Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL., S. PAULO, VOL. 29(11): 71-78, 1 pl. 8.X.1975

NEW AND LITTLE KNOWN NEOTROPICAL COLEOPTERA IV. NOTES ON SPERCHEIDAE, ESPECIALLY *SPERCHEUS FIMBRIICOLLIS* BRUCH

HANS REICHARDT [1]
SERGIO A. VANIN [1, 2]
PAUL J. SPANGLER [3]

ABSTRACT

Spercheus fimbriicollis *Bruch,* 1915, *the only New World species of Spercheidae, already known from localities in Argentina and Bolivia, is discovered in the Brazilian state of Mato Grosso (Salobra). Morphological details (mouthparts, antennae, male and female genitalia, wings) are studied; the antennal structure of Spercheidae is discussed.* Spercheus texanus *Spangler,* 1961, *described from Texas, United States, is synonymized with the European* S. emarginatus *(Schaller,* 1783).

During preparation of a sample of aquatic beetles collected at light in Salobra, state of Mato Grosso, Brazil, a series of seven specimens was recognized as a species of *Spercheus*. At first it appeared to be different from the only Neotropical representative of the family, Bruch's *Spercheus fimbriicollis*. Removal of the dirt crust which normally covers specimens of this family, however, showed that we had the same species, which thus is for the first time recorded from Brazil.

A check through the literature showed that besides *Spercheus fimbriicollis* Bruch, 1915, the only other known New World species is *Spercheus texanus* Spangler, 1961, from the United States. As will be shown below, however, *Spercheus texanus* is a junior synonym of the European *Spercheus emarginatus* (Schaller, 1783).

Elsewhere the family, with its single genus, is represented in Europe, Africa (including Madagascar), Asia and Australia, with a total of 15 species.

The family is still poorly known, and most authors prefer to consider it as a subfamily of Hydrophilidae. We prefer to follow Crowson, considering Spercheidae as a distinct family of Hydrophiloidea. The knowledge of *Spercheus* is still incomplete probably due to the

1. Museu de Zoologia, Universidade de São Paulo.
2. Bolsista, Fundação de Amparo à Pesquisa do Estado de S. Paulo.
3. Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

rareness of most species. Most authors have restricted themselves to the description of new species, frequently without reference to previously known forms. This stimulated a study of certain morphological structures of the South American species, as a contribution towards the better knowledge of the whole group. *Spercheus fimbriicollis,* at first, seeems to differ much from the other known species, but its morphology in general agrees with that of the genus, and it seems even to share some characters with the Sudanese *Spercheus burgeoni* d'Orchymont, 1929. These two species differ very much from the other species by the two frontal swellings (of *Spercheus burgeoni* only the female has been described; in *Spercheus fimbriicollis* both sexes bear the swellings) and by the elytra, both ending in a pre-sutural tooth.

Mouthparts apparently have only been described previously for the European *Spercheus emarginatus* (Reitter, 1909, pl. 79, figs. 1c-g). The similarities of the mouthparts of *S. emarginatus* with the mouthparts of *S. fimbriicollis* (figs. 3-7) are very striking, the only difference being details of the mandibles.

The membranous wings of *Spercheus fimbriicollis* (fig. 11) agree with the basic hydrophiloid wing (Crowson, 1954, fig. 5), in having the "M-Cu loop", but lacking the also typical "W" cell, thus differing from Hydrophilidae.

The aedeagus (fig. 10) of *Spercheus fimbriicollis* is similar to those of some species, but apparently differs very much from the African species in having a thin median lobe and large parameres (in the African species the median lobe is usually much better developed than the thin parameres; see d'Orchymont, 1929).

The female genitalia of *Spercheus* is described and figured for the first time (fig. 9). Description: coxite (c) unsegmented, with basal looping which is articulated to the paraproct (pp); stylus (st) unisegmented, with a few apical setae; valvifer (vf) with four apical setae, approximately as long as the valvifer.

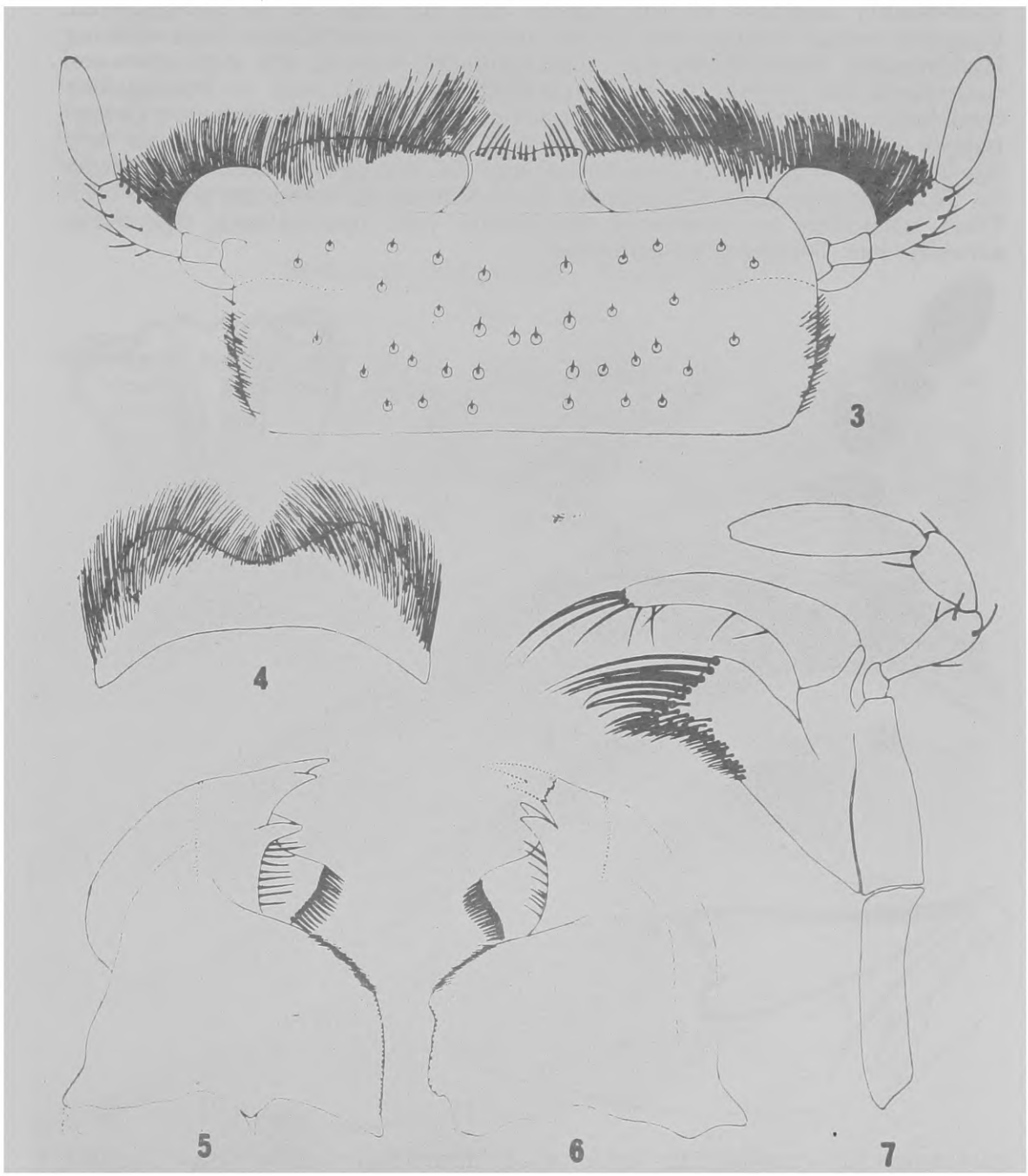
Lack of data on the female genitalia of Hydrophiloidea makes comparisons almost impossible, and does not allow final conclusions beyond the fact that it points to Hydrophiloidea. It is, however, clear that the female genitalia of *Spercheus fimbriicollis* is similar to that of *Hydrophilus triangularis* Say (Tanner, 1927: 21, figs. 34, 35), especially in regards to the structure of coxite and style, and presence of valvifer and paraproct. *Spercheus fimbriicollis* differs from *Hydrophilus triangularis* by the long apical setae of the valvifer (absent in *Hydrophilus*); the absence of a proctiger and remnants of the tenth sternite, both present in *Hydrophilus,* and lacking in the single dissected female of *Spercheus fimbriicollis,* are also important differences.

The number of antennal segments of the genus is apparently not yet clearly established, at least there are quite different and confusing interpretations in the literature. Our conclusion, based on cleared and Canada Balsam mounted antennae, is that *Spercheus fimbriicollis* has 7-segmented antennae (fig. 8), as reads Crowson's description for the family (1954: 20, 22).

In a paper mainly concerned with a hydraenid from the Kerguelen Islands, d'Orchymont (1938: 79-85, figs. 1-6) tried to establish the correlation between the antennal segments of Palpicornia, tentatively establishing a phylogenetic line from one type to the next. The antenna of *Spercheus emarginatus* was described as 8-segmented (fig. 12, adapted from d'Orchymont's fig. 1). The 4-segmented, pubescent club

was described as separated from a large, spheroid, also pubescent III segment, by a small, glabrous cupule; another small, also glabrous segment was described between the scape and III. The same antennal formula (4 + 4 = 8) was later accepted for *Spercheus fimbriicollis* (d'Orchymont, 1939: 253).

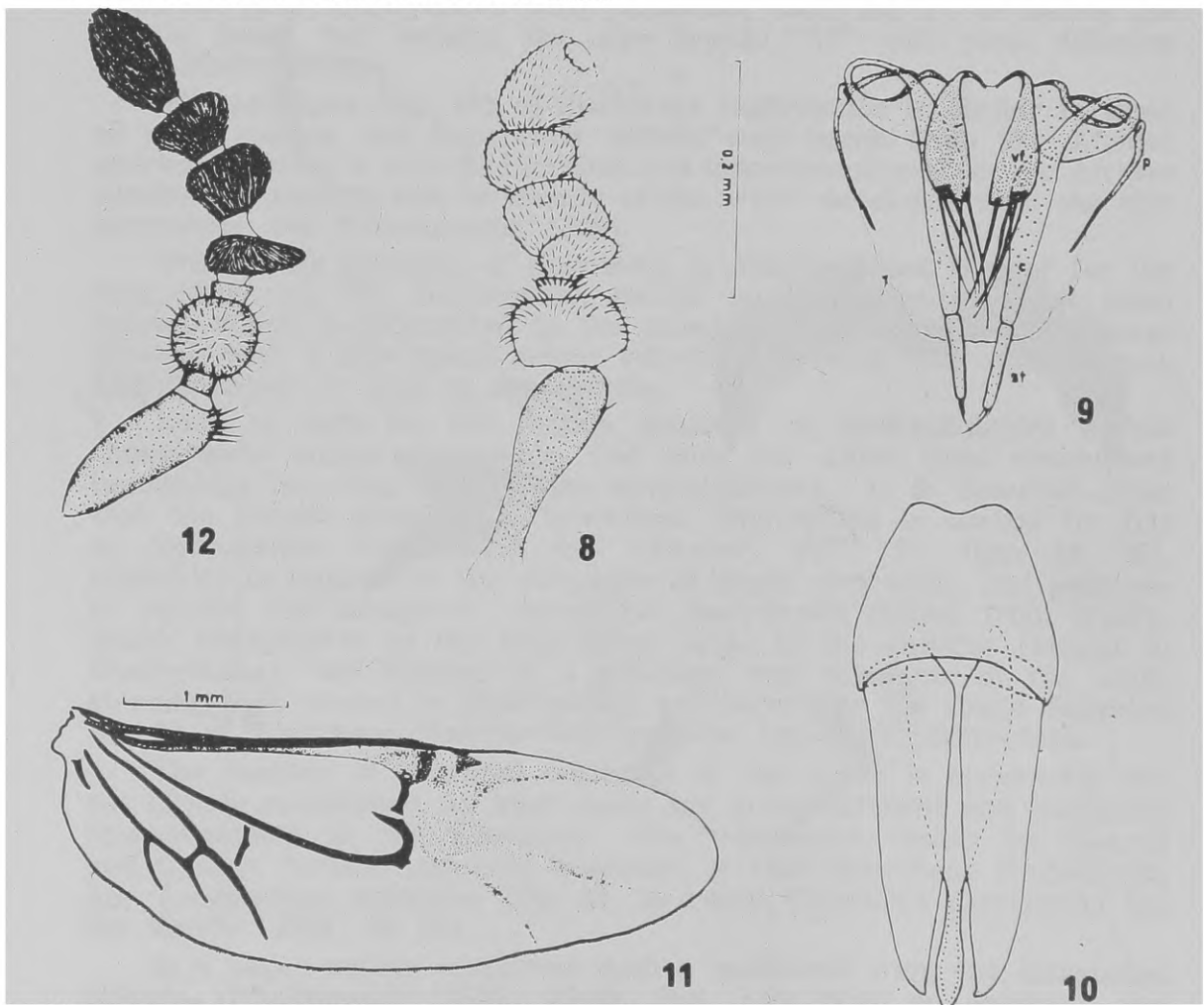
Hrbacek (1950), in a study of the antennae of European Hydrophilidae (*s. lat.*, including *Spercheus*), illustrated the antenna of the same *Spercheus emarginatus* with only 6 segments, omitting the II



Spercheus fimbriicollis, mouthparts. 3, labium; 4, labrum; 5, 6, mandibles; 7, maxilla. Male from Salobra.

and IV of d'Orchymont (his fig. 9c, however, is not clear, there being indications of the segments II and IV). It is interesting, though, that Hrbacek concluded that "... the antennae of the genera *Hydraena, Ochthebius, Limnebius, Hydrochus* and especially *Spercheus* can hardly be considered as links between the antennae of the ancestors of the family and the antennae of the most advanced genera of to-day" (*l.c.*: 255).

Crowson (1954, fig. 21c) apparently reproduced d'Orchymont's sketch of the antenna of *Spercheus emarginatus,* but considered the V (pubescent) segment as the cupule, and the club to be 3-segmented. It seems rather strange that in the six other hydrophiloids (representing Hydraenidae, Hydrochidae and Hydrophilidae, figs. 21 a-b, d-g), Crowson considered the cupule to be a glabrous segment, and in Spercheidae considered the cupule to be a pubescent segment. Even though d'Orchymont's II segment is reproduced in Crowson (fig. 21c), in the key (p. 20) this segment is not listed, and in the family characterization (p. 22), d'Orchymont's III segment is considered as being the pedicel (II). Thus, according to Crowson's description (not illustration), *Spercheus* actually has 7-segmented antennae.



Spercheus fimbriicollis. 8, antenna; 9, female genitalia (c = coxite; pp = paraproct; st = stylus; vf = valvifer); 10, aedeagus; 11, wing. *Spercheus emarginatus*: 12, antenna (adapted from d'Orchymont, 1938, fig. 1).

Spangler (1961) described the antenna of *Spercheus texanus* as 6-segmented, omitting d'Orchymont's II and IV segments, but his fig. 3 reproduces these segments.

In *Spercheus frimbriicollis* (fig. 8) the pedicel (II) is not spheroid and only partly pubescent; segment III is small and bears a median crown of setae; the 4-segmented club is pubescent, but its pubescence similar to that of the pedicel, not as dense as in *Spercheus emarginatus* (fig. 12). Also, in *S. fimbriicollis* the apical antennal segment bears an apical, glabrous area.

The sexual dimorphism of Spercheidae is well developed: in males "... chaperon plus profondément et plus triangulairement échancré au bord antérieur, ce bord, de chaque côté de l'échancrure, franchement avancé en dent aigué" (d'Orchymont, 1929: 44). In *Spercheus fimbriicollis* the clypeus also bears a broad v-shaped emargination anteriorly, but there seems not to be a very pronounced dimorphism. Two similar specimens were dissected, and turned out to be male and female.

Spercheus fimbriicollis (Bruch, 1915)

(Figs. 1-11)

Spercheus fimbriicollis Bruch, 1915a: 460-462, fig. 15 (Types, 2 specimens, Argentina, Santa Fé; MACN); 1915b: 484 (Catalog; Argentina, Buenos Aires, Santa Fé and Chaco); 1927: 549 (Catalog; Argentina, Santa Fé and Buenos Aires; Bolivia); Knisch, 1924: 65 (Catalog); d'Orchymont, 1939: 253-254, 2 figs. (1 specimen, Bolivia, Cuatro Ojos); Blackwelder, 1944: 168 (Catalog); Costa Lima, 1952: 300, fig. 77; Spangler, 1961: 117 (Notes).

Notes. A single type-specimen of *Spercheus fimbriicollis* is apparently preserved in the Buenos Aires Museum. It bears two locality labels, "Prov. Santa Fé" and "Chaco". Thus, Santa Fé and Chaco, as listed by Bruch (1915b), represent one record. No specimen from Buenos Aires is apparently preserved in that Museum.

Material examined. ARGENTINA. *Santa Fé*: "Chaco" (holotype, MACN). BOLIVIA. *Santa Cruz*: Sara, Cuatro Ojos, region of Rio Piray (1 specimen, MACN); 60 mi N Santa Cruz, 27-30.XII.1959 (R. Cumming; 1♂, USNM); Ayacucho, 13.V.1969 (P. & P. Spangler; 1♀, USNM). BRAZIL. *Mato Grosso*: Salobra, 30.I.1941 (F. Lane; 7 specimens, MZSP).

Spercheus emarginatus (Schaller, 1783)

Spercheus texanus Spangler, 1961: 117-119, figs. 1-5 (Holotype ♂, United States, Texas, 6 mi S Corpus Christi; USNM). *Syn. n.*

Originally described as the first Nearctic species of *Spercheus*, *texanus* was found to be a synonym of the European species, *S. emarginatus*. The holotype, the only known specimen from the United States, was later discovered to be one of a serie of European beetles purchased from Charles E. Burt, a former dealer in biological specimens. The European specimens were somehow mixed with and labeled the same as other aquatic animals that Burt actually collected in the Corpus Christi area, Texas, during August 1935.

Acknoledgments. It is a pleasure to acknowledge Professor Henry F. Howden and Mr. L. E. C. Ling of the Department of Biology, Carleton University, Ottawa, Canada, who took the excellent S.E.M. micrographs which illustrate this paper. Mr. Albino M. Sakakibara, Universidade Federal do Paraná, Curitiba, was also extremely kind in helping out with the printing of the micrographs. Dr. M. J. Viana from the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires (MACN), was cooperative in making the holotype and Bruch's second specimen of the species available for study and comparisons.

References

Blackwelder, R. E.

1944. Checklist of the Coleopterous Insects of Mexico, Central America, the West Indies, and South America. *Bull. U. S. Nat. Mus. 185* (1): 1-188.

Bruch, C.

1915a. Nuevas especies de coleópteros hidrofílidos. *Rev. Mus. La Plata 19*: 447-470, figs.

1915b. Catálogo sistemático de los coleópteros de la Republica Argentina. Parte II. *Ibidem*: 471-526.

1927. *Idem.* Suppl. II. *Physis 8*: 536-553.

Costa Lima, A. da

1952. *Coleópteros 1. In Insetos do Brasil 7*, 372 pp., 103 figs., Escola Nacional de Agronomia, Rio de Janeiro.

Crowson, R. A.

1954. *The Natural Classification of the Families of Coleoptera.* 187 pp., 212 figs., Nathaniel Lloyd & Co., London.

Hrbacek, J.

1950. On the morphology and function of the antenna of the Central European Hydrophilidae (Coleoptera). *Trans. Ent. Soc. London 101*: 239-256, 17 figs.

Knisch, A.

1924. Hydrophilidae. *In Coleopterorum Catalogus Pars 79*, 306 pp., W. Junk edit., Berlin.

d'Orchymont, A.

1929. Remarques au sujet de quelques *Spercheus* africains. *Bull. Ann. Soc. Ent. Belg. 69*: 41-55, 6 figs.

1938. Voyage de M. E Aubert de la Rue aux iles Kerguelen: *Palpicornia. Rev. franç. d'Ent. 5*: 78-91, 10 figs.

1939. Notes sur quelques Palpicornia de la Republique Argentine. *Rev. Soc. Ent. Argent. 10*: 253-264, figs.

REITTER, E.

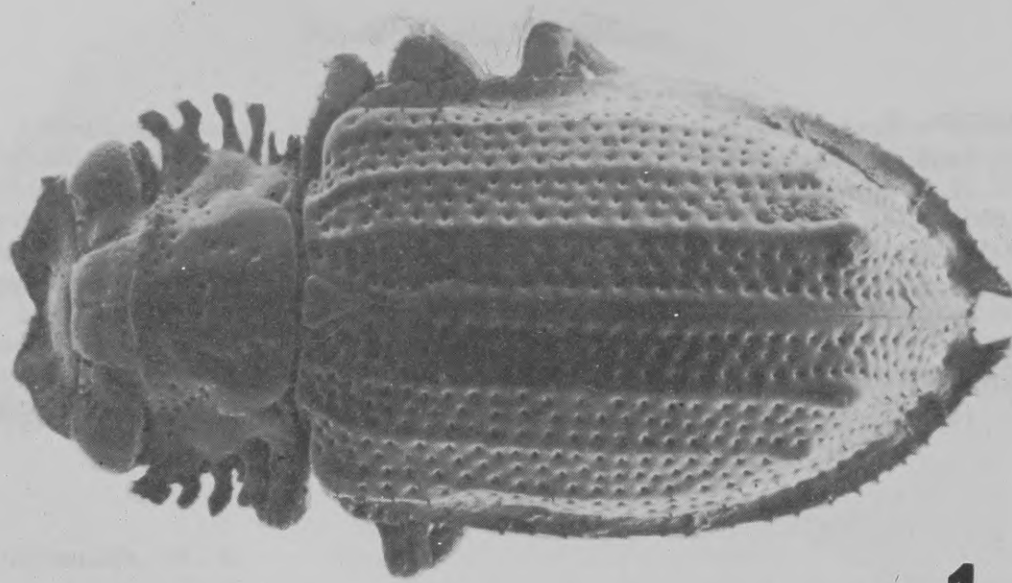
1909. *Fauna Germanica. Die Käfer des Deutschen Reiches, 2*: 1-392, figs., pls. 41-80. K. G. Lutz, Stuttgart.

SPANGLER, P. J.

1961. A new species of *Spercheus* from Texas (Coleoptera: Hydrophilidae). *Col. Bull. 15* (4): 117-119, 5 figs.

TANNER, V. M.

1927. A preliminary study of the genitalia of female Coleoptera. *Trans. Amer. Ent. Soc. 53*: 5-50, 15 pls., 222 figs.



1

2

Spercheus fimbriicollis from Salobra, Mato Grosso, Brazil.