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

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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
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 struc-
tures of the South American species, as a contribution towards the
better knowledge of the whole group. Spercheus fimбриicollis, at first,
seems 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 fimбриicollis 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. fimбриicollis (figs. 3-7) are very striking, the only difference
being details of the mandibles.

The membranous wings of Spercheus fimбриicollis (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 fimбриicollis 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) uniseg-
mented, 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 fimбриicollis 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 fimбриicollis differs from Hydro-
philus 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 fimбриicollis, 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 fimбриicollis
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 an-
tenna 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 fimбриicollis* (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 fimбриicollis*, 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, Limnephilus, 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 frimbiicollis* (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. frimbiicollis* 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, fractrement avancé en dent aigué" (d'Orchymont, 1929: 44). In *Spercheus frimbiicollis* 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 frimbiicollis* (Bruch, 1915)

(Figs. 1-11)

*Spercheus frimbiicollis* 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 frimbiicollis* 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 series 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.
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References

BLACKWELDER, R. E.

BRUCH, C.

COSTA LIMA, A. DA

CROWSON, R. A.

HRBACEK, J.

KNISSCH, A.

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

Spangler, P. J.

Tanner, V. M.
Spercheus fimbricollis from Salobra, Mato Grosso, Brazil.