

Papéis Avulsos de Zoologia

PAPÉIS AVULSOS ZOOL., S. PAULO, 30 (3): 35-42

5. VIII. 1976

REVISION OF THE LEPICERIDAE (COLEOPTERA, MYXOPHAGA)

HANS REICHARDT

ABSTRACT

A revision of the Myxophagan family Lepiceridae is presented. Lepicerus horni (Sharp, 1882) is synonymized with Lepicerus inaequalis Motschulsky, 1855. A lectotype and three paralectotypes are designated from the type-series in the Zoological Museum of the University of Moscow.

Lepicerus inaequalis was originally placed in the Georyssidae (Motschulsky, 1855). Sharp (1882) described *Cyathocerus horni* as a representative of a new family, Cyathoceridae, placed near Georyssidae. Hinton (1934) made known a second species of *Cyathocerus*, and later (1936) discovered the original description of *Lepicerus*, synonymizing *Cyathocerus* with Motschulsky's genus. *Lepicerus inaequalis* was only briefly mentioned in Motschulsky's account of his trip to Panama, and the reference was lost until attention was drawn to it by Hinton (1934). The original description of *Lepicerus inaequalis* is worthless, but the accompanying figure leaves no doubt that the two genera are synonyms.

The status of the included species thus remained uncertain, especially that of *inaequalis* and *horni* which are sympatric in Panama.

At present the Lepiceridae (= Cyathoceridae) is one of the four families of the suborder Myxophaga (Crowson, 1955: 11; Reichardt, 1973: 109), and the only one of which larvae are still unknown.

The family-name Cyathoceridae was changed to Lepiceridae by Hinton in 1936, in accordance with the then valid International Rules of Zoological Nomenclature (article 5). A recent attempt by Abdullah (1973) of reinstating Cyathoceridae, in accordance with the latest edition of the Rules (1964), according to which the family-name has not to be changed when the type-genus is synonymized,

Museu de Zoologia, Universidade de São Paulo, Caixa Postal 7172, 01000 São Paulo.

after 1960 (Article 40), is incorrect. This same article (40a) permits the maintainance of a family-group name, in the interest of stability, if it has won general acceptance. This is not the case with Cyathoceridae (see Crowson, 1955; Steffan, 1964; Reichardt, 1973; among others). It is my opinion that the Rules exist for the stabilization of names, and not to modify established names each time they are changed.

Through correspondence with Professor A. G. Ponomarenko of the Paleontological Institute, and Dr. S. I. Kelejnikova of the Zoological Museum of the University of Moscow, USSR, I was able to locate and borrow the type-series of Motschulsky's *Lepicerus inaequalis*. I am now in position to confirm the synonymy of *Cyathocerus* Sharp, 1882 with *Lepicerus* Motschulsky, 1855, and to synonymize *Cyathocerus horni* Sharp, 1882 with *Lepicerus inaequalis* Motschulsky, 1855. This opportunity is taken to revise the two species of the family.

I am especially indebted and thankful to Professor Ponomarenko and Dr. Kelejnikova for their help with Motschulsky's types; my friend Paul J. Spangler, Jr., National Museum of Natural History, Washington, D. C., was helpful in obtaining a xerox-copy of Motschulsky's paper. Donald S. Chandler was kind enough to donate to the collection of the Museu de Zoologia, Universidade de São Paulo, one specimen of each species he collected in northern Mexico (Chandler, 1973). My friend John F. Lawrence, Museum of Comparative Zoology, Cambridge, Mass., also loaned important specimens.

Lepicerus Motschulsky, 1855

Lepicerus Motschulsky, 1855: 14 (Type-species, by monotypy, *Lepicerus inaequalis* Motschulsky, 1855); Hinton, 1936: 472-473; Reichardt, 1973: 122.

Cyathocerus Sharp, 1822: 142-144 (Type-species, by monotypy, *Cyathocerus horni* Sharp, 1882); Zaitzev, 1908: 313 (Catalog); 1910: 48 (Catalog); Hinton, 1936: 473 (Proposed synonymy with *Lepicerus*).

Redescription. Antennae inserted in front and slightly below eyes; 4-segmented, the 3 basal segments small, together about half as long as the large club, which increases in width towards apex, and is truncate apically, bearing short pubescence on apex. Eyes lateral, bulging, internally protected by a laminate carina which extends towards clypeus. Mouthparts hidden under labrum and mentum. Surface of head tuberculate. Pronotum wider than long, wider than head, deplanate at sides and with sharp, projected anterior angles; posterior angles not too pronounced nor too sharp. Surface tuberculate. Anterior angles forming a cavity to receive the antennal club. Scutellum small, elongate-triangular. Elytra wider than pronotum, with rounded but prominent humeri; narrowed in the middle, where the epipleura forms a deep sinuation which receives the extremity of the retracted hind femur. Beyond this sinuation elytra widen again, and then, near apex, are rounded towards the sutural angle. Surface of elytra costate, each elytron with three costae; edge of costae bearing series of short, peg-like setae. Pygidium covered

by elytra. Prosternum very narrow, with more or less tuberculate process between front coxae; the latter large, transverse, not touching each other, but front coxal cavities open behind. Mesosternum also narrow; middle coxae well separated from each other, and elongate, but not transverse. Metasternum long, with hind coxae more separated from each other than middle coxae; hind coxae small, more or less triangular, without coxal plates. Abdomen with 5 entire, visible sternites, plus a small one which appears at the base, only between hind coxae. Legs similarly developed, with more or less clavate femora (with tuberculate surface), more or less cylindrical tibiae, which are shorter than femora, and end in a single spur; tarsi long, about as long as tibiae, unsegmented, each with about 7 short setae ventrally, and each tarsus ending in a single, simple claw.

Discussion. As a family the Lepiceridae are especially well characterized by the 4-segmented antennae and the unsegmented tarsi with a single claw. These characters distinguish Lepiceridae not only from the other Myxophaga, but from the remaining families of Coleoptera.

The real affinities of the family are still obscure. Both Motschulsky and Sharp originally considered the Lepiceridae as closely related to Georyssidae (or part of it). The study of the male genitalia of both families, however, showed that "*Georyssus*... cannot be placed with *Cyathocerus*" (Sharp & Muir, 1912: 531). The male genitalia of *Lepicerus inaequalis* (figs. 3, 4) was only very briefly described by these authors: "Median lobe long, thin and crooked, with median orifice at apex and median foramen at base on dorsal aspect. Tegmen forming sheath with the distal end cleft along the dorsal aspect, but without division between lateral lobes and basal piece. Internal sac undifferentiated. The tegmen of this comes near to the Trogositidae, but the median lobe is quite unique so far as we have observed" (Sharp & Muir, 1912: 530). As far as I know this type of genitalia is different from that of the other Myxophaga, but it must be said that the genitalia of the suborder are still poorly known, and comparisons are impossible.

One of the difficulties with *Lepicerus* is the (apparent) absence of sexual dimorphism. Two facts, however, puzzle me in this regard. Sharp's description of *horni* was based on a large sample collected by Champion, and in the literature there is only reference to males; both Hinton (1934) and Chandler (1973) collected the two species of lepicerids in the same spot. Could they represent the two sexes of a single species?

Two characters of Lepiceridae stress the affinities with the other Myxophaga: the single-lobed maxilla, and the venation of the hind wings. The latter were first studied by Forbes (1926: 60-61, figs. 19, 20), who for the first time united Sphaeriidae, Hydroscaphidae and Lepiceridae in one group. The wing-venation of *Lepicerus inaequalis*, as shown by Forbes (1926; see also Crowson, 1955, fig. 1b), is extremely similar to that of Torridincolidae (Reichardt, 1973, fig. 36). It is interesting that in the original description of Torridincolidae its author (Steffan, 1964) considered it closest to Lepiceridae, especially because of the venation of the hind wings.

Lepicerus horni; Hinton, 1936: 472-473; Reichardt, 1973: 122.

Discussion. Motschulsky's original description is completely useless: "... un genre nouveau dans les *Georssidae* [sic], *Lepicerus inaequalis*, à forme plus carrée que les *Georissus* avec le corps recouvert comme d'une croute argilleuse;..." (Motschulsky, 1855:14). The original material, 4 specimens, was collected with sieve in Obispo (at present Canal Zone), Panama, in March 1854. The 4 syntypes, at present in the Zoological Museum of the University of Moscow, are perfectly well preserved, and were glued on a single cardboard; they have been remounted by myself, each on its own pin; one specimen is selected lectotype, and the remaining specimens become paralectotypes.

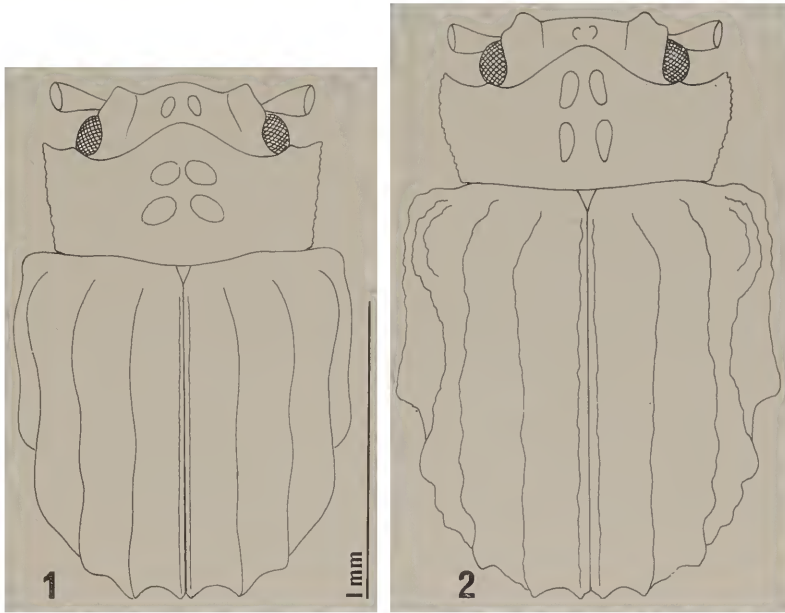


Fig. 1, *Lepicerus inaequalis* Motschulsky, 1855. Fig. 2, *Lepicerus bufo* (Hinton, 1934).

Comparison of Motschulsky's types with the specimens of *Lepicerus horni* I have studied (Alamos, Sonora, Mexico; Canal Zone, Panama; Cacao, Guatemala), leaves no doubt that the two forms are synonyms.

Even though rare, the species has already been recorded from a large number of localities, as follows: MEXICO. *Sonora*: 11.5 km W Alamos (Chandler, 1973). *Mexico*: Temascaltepec District, Tejuipilco (Hinton, 1934). GUATEMALA. *Guatemala*: Guatemala (Sharp, 1882). *Baja Verapaz*: San Jerónimo (Sharp, 1882). *Alta Verapaz*: Cacao Trece Aguas, 27.IV.1906 (1 ex., USNM). COSTA RICA: Los Limones (Hinton, 1936). PANAMA. *Chiriqui*: Peña Blanca (Sharp,

1887). *Canal Zone*: Obispo (Motschulsky, 1855); 4 mi NW Gamboa, 23.II.1975, Lawrence & Erwin, "flood debris" (1 ex., MCZC). VENEZUELA. *Distrito Federal*: Caracas, Patate (Grouvelle, 1889).

The Venezuelan record must be taken with certain care, since I was unable to locate the specimen(s) in the Paris Museum in 1971, and it is possible, even though not probable, that another species occurs in Venezuela.



Figs. 3, 4. Genitalia of *Lepicerus inaequalis* Motschulsky, 1855 (adapted from Sharp & Muir, 1912, fig. 123).

Lepicerus inaequalis is easily distinguished from *Lepicerus bufo* by the characters cited in the key. As it has been carefully described by Sharp, there seems to be no point in redescribing it at this stage.

***Lepicerus bufo* (Hinton, 1934)**

(Fig. 2)

Cyathocerus bufo Hinton, 1934: 162 (Holotype and 3 paratypes, from Mexico, Mexico, Temascaltepec District, Tejupilco; CASC); Blackwelder, 1944: 274 (Catalog); Chandler, 1973: 288 (Record from Mexico, Sonora).

Lepicerus bufo; Hinton, 1936: 473 (Notes); Reichardt, 1973: 122 (Catalog).

Discussion. Only six specimens of *Lepicerus bufo* have thus far been made known in the literature, the 4 original types, and the 2 specimens collected by Stephan & Chandler in the Mexican state of Sonora.

Lepicerus bufo is slightly larger than *Lepicerus inaequalis*, differently colored, and especially distinguished by the more tuberculate and interrupted elytral costae.

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