Desmopachria (s. str.) species near *glabricula*, Young, 1986, Coleopt. Bull., 40 (3): 271 (Panama as above).

Diagnosis: Similar to *D. glabricula*, the dorsal punctuation very fine and sparse. Male external genitalia (Fig. 5) diagnostic.

Holotype and paratypes in Biologia-Centralia Americana material in BMNH. Labelled *Desmopachria glabricula* Sharp.

Total length 1.4 mm; greatest width near middle of elytra about 1.0 mm.

Literature Cited

- Sharp, D.** 1882. *Biologia Centrali-Americana*. Insecta, Coleoptera. 1 (Part 2), pp. xv + 140, 4 pls.
- Sharp, D.** 1887. Same (supplement), pp. 748-775.
- Young, F.N.** 1986. Predaceous water beetles of the genus *Desmopachria* Babington: The Nitida Group (Coleoptera: Dytiscidae). *Coleopt. Bull.*, 40 (3): pp. 269-271.
- Zimmermann, A.** 1921. Beitrage zur Kenntnis der sudamericanischen Schwimmkafer nebst 41 Neubeschreibungen. *Archiv. fur Naturegesch.* 87, Abt. A, 3 Heft, pp. 181-206.