Hydrovatus sandwichensis, n. sp. (Coleoptera: Dytiscidae) and a New Record of *Hydrovatus* from the Hawaiian Islands

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Only 1 species of *Hydrovatus* has thus far been reported from the Hawaiian Islands: *H. confertus* Sharp (Fullaway 1922, Williams 1936, Balfour-Browne 1945). In my revision of the genus (Biström 1994), I did not examine any material from the Hawaiian Islands, but referred simply to previous authors.

Recently, Dr. G.A. Samuelson at Bishop Museum (BPBM), kindly sent for examination both comparatively old and recently collected material of *Hydrovatus* from different parts of the Hawaiian Islands. It immediately became clear that these specimens did not belong to the Oriental species *H. confertus*, but to a previously undescribed species, the description of which is given below. Among the material studied was also 1 specimen that belongs to the real *H. confertus*. However, it only has a code label "7/11/71 Km100" and an additional label "HI: Hawaii Island ?", which strongly suggests that it had not been sampled in the Hawaiian Islands at all but had been used as material for comparison. The occurrence of *H. confertus* in the Hawaiian Islands was considered a case of immigration due to human agency (Balfour-Browne 1945). I suspect Balfour-Browne's view was based on the title of the article in which the first record of the species was given: "Notes on immigrant Coleoptera" (Fullaway 1922). No other indication of a recent immigration of the species seems to exist; on the other hand, transportation by man cannot be excluded.

Specimens are deposited at Bishop Museum (BPBM) and the Zoological Museum, Helsinki (ZMH).

Hydrovatus sandwichensis Biström, new species — Figs. 1–6

Hydrovatus confertus: Fullaway, 1922: 78; Williams, 1936: 239, 257–61; Balfour-Browne, 1945: 105, 106, 112, incorrectly assigned to this species.

Diagnosis: *H. sandwichensis,* n. sp. is most closely related to *H. subtilis* Sharp and *H. stridulus* Biström. A portion of the type material of *H. sandwichensis* was earlier attributed to *H. confertus* Sharp. The new species is distinguished from *H. subtilis* and *H. stridulus* by the appearance of the stridulation file of the male. In *H. subtilis* and *H. stridulus* the file consists of 13–18 separate ridges, which are easily recognized with a binocular magnification of 25 x. The corresponding file of *H. sandwichensis* consists of narrow, hardly visible ridges (requiring magnification of 75–100 x), the number of which exceeds 2. The ventral outline of the apical part of the penis posterior to the downwards bent tip is almost straight in *H. sandwichensis* while generally distinctly curved in *H. subtilis* and *H. stridulus*. Additionally, *H. sandwichensis* is smaller (see below) than *H. stridulus* (length of body 2.46–2.58 mm). *H. sandwichensis* is separated from *H. confertus* by having distinctly sparser elytral punctation and by its more elongated body. The 4 taxa involved all belong to a separate species group distinguished in Biström (1994).

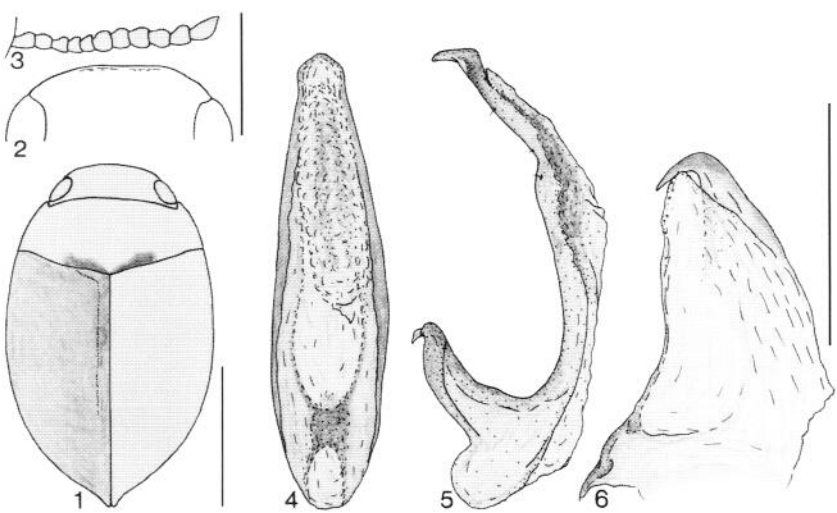
Description [only differences from redescriptions of *H. confertus* and *H. subtilis* and the description of *H. stridulus* (Biström 1994) are included here]: Length of body: 2.22–2.46 mm, breadth 1.40–1.54 mm. Habitus (Fig. 1): body more elongated than in *H. confertus*, approximately as in *H. subtilis*. Head: Frontal aspect of head (Fig. 2). Antenna modified, segments 6–8 broadest (segments almost equally broad). Apical segments also distinctly enlarged but slightly narrower than pre-

ceding ones (Fig. 3). Shape of the antenna resembles most closely the antenna of *H. stridulus*. Elytra: Ferrugineous to brownish, main color somewhat darker than on head and pronotum. Punctation somewhat sparse; distance between separate punctures generally greater than the diameter of one puncture (punctation approximately as in *H. stridulus*). Venter: Width of stridulation file narrow, ridges hardly visible even at magnification of 100 x. Number of ridges unclear but at least over 20. Male genitalia: Figs. 4–6. Penis almost as in *H. stridulus* and *H. subtilis* except for ventral aspect of penis–apical–part. In lateral view, outline of apical part of penis almost straight up to quite strongly bent tip of penis. Female: Antennal segments not distinctly enlarged. Lacks stridulatory file.

Type material: *Holotype*, male: Hawaiian Is: Oahu I, Kawainui Marsh, sea level, 30.i.1982 (W.C. Gagné) (BPBM 15,371). *Paratypes*: same data as holotype (1 ex ZMH); OAHU: Kawainui Marsh, 14.ii.1982, in submerged plants, Bishop Mus. Acc. 1982.538 (3 exx. BPBM 1 ex. ZMH); Oahu, T.H., Sept. 1913, *Hydrovatus confertus* Sharp (3 exx. BPBM); Oahu, T.H., Nov. 1914 (1 ex. BPBM); Honolulu, T.H., ix–37 (E.H. Bryan, Jr.) (1 ex. BPBM); Honolulu, 21.xii.1927 (MaMankei), *Hydrovatus confertus* Shp. det. by O.H. Swezey (1 ex. BPBM); Manoa, 15.x.1936, at light (N.L.H. Krauss) (2 exx. BPBM); KAUAI: Lawai Valley, Pacific Tropical Botanical Garden, ca. 20 m, 7–9.ix.1988 (S.E. Miller) (1 ex. BPBM); HAWAII: Olaa, 19–20.iv.1920 (O.H. Swezey) (1 ex. BPBM). In all, 16 exx.

Distribution: Known only from the Hawaiian Islands.

Biology: According to Williams (1936), the species (as *H. confertus*) may be sampled in weedy and sometimes malodorous shallows. Additionally, it is reported by Williams in certain weedy lowland swamps, in abandoned rice fields, in hoof prints of cattle, and in other small water pockets by taro patches, particularly where fish have not yet penetrated and where protozoans, rotifers, minute crustaceans, and other diminutive organisms abound. The species often inhabits the same waters as the hydrophilids *Enochrus pygmaeus* (Fabricius) and *Coelostoma fabricii* (Montrouzier).



Figs. **1–6**. *Hydrovatus sandwichensis*, n. sp. **1**, habitus. **2**, male head, frontal aspect. **3**, male antenna. **4**, penis, dorsal aspect. **5**, penis, lateral aspect. **6**, paramere. Left bottom scale = 1 mm. for habitus; left top scale = 0.5 mm for head and antenna; right scale = 0.4 mm for genitalia.

H. acuminatus Motschulsky **New state record**

This species has a wide distribution in the Old World ranging from Turkey to the South of Japan, the Philippines, Yap Island (Federated States of Micronesia) and most of Indonesia. Additionally, there are scattered records from Africa between Egypt and Gambia to South Africa and Madagascar (Biström 1994). This is the first record of this species from Hawaii.

The specimen was discovered mixed with the Hawaiian material determined as *H. confertus*. Because of its commonness, particularly in the Oriental region, the possibility of human introduction to the Hawaiian Islands must be seriously considered, although the original manner of immigration will probably remain unknown. Its wide global distribution including many remote areas indicates that the species undoubtedly has a well developed ability to migrate.

Material studied: 1 M, Keanae Camp, Maui, vi.24 (30?) ex *Cyanea* (E.H. Bryan, Jr.) (BPBM).

References

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