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A NEW SPECIES OF *HYDROCHARA* (COLEOPTERA: HYDROPHILIDAE) FROM THE WESTERN GREAT LAKES REGION¹

William L. Hilsenhoff and Bryn H. Tracy²

ABSTRACT

A new species *Hydrochara simula* (Coleoptera: Hydrophilidae) is described from Wisconsin and separated from other western Great Lakes species by a key. It is similar to *H. obtusata* (Say) and *H. soror* Smetana, but males can be easily recognized by a dorso-basal concavity of the aedeagus. Females can be distinguished from *H. obtusata* and *H. soror* by the more elongate penultimate segment of the maxillary palpus and other less consistent characters.

In 1980 Ales Smetana revised *Hydrochara* Berthold and described four new species from North America. We have discovered a fifth new species in the western Great Lakes region, which will key to *H. obtusata* (Say) in Smetana (1980). Because of its similarity to *H. obtusata* we have named it *Hydrochara simula*. In material identified by Smetana that we have examined, the new species was always identified as *H. obtusata*, but some females in other collections may have been identified as *H. soror* Smetana. Male *H. simula* are readily separated from *H. obtusata* by a dorso-basal concavity of the aedeagus (Figs. 1 and 2) and the lack of a pronounced carina on the metasternal end of the sternal keel (Figs. 3-6). Both sexes can be separated from *H. obtusata* by the longer third segment of the maxillary palpus and differing arrangements of punctures on the pronotum and head.

We examined the neotype of *H. obtusata*, and all paratypes of *H. soror* and specimens of *H. obtusata* in the Field Museum of Natural History, which included specimens recently donated by Dr. Walter Suter of Carthage College. We also examined a male and female of *H. brevipalpus* Smetana, *H. soror*, *H. leechi* Smetana, *H. obtusata*, and *H. occulta* (d'Orchymont) from the National Museum of Natural History. All of the above beetles had been identified by Smetana. We identified all *Hydrochara* in the University of Wisconsin Insect Collection, and in Wisconsin *H. obtusata* and *H. simula* were the most common and widely distributed species. Nine *H. spangleri* Smetana from the southern half of Wisconsin were found, and from extreme southern Wisconsin we identified three *H. leechi* (two males and a female collected in 1915 and 1916) and four female *H. soror*. Three of the *H. soror* were from Dr. Suter's collection and the fourth, from the University of Wisconsin Insect Collection, was collected in 1899.

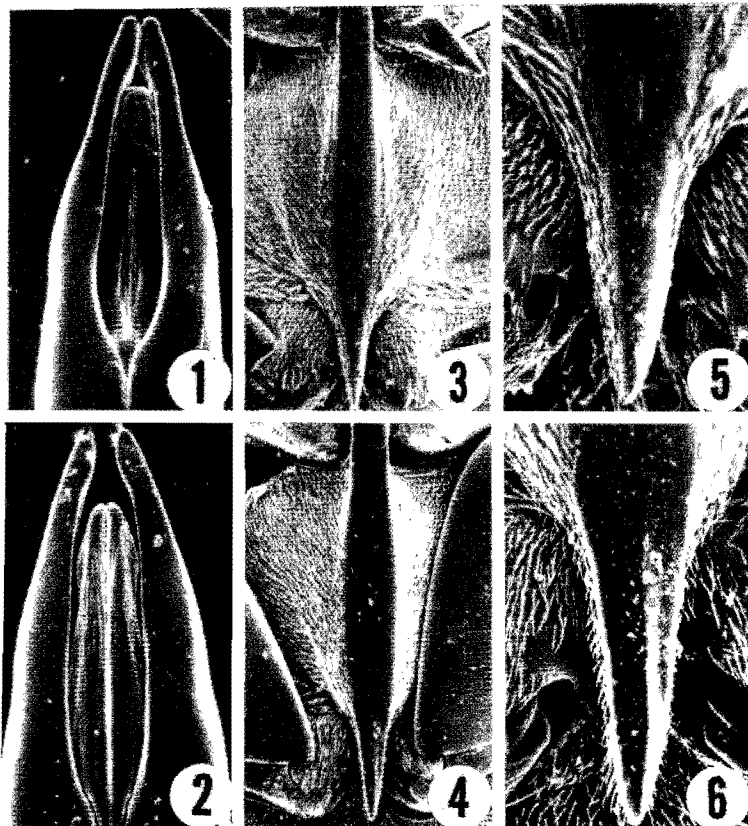
From our study of these five sympatric species we conclude that females as well as males can be identified in the region of sympatry, with the male genitalia being diagnostic. Below is a description of the new species, a key to species in the western Great Lakes region that includes *H. brevipalpus*, and notes on identification.

Hydrochara simula new species

Dorsum of head, pronotum, and elytra unicolorous and densely micropunctate with varying sizes of punctures. Specimens preserved in ethanol dark copper brown; pinned specimens almost black with some greenish hues. Length (to tip of elytra): Males 17.6 mm

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Figs. 1-6. (1) Male genitalia of *H. simula* (dorsal view). (2) Male genitalia of *H. obtusata* (dorsal view). (3) Metasternal portion of sternal keel of a male *H. simula* (ventral view). (4) Metasternal portion of sternal keel of a male *H. obtusata* (ventral view). (5) Metasternal end of sternal keel of a male *H. simula* (ventral view). (6) Metasternal end of sternal keel of a male *H. obtusata* (ventral view).

(16.0-19.1), holotype 17.3 mm; Females 19.5 mm (18.1-21.0), allotype 19.3 mm. Width: Males 8.4 mm (7.9-9.1), holotype 8.4 mm; Females 9.5 mm (8.8-10.0), allotype 9.4 mm.

Head. Groups of large, green, setiferous punctures as follows: about 12 in a row along posterior margin of labrum; a semicircular row of about 12 on frontoclypeus in front of each eye; a linear group of 5 or 6 in males, 8 to 12 in females, on a small sclerite directly anterior to each eye; and a mostly double or triple row of about 18 running obliquely mesad and posteriorly from anterior edge of each eye, usually distinctly separated from a more posterior group of 4 or 5 closer to posterior margin of eye. Piceous ventrally with labial and maxillary palpi testaceous to rufotestaceous, terminal segment of maxillary palpi with a piceous apical ring. Third segment of maxillary palpi elongate, usually 1.3-1.4 mm long and 1.4 times as long as last segment. Antennae testaceous with a rufopiceous club.

Pronotum. Large, green, setiferous punctures arranged as follows: a single row of about 15 along each lateral margin in anterior half; a group of about 6 near each anterolateral corner and a loosely-formed group of 15 to 20 more posterior; a tightly formed oblique group of about 15 in anterior third directly behind inner margin of each eye, punctures often

contiguous and forming an irregular double row. A pair of widely separated impressed black spots near posterior margin.

Elytra. Eleven obscure, somewhat impressed longitudinal striae of larger punctures on each elytron. Large, green, setiferous punctures forming 6 irregular longitudinal striae on each elytron, with marginal stria having the most punctures.

Venter. Piceous to rufopiceous, with rufous areas along margins of elytra, pronotum, and near lateral margins of abdominal sterna. Densely punctate and setiferous, except for prosternal keel, meso- and metasternal keel, and a large truncate patch at apex of fifth abdominal sternum, which are glabrous with minute microsculpture and scattered small punctures. Meso- and metasternal keel rufopiceous, notched near anterior end, slightly expanded in metasternal area, width at metasternal expansion about 35% greater than at mesosternal expansion. Keel narrowly sulcate in metasternal region, strongly arched posterior to sulcus and sharply pointed to the rear (Figs. 3 and 5).

Legs. Rufopiceous, with posterior of profemora and anterior of meso- and metafemora mostly rufous. Tarsi with a dense dorsal fringe of long golden hairs.

Male Genitalia. Parameres elongate, narrow, rounded at tip, and extending well past aedeagus (Fig. 1). Aedeagus gradually tapered to a blunt, slightly notched tip with distal fifth about 1.5 times as wide as parameres. Dorsum of aedeagus distinctly concave in basal half, with a complete, fine, median longitudinal groove.

Holotype and Allotype. The holotype male and allotype female were collected by Bryn Tracy from a vernal pond at the junction of McKee Road and Seminole Highway in Dane County, Wisconsin (T6N, R9E, S8) on 3 May 1980. Both beetles are deposited in the University of Wisconsin Insect Collection at Madison.

Distribution of Paratypes. National Museum of Natural History, male and female from Door Co., WI; Canadian National Collection, male and female from Brown Co., WI; Museum of Comparative Zoology, male and female from Dane Co., WI; Field Museum of Natural History, male and female from Adams Co., WI; University of Wisconsin Insect Collection, male from Brown Co., WI, male from Door Co., WI, 4 males from Dane Co., WI, male from Price Co., WI, and female from Marinette Co., WI.

Specimens Examined. IL 1, IN 12, MI 13, WI 39, Ontario 1.

KEY TO *HYDROCHARA* IN THE WESTERN GREAT LAKES REGION

- 1 Maxillary palpus very short, penultimate segment less than 0.9 mm long *brevipalpus* Smetana
- Maxillary palpus elongate, penultimate segment greater than 0.9 mm long 2
- 2(1) Terminal segment of maxillary palpus entirely testaceous 3
- Terminal segment of maxillary palpus with a dark ring at tip 4
- 3(2) Penultimate segment of maxillary palpus at least 1.4 mm long *spangleri* Smetana
- Penultimate segment of maxillary palpus not longer than 1.3 mm *obtusata* (Say) in part
- 4(2) Metasternal portion of sternal keel strongly dilated, about twice as wide as mesosternal portion *leechi* Smetana
- Metasternal portion of sternal keel at most weakly dilated, not more than 1.5 times as wide as mesosternal portion 5
- 5(4) Sternal keel parallel-sided, not dilated in metasternal region *soror* Smetana
- Sternal keel at least slightly dilated in metasternal region, usually about 1.25 times as wide as mesosternal portion 6
- 6(5) A distinct carina at metasternal end of sternal keel in males, less distinct or absent in females; penultimate segment of maxillary palpus in females rarely as long as 1.3 mm *obtusata* (Say) in part
- No carina at metasternal end of sternal keel in males or females; penultimate segment of maxillary palpus in females usually longer than 1.3 mm *simula* new sp.

NOTES ON IDENTIFICATION

Hydrochara brevipalpus can be easily separated from other *Hydrochara* by the extremely short maxillary palpi. The other five species in the western Great Lakes region can be separated with certainty by the male genitalia; most males and females can also be identified by characters in the key. *Hydrochara obtusata*, *H. soror*, and *H. simula* are the most similar. Male *H. leechi* are readily identified by the shallow dorso-apical depression of the aedeagus and apically incurved and narrowly expanded parameres (Smetana 1980, Figs. 18 and 76). A strongly dilated metasternal portion of the sternal keel, which is usually at least twice as wide as the widest part of the mesosternal portion (Smetana 1980, Fig. 61), also distinguishes *H. leechi*. In *H. obtusata* and *H. simula* the metasternal dilation is rarely as great as 1.5 times the width of the mesosternal portion, and in *H. soror* and *H. spangleri* there is no dilation. Male *H. spangleri* can be readily recognized by a pronounced dorsal concavity of the aedeagus (Smetana 1980, Fig. 75). *Hydrochara spangleri* is also easily identified by the long third segment of the maxillary palpi (> 1.4 mm), and the lack of a dark ring at the tip of the last palpal segment. Only in *H. simula* is the third segment of the maxillary palpi as long as 1.4 mm, but in *H. simula* the terminal palpal segment has a dark apical ring.

Hydrochara soror can be most readily separated from *H. obtusata* and *H. simula* by its parallel-sided sternal keel, which is not dilated in the metasternal region as is the keel of the latter two species. In addition, the ventral surface of the keel between the metacoxae is flat, with a fine median carina in both sexes. In *H. simula* the keel in this region is strongly arched, but has no carina (Figs. 3 and 5), and in *H. obtusata* the keel is arched with a strong carina in males (Figs. 4 and 6) and little or no carina in females. In all species there is an anterolateral oblique row of large, green, setiferous punctures on each side of the disc of the pronotum. In *H. obtusata* this row is more elongate and not always a double row of punctures as it is in *H. simula* and *H. soror*. There are also several large, green, setiferous punctures mesad of each eye in all species. In *H. obtusata* these punctures tend to form an irregular single to double row that mostly follows the contour of the eye and is only slightly separated from the posterior four to six punctures. In *H. simula* and *H. soror* these punctures tend to form a mostly double row that runs obliquely mesad from the inner anterior margin of the eye and usually is distinctly separated from punctures near the posterior margin of the eye. In *H. soror* the posterior punctures are usually in a row of two to four, while in *H. simula* they most often form an irregular group of three to five.

Finally, males of *H. simula*, *H. obtusata*, and *H. soror* may be separated by differences in the genitalia. As stated in the species description of *H. simula*, the dorsum of the aedagus is distinctly concave in the basal half (Fig. 1), while it is slightly convex in *H. obtusata* (Fig. 2) and *H. soror*. In *H. soror* the parameres are wider both basally and apically and the apices are flat dorsally and distinctly incurved (Smetana 1980, Fig. 11). In *H. simula* and *H. obtusata* the parameres are slender, narrow, dorsally rounded, and not incurved (Figs. 1 and 2).

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