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Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsus slightly enlarged. Claws simple.

Male: Unknown.

Distribution: Zaire (Fig. 1218).

Biology: Unknown.

6.5.14. Species group 14 (sp.gr. *confertus*)

Hydrovatus sinister Sharp

Figs 1226–1229.

Hydrovatus sinister SHARP, 1890:343 (orig. descr., faun.); RÉGIMBART, 1899b:236 (descr., faun.); ZIMMERMANN, 1920a:36 (cat., faun.); VAZIRANI, 1970b:105 (descr., faun.); 1977a:30 (faun.); BRANCUCCI, 1979:197 (faun.); VAZIRANI, 1981:260, 263 (faun.); ROCCHI, 1986a:33 (faun.).

Type locality: Sri Lanka.

Type material studied: Lectotype, m, by present designation: *Hydrovatus sinister* Type D.S. Ceylon 17.4. 1882 Lewis/Type/Ceylon Lewis/Sharp Coll. 1905–313 (BMNH; mounted to left on same card as one female paralectotype).

Additional material studied: Sri Lanka: Ceylon (2 exx. MNB). – India: Calcutta/*H. confertus* Shp det. Zimmermann (2 exx. f MNB; determination uncertain). – Burma: Rangoon 6.XI.1984 (2 exx. coll. Rocchi). – Laos: Vientiane Pr. Gi Sion, vill. de Tha Ngone 28.II.1965/light trap (2 exx. BBM, 2 exx. MZH); Vientiane, Ban Van Eue 30.II.1985/light trap (2 exx. BBM); Vientiane 30.V.1965/at light (4 exx. BBM, 2 exx. MZH); Vientiane 28.V.1965 (2 exx. BBM). – Malaysia: W Malaysia Selangor Serdang/Mardi 1.I.1982 (1 ex. BMNH). – Indonesia: N Sumatra Dolok-Merungir 1.X.–14.XI.1984 (2 exx. MNB). In all 25 exx.

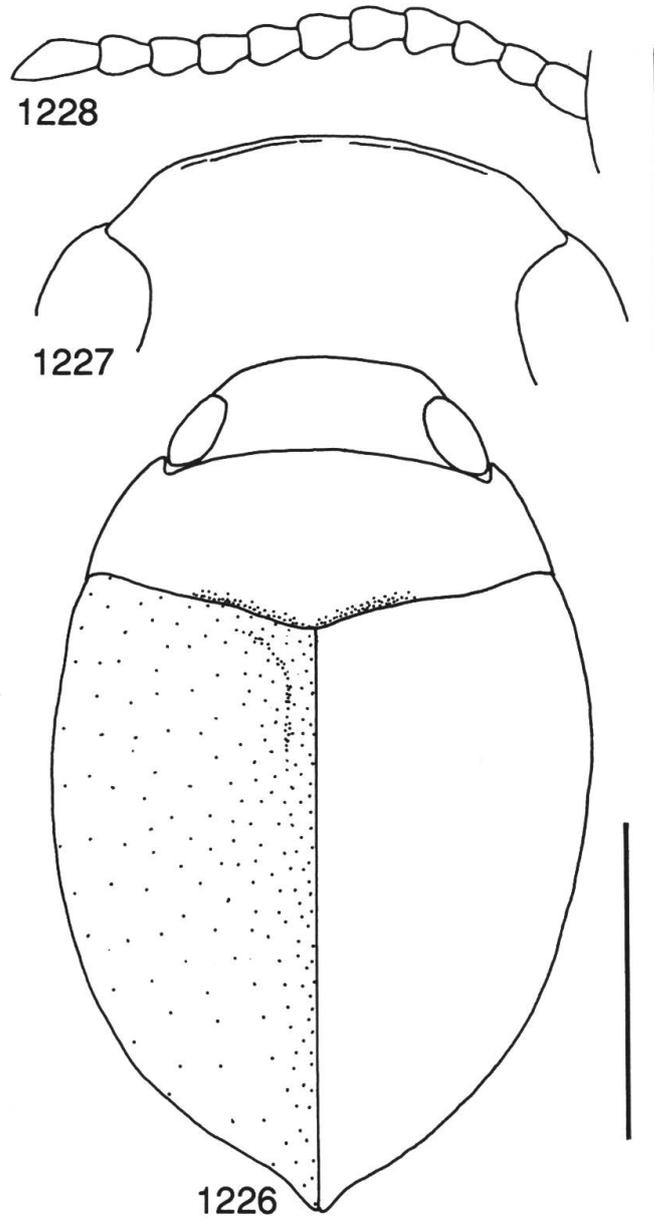
Diagnosis: Very close to *H. confertus* below. The two species are distinguished by differences in the male antenna (slender in *H. sinister*/modified in *H. confertus*), elytral punctation (distinctly sparser in *H. sinister*) and dorsal microsculpture (less strongly developed in *H. sinister*). Body microsculpture is variable: In specimens from India and Burma elytral reticulation is more strongly developed. Incorrect association of these specimens with *H. sinister* cannot be excluded!

Description: only diagnostically important deviations from description of *H. confertus* are recognized; cf. below.

Length of body: 2.40–2.68 mm, breadth: 1.48–1.76 mm. Habitus (Fig. 1226).

Head: Frontal aspect in Fig. 1227. Antenna slender, not modified (Fig. 1228).

Pronotum: Submat to rather shiny, finely microsculptured (meshes clearly visible).



Figs 1226–1228: *Hydrovatus sinister*. – 1226, habitus. – 1227, head, frontal aspect. – 1228, male antenna. Top scale 0.5 mm, head and antenna; bottom scale 1m, habitus.

Elytra: General punctation somewhat sparse. Rather shiny, finely and partly indistinctly microsculptured (meshes only partly discernible). Epipleural microsculpture indistinct.

Ventral side: Rather shiny to slightly mat, finely microsculptured. Metacoxal plates and and metathorax with scattered, weakly developed reticulation.

Male genitalia: As in *H. confertus*, cf. Figs 1233–1235.

Distribution: Sri Lanka, India, Burma, Laos, Malaysia, Indonesia: Sumatra (Fig. 1229). Also reported from Borneo (eg. ZIMMERMANN, 1920a).

Biology: Badly known. In Laos sampled at light collection.

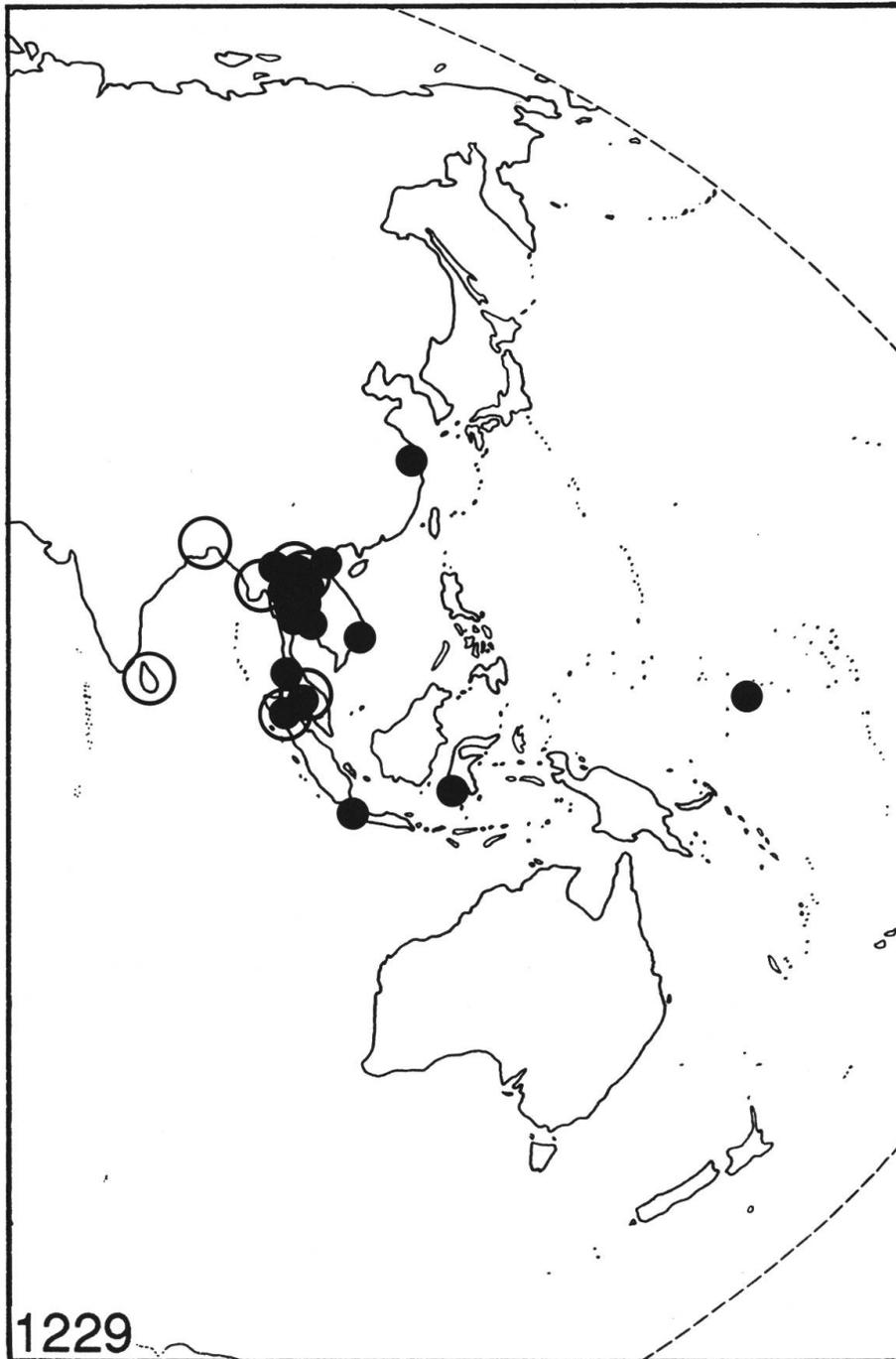


Fig. 1229: Distribution of *Hydrovatus sinister* (circle) and *H. confertus* (dot).

Hydrovatus confertus Sharp

Figs 4, 1229–1235.

Hydrovatus confertus SHARP, 1882a:329 (orig. descr., faun.); BRANDEN, 1885:25 (faun.); SEVERIN, 1892:472 (type cat.); RÉGIMBART, 1899b:237, 238 (descr., disc., faun.); ZIMMERMANN, 1919:127 (disc.); 1920a:32 (cat., faun.); 1922:148 (faun.); 1924:194 (disc.); 1927:19, 23 (descr., faun.); FENG, 1932:21 (cat., faun.); 1933a:331 (faun.); 1933b:92, 93 (descr., faun.); WILLIAMS, 1936:257 (descr., faun., biol.); WU, 1937:203 (faun.); CSIKI, 1938:126 (faun.); BALFOUR-BROWNE, 1945:105, 106, 112 (disc., faun.); BERTRAND, 1947:396 (faun.); 1948:10 (disc.); GUIGNOT, 1954g:565 (disc., faun.); 1956g:58 (disc.); NAKANE, 1959:61 (disc.); SPANGLER, 1962:278 (disc., faun.; given as *H. confertus* (Boisduval)); BERTRAND, 1963:405 (faun.); VAZIRANI, 1967:102 (disc.); 1969:3 (faun.); 1970a:31, 39 (disc., faun.); 1970b:102 (descr., faun.); 1972:120 (faun.); ROCCHI, 1976:179 (faun.); VAZIRANI, 1977a:27 (faun.); BRANCUCCI, 1979:196 (faun.); HECKMAN, 1979:55, 145 (faun., biol.); ZHAO, 1981:111 (faun.); WEWELKA, 1982:115, 123 (faun., biol.); YANO & al., 1983b:17 (faun., biol.); Satô, 1984:2 (disc.); ROCCHI, 1986a:33 (faun.).

Type locality: Thailand.

Type material studied: Lectotype, m, by present designation: Type/Siam/Sharp Coll. 1905–313/Siam/Type 13 m/*Hydrovatus confertus* (BMNH). – Paralectotype: Same data as holotype but additionally labelled: Bangkok (1 ex. BMNH).

Additional material studied: China: Li-ka-wei près Shanghai (1 ex. MNHN). – Thailand: Chon Thong 24–28.IV.1991 (4 exx. coll. Brancucci); Fang 300 m 19.55N, 99.12E, 25.V.1991 (8 exx. coll. Brancucci, 1 ex. MZH); Palong 750 m, 19.55N, 99.06E, 26–28.V.1991 (2 exx. coll. Brancucci); Umphang 500 m, 16.04N, 98.53E, 26.IV.–6.V.1991 (35 exx. coll. Brancucci, 3 exx. MZH); Khon Kaen 16.X.1972 (1 ex. MZH); Khon Kaen X–XII.1972 (1 ex. MZH); Khon-Kaen lux 21.X.1980 (1 ex. MNB); Sara Buri 28.I. 1986 (1 ex. MZH); Chiangmai 300 m, MV light 14.XI.1957 (1 ex. BBM); Chiangmai 11.VI.1965/at light (1 ex. BBM); W Thail. Kanchanaburi, am Licht 30.XI./1.XII.1990 (1 ex. NMW); ca. 220 km NW Bangkok, 110 m, IX.1990 (14 exx. MNB, 4 exx. MZH); Pattaya 14–16.XII.1979 (1 ex. UZI). – Laos: Vientiane 30.V.1965/at light (2 exx. BBM, 1 ex. MZH); Vientiane 8.V.1965/at light (1 ex. BBM); Vientiane 31.V.–3.VI.1960/light trap (5 exx. BBM, 1 ex. MZH); Vientiane 28.V.1965 (2 exx. BBM); Vientiane 9.V.1965/at light (6 exx. BBM, 2 exx. MZH); Vientiane Pr., Gi Sion Vill. de Tha Ngone 28.II.1965 (1 ex. BBM). – Vietnam: 15–35 km NW Phan Rang 8–16.XI.1960/at light (1 ex. BBM); Tuong Linh nr Phu ly 19–28.V.1966 (10 exx. coll. Brancucci, 2 exx. MZH); Hanoi 1–10.XII. 1963 (1 ex. coll. Brancucci). Uncertain record is Tonkin Hoa-Binh (2 exx. ASC). – Malaysia: Penang 15–17.I. 1981 (6 exx. UZI, 2 exx. MZH); Langkawi P.Lalang-U. Melaka (1 ex. NMW). – Indonesia: Java Batavia 18–30.XII.1880 (1 ex. MNB); N Sumatra lux Dolok-Merungir 1.X.–14. XI.1911 (2 exx. MNB, 1 ex. MZH). In all 122 exx.

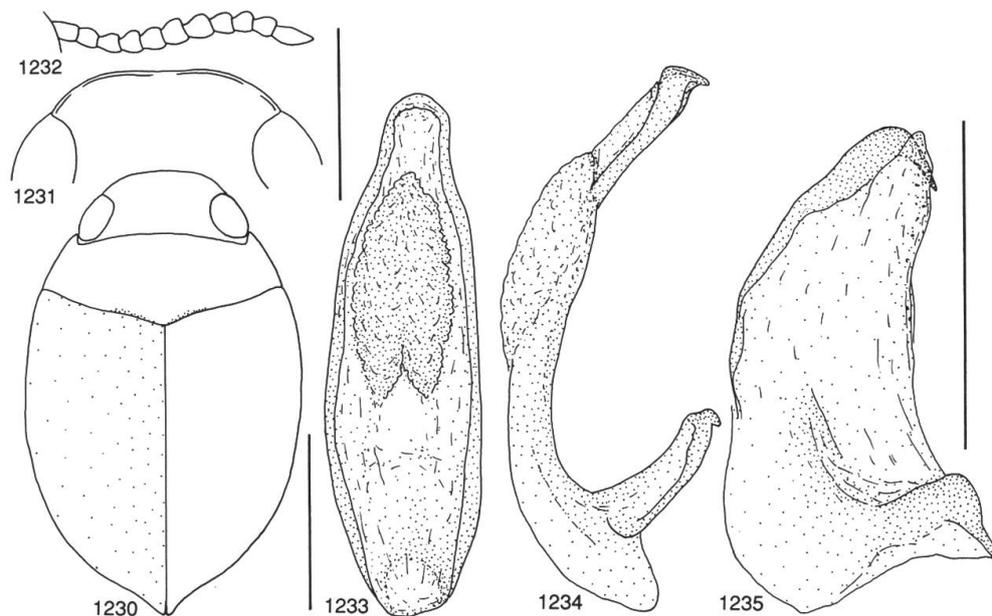
Diagnosis: A quite easily recognized species, exhibiting quite fine and dense elytral punctation and slightly modified male antenna; segments 5–8 are somewhat enlarged. (See also the diagnosis of *H. sinister*, above.)

Length of body: 2.26–2.58 mm, breadth: 1.50–1.68 mm. Habitus in Fig. 1230.

Head: Pale ferruginous to ferruginous to brownish. Punctuation fine, sparse, rather indistinct. Submat, microsculpture strongly developed (meshes very distinct). Head frontally rounded, medially almost straight. Between eyes very finely margined; margin partly broken and hardly visible (Fig. 1231). Frontally at eyes with shallow depressions. Antenna pale ferruginous, medial segments slightly enlarged (Fig. 1232).

Pronotum: Pale ferruginous to pale brown, mediobasally with vague and narrow, darkened area. Finely and fairly densely punctate. Broad discal area with distinctly sparser punctures. Submat, strongly microsculptured (meshes distinct). Lateral outline of pronotum almost straight to slightly rounded.

Elytra: Pale ferruginous to ferruginous to brown. Laterally palest but without distinct colour pattern. Punctuation rather fine to fine (in comparison with pronotal punctures distinctly coarser), dense, almost evenly distributed. Close to epipleura and apically with only slightly finer and sparser punctuation. Distinct rows of punctures absent. Submat, strongly microsculptured (meshes strongly developed). Epipleura pale ferruginous to pale brown, rather indistinctly but quite densely punctate. Submat, distinctly microsculptured.



Figs 1230–1235: *Hydrovatus confertus*. – 1230, habitus. – 1231, head, frontal aspect. – 1232, male antenna. – 1233, penis, dorsal aspect. – 1234, penis, lateral aspect. – 1235, paramere. Left top scale 0.5 mm, head and antenna; left bottom scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Ventral side: Pale ferruginous to ferruginous. Punctuation rather fine to fairly coarse, somewhat sparse. Abdomen, except basally, with very indistinct punctures. Submat, distinctly microsculptured. Stridulatory apparatus rather narrow, consists of many minute but discernible ridges (Fig. 4). Prosternal process laterally indistinctly margined, medial surface almost flat, distinctly punctate.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus somewhat enlarged.

Male genitalia: Figs 1233–1235.

Female: Antenna slender, not modified. Stridulatory apparatus absent.

Distribution: China, Thailand, Laos, Vietnam, Malaysia, Indonesia: Sumatra, Java (Fig. 1229). Additional unverified (must be re-examined) records are India, Sri Lanka, Burma, Borneo (RÉGIMBART, 1899b), Celebes (ZIMMERMANN, 1920a), Cambodia (ZIMMERMANN, 1922), Hawaii (WILLIAMS, 1936), Bangla Desh (ROCCHI, 1976), Pakistan, Nepal and Andaman Islands (WEWALKA, 1982). According to BALFOUR-BROWNE (1945), the species is a recent immigrant into Hawaii.

Biology: Adults of *H. confertus* are often recorded in rice field water, but not in great numbers (HECKMAN, 1979). YANO & al. (1983b) listed the species as occurring in paddy water. WILLIAMS (1936) presented some information on the living habits of the species; a compilation of his results is given under the section Biology on p. 91. Very often sampled at light collection.

Hydrovatus subtilis Sharp

Figs 1236–1242.

Hydrovatus subtilis SHARP, 1882a:329 (orig. descr., faun.); BRANDEN, 1885:27 (faun.); SHARP, 1890:344 (var. descr., disc., faun.); SEVERIN, 1890:CXC (descr., faun.); RÉGIMBART, 1892:114 (disc.); 1895a:340 (descr., faun.).

Hydrovatus confertus var. *subtilis* SHARP, RÉGIMBART, 1899b:237 (descr.); ZIMMERMANN, 1920a:32 (cat., faun.); FENG 1933a:331 (syn. *H. confertus* Sharp); WU, 1937:203 (syn. list.).

Hydrovatus subtilis SHARP, GUIGNOT, 1956g:58 (descr., faun.; distinct species); NAKANE, 1959:61 (disc.); VAZIRANI, 1977a:30 (faun.); SATÔ, 1984:2 (disc., faun.); NAKANE, 1988a:211 (descr., faun.); 1990b:25 (faun.); LEE & al. 1992:47 (descr., faun.).

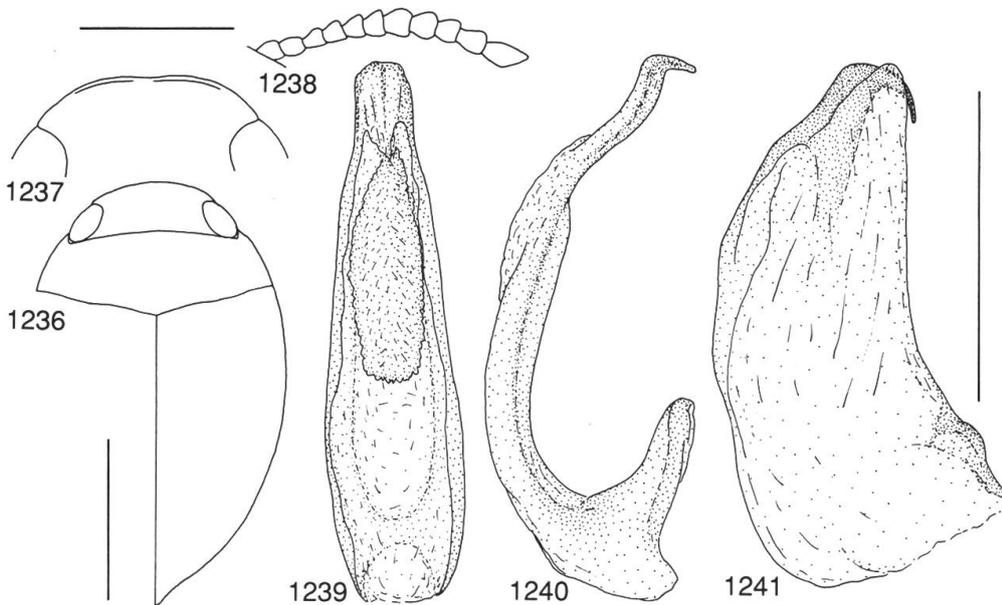
Hydrovatus adachii KAMIYA, 1932b:4 (orig. descr., faun.); TAKIZAWA, 1933:165, 166 (descr., faun.); KAMIYA 1938:10 (descr., faun.); GSCHWENDTNER, 1939:2 (descr., faun.); NAKANE, 1959:60, 61 (descr., faun.); SATÔ, 1961:7 (disc.); NAKANE & al., 1963:56 (descr., faun.); ZAITZEV, 1972:116 (descr., faun.); SATÔ, 1984:2 (syn. *H. subtilis* Sharp); NAKANE, 1988a:21 (faun.); 1990b:25 (list.).

Type locality: Thailand.

Type material studied: *H. subtilis*: Lectotype, m, by present designation: Type/Siam/Sharp Coll. 1905–313/Type 14 m/*Hydrovatus subtilis* n.sp./Siam (BMNH). – Paralectotype: Principally with same data as lectotype (1 ex. BMNH). – *H. adachii*: Holotype (not located): Honshu: Tokyo, (Musashi) 20.VIII.1929, T. Adachi. According to the original description deposited in coll. Kamiya in Tokyo Agricultural College, Japan.

Additional material studied: S. Andaman Isl.: Bimblton 22.XII.1976, Lichtfang am Bach/*H. confertus* Shp det. Wewalka 1981 (3 exx. NMW, 1 ex. MZH). – Thailand: Khon Kaen 6.X.1972 (1 ex. MZH); Kanchanaburi R. Kwai 1.XII.1990 (1 ex. NMW); Kanchanaburi, am Licht 6.XII.1990 (1 ex. NMW); Kanchanaburi, am Licht 26.XI.1990 (2 exx. NMW); Kanchanaburi, am Licht 30.XI.1990 (1 ex. NMW). – Laos: Vientiane 9.V.1965/at light (1 ex. MZH); Vientiane 8.V.1965/at light (1 ex. BBM); Vientiane 28.V.1965 (1 ex. BB M). – Malaysia: Penang 15–17.I.1981 (35 exx. UZI, 5 exx. MZH). – Indonesia, N. Sumatra Dolok-Merungir 1.X.–14.XI.1984 (1 ex. MNB); Sumatra, Manna/*H. confertus* Shp det. Wewalka (3 exx. NMW); S-Nias Umg. Telukdalam 8.II.1990 (4 exx. MZH, 13 exx. NMW); Siberut Muarasiberut 15.II.1991 (1 ex. NMW). In all, 77 exx.

Diagnosis: Closely related to *H. confertus*, above. The two species are distinguished by differences in the male antenna (enlarged segments become only slightly narrower towards the apex in *H. subtilis*), by elytral punctation (sparser in *H. subtilis*) and by the penis apex (narrows more evenly in *H. subtilis*).



Figs 1236–1241: *Hydrovatus subtilis*. – 1236, habitus. – 1237, head, frontal aspect. – 1238, male antenna. – 1239, penis, dorsal aspect. – 1240, penis, lateral aspect. – 1241, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

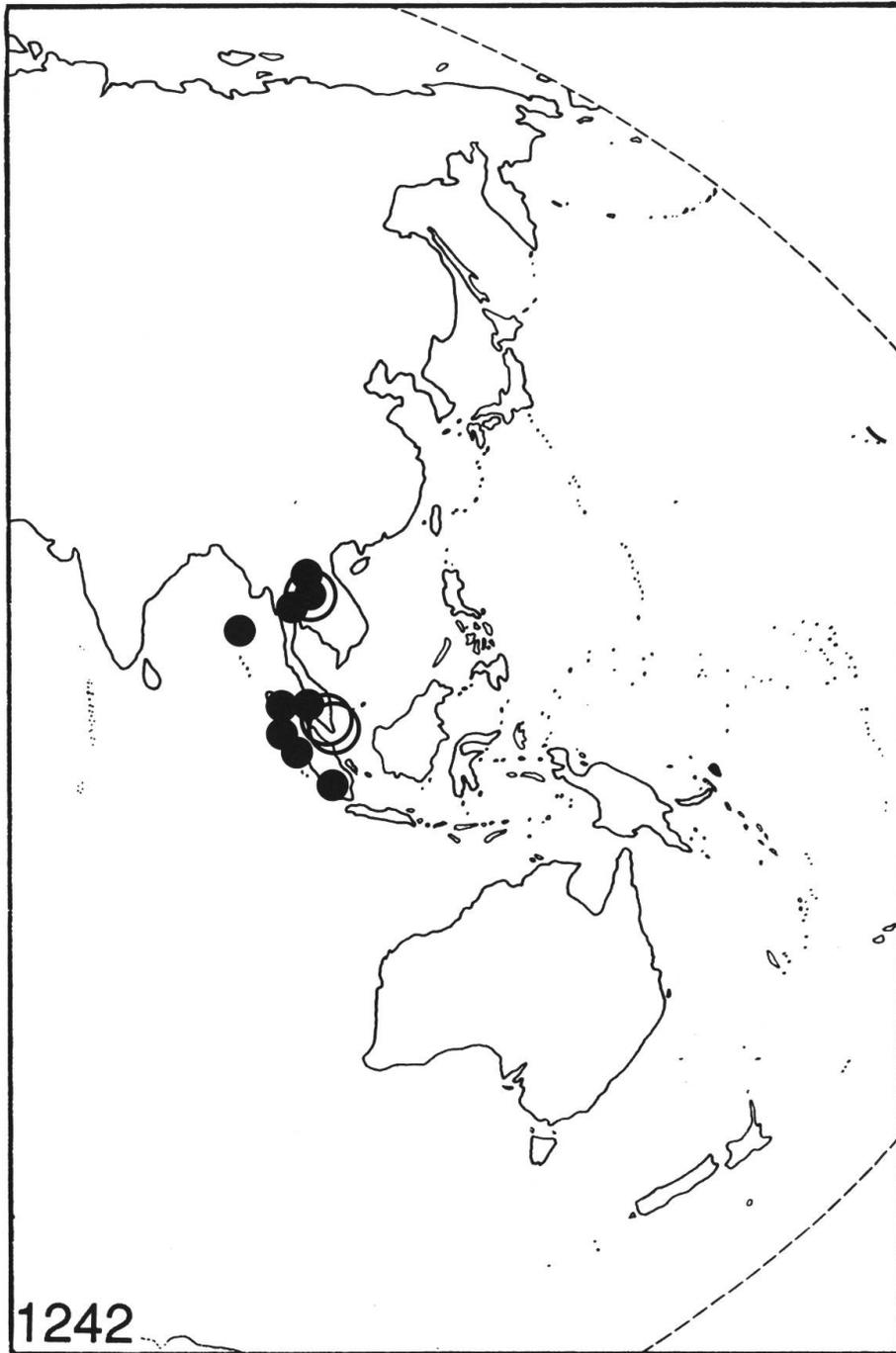


Fig. 1242: Distribution of *Hydrovatus subtilis* (dot) and *H. stridulus* (circle).

Description: only diagnostically important characters recognized; cf. *H. confertus* above.

Length of body: 2.30–2.70 mm, breadth: 1.42–1.66 mm. Habitus (Fig. 1236).

Head: Frontal aspect in Fig. 1237. Antenna in Fig. 1238, segments 5–11 somewhat enlarged, narrows slightly towards apex from segment 7.

Elytra: Punctures sparser (distance between separate punctures approximately equal to diameter of a single puncture).

Ventral side: In specimens from Laos stridulatory file consists of 16–18 quite strongly built and slightly elevated ridges.

Male genitalia: Figs 1239–1241.

Distribution: S. Andaman Isl., Thailand, Laos, Malaysia, Indonesia: Sumatra, Nias, Siberut (Fig. 1242). SHARP (1890) reports a variation from Sri Lanka. Additional unverified (must be controlled) records are Tetara (? India) (SEVERIN, 1890), India and South Korea (LEE & al., 1992), Java (GUIGNOT, 1956g) and Japan (SATÔ, 1984).

Biology: Practically unknown. Often sampled at light collection.

Synonymy: Synonymy of *H. subtilis* and *H. adachii* follows SATÔ (1984). The older name, *H. subtilis*, is the valid name of the species.

Hydrovatus stridulus n.sp.

Figs 1242–1248.

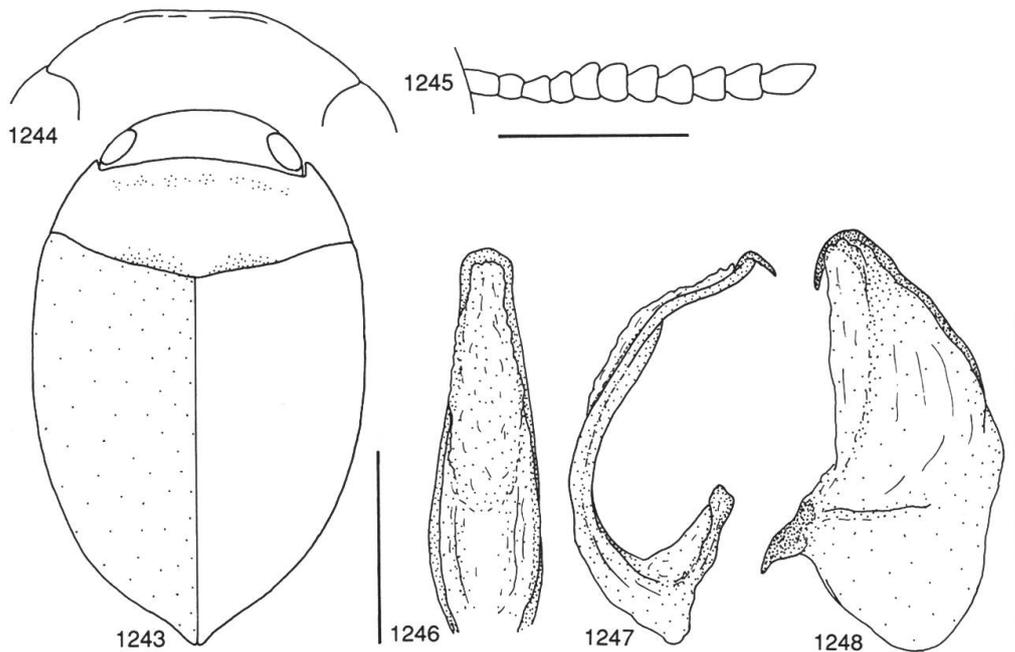
Type locality: Singapore.

Type material: Holotype, m: Type/Bi. 11. 22 flew/Singapore C.J. Sounders B.M. 1929–369/*Hydrovatus stridulus* mihi J. Balfour-Browne det. (BMNH; mounted on left of one paratype on same card). – Paratypes: See under holotype; Principally with same data as holotype (2 exx. BMNH, 2 exx. MZH); Mardi M 10069 27.4. 83 Tax. Expdn./West Malaysia Johore Kluang/CIE 18071/Pres. by Comm. Inst. Ent. B.M. 1986–1/*Hydrovatus* sp. det. R.B. Madge 1986 (1 ex. BMNH); NO Thailand Khon Kaen lux 23.I.1981, leg. Dr. S. Saowakontha/Zool. Mus. Berlin (1 ex. MNB). In all 8 exx.

Derivation of the name: The manuscript-name *H. stridulus* proposed by J. Balfour-Browne is here adopted.

Diagnosis: *H. stridulus* is undoubtedly very close to *H. subtilis* (see above). The two species may be separated by study of male antenna (in *H. stridulus* segments 5–11 almost equally broad; in *H. subtilis* segments 7–8 broader than segments 6 and 9), by the elytral punctation (in *H. stridulus* slightly finer and sparser than in *H. subtilis*), by the stridulation file (in *H. subtilis* number of visible ridges 16–18; in *H. stridulus* 13–16), and by the penis (in *H. subtilis* apex of penis in lateral view more strongly curved than in *H. stridulus*). Further study of the two species may show that *H. stridulus* in fact is a variation of *H. subtilis*.

Description: only differences from descriptions of *H. subtilis* and *H. confertus* are recognized)



Figs 1243–1248: *Hydrovatus stridulus*. – 1243, habitus. – 1244, head, frontal aspect. – 1245, male antenna. – 1246, penis, dorsal aspect. – 1247, penis, lateral aspect. – 1248, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Length of body: 2.46–2.58 mm, breadth: 1.52–2.58 mm. Habitus in Fig. 1243.

Head: Frontal aspect of head (Fig. 1244). Antenna with apical segments almost equally broad (Fig. 1245); see under diagnosis.

Ventral side: Number of discernible ridges on striulatory file generally lower than in *H. subtilis*; see under diagnosis.

Male genitalia: Figs 1246–1248.

Female: Unknown.

Distribution: Thailand, Malaysia, Singapore (Fig. 1242).

Biology: In Thailand sampled at light collection.

Hydrovatus obtusus Motschulsky

Figs 1249–1254, 1261.

Hydrovatus obtusus MOTSCHULSKY, 1855:82 (orig. descr., faun.); 1861:14 (faun.); CLARK, 1863:424 (faun.); MOTSCHULSKY, 1869:29 (faun.); SHARP, 1882a:331 (descr., faun.); KOLBE, 1883:404 (disc., faun.); BRANDEN, 1885:26 (faun.); RÉGIMBART, 1899b:238 (descr., faun.); ZIMMERMANN, 1920a:34 (faun.); F. BALFOUR-BROWNE, 1936:28 (disc.); VAZIRANI, 1970b:101 (descr., faun.); 1977a:28 (faun.).

Hydrovatus acutus SHARP, 1882a:330 (orig. descr., faun.); BRANDEN, 1885:25 (faun.); RÉGIMBART, 1888:612 (faun.).

Hydrovatus confertus var. *acutus* SHARP, RÉGIMBART, 1899b:237 (descr.); ZIMMERMANN, 1919:127 (faun.); 1920a:32 (cat.); 1927:19, 23 (descr., faun.).

- Hydrovatus acutus* SHARP, FENG, 1932:21 (faun.); 1933b:92, 93 (descr., faun.).
Hydrovatus confertus var. *acutus* SHARP, FENG, 1933a:324, 330 (cat., faun.); WU, 1937:203 (faun.).
Hydrovatus acutus SHARP, CSIKI, 1938:126 (faun.); GUIGNOT, 1956g:58 (faun.); VAZIRANI, 1977a:25 (faun.).
Hydrovatus confertus acutus SHARP, ZHAO, 1981:111 (faun.). **New synonym.**

Type locality: "India orientalis".

Type material studied: *H. obtusus*: Lectotype, m, by present designation: 10066/Type/*Hydrovatus obtusus* Motsch. Ind. or. Motsch./Zool. Mus. Berlin (MNB). – Paralectotypes: Same data as lectotype (1 ex. MNB); *Hydrovatus obtusus* Motsch. I. or. Birma, Ceylon (4 exx. ZMM; possibly include specimens belonging to some other *Hydrovatus* species); one additional probable paralectotype, labelled principally as the lectotype and additionally provided with Coll. L.W. Schaufuss (MNB), belongs also to some other *Hydrovatus* species. This specimen deviates from *H. obtusus* e.g. by more weakly developed microsculpture of dorsal side of body, by sparser and finer elytral punctation and by metacoxal plates being almost without microsculpture. Two probable paralectotypes, labelled: 6756/*H. obtusus* Motsch. Schaufus 2035 Types Ind. or., kept in BMNH, belong to a closely related *Hydrovatus* species. They deviate from the lectotype in having the broadest antennal segments in the male more apically located. There is a third specimen in BMNH, marked as type of *H. obtusus* (Ceylan). The data of this record does not fit the original description – thus it is not regarded as belonging to original type material. The specimen is, however, conspecific with the lectotype of *H. obtusus* confirming occurrence of the species in Sri Lanka. – *H. acutus*: Lectotype, m, by present designation: Type/Macassar Jan. 74 Beccari/Celebes/Sharp Coll. 1905–313/Type 448 m/*Hydrovatus acutus* n.sp. (BMNH). – Paralectotypes: Principally with the same data as lectotype (2 exx. BMNH, 2 exx. MCG). One of the paralectotypes was mailed to me as belonging to type material of *H. elevatus* Sharp (= *H. subrotundatus* Motschulsky). According to label-data as well as the morphology of the specimen in question, there is no doubt that it actually belongs to the type material of *H. acutus*.

Additional material studied: ? China: Uncertain record from Amoy/*H. acutus* Shp (1 ex. ASC). – Thailand: Chiangmai 300 m, MV-light 14.XI.1957 (1 ex. BBM); ca. 220 km NW Bangkok, 110 m, IX. 1990 (6 exx. MNB, 2 exx. MZH). – Laos: Vientiane pr. Gi Sion, Vill. de Tha Ngone 28.II.1965/light trap (3 exx. BBM, 2 exx. MZH); Vientiane pr. Ban Van Eue 30.II.1965/light trap (2 exx. BBM); Vientiane, light trap 2–4.VI.1960 (3 exx. BBM); Vientiane 31.V.–3.VI.1960/light trap (1 ex. BBM); Vientiane 8., 9., 26., 30.V.1965/at light (8 exx. BBM, 1 ex. BBM); Malaysia: Penang 12–14.I.1959/Malaise trap (3 exx. BBM, 1 ex. MZH); Pahang Rompin, sea-level 17.IX.1960 (1 ex. BBM). – Indonesia: N. Sumatra, Dolok-Merungir 1.X.–14.XI.1984 (25 exx. MNB, 6 exx. MZH); W. Sumatra Maninjau 8.II.1991 (2 exx. NMW); Maninjau 550 m (6 exx. NMW, 2 exx. MZH); Siberut Muarasiberut 15.II.1991 (6 exx. NMW, 2 exx. MZH); S. Nias 40 km N Telukdalam 13.II. 1992 (1 ex. MW); Bali, Ubud ca. 300 m, Reisfeld 26.VIII.1990 (4 exx. coll. Balke & Hendrich, 2 exx. MZH); Celebes, Macassar (1 ex. MCG). In all, 108 exx.

Diagnosis: Very close to the species above, *H. obtusus* is characterized by the male antenna (broadest at segments 4–6), by the stridula-

tory file with separate ridges, and by the density of elytral punctures (sparser than in *H. confertus*; the distance between medial punctures equally long as the diameter of a single puncture).

Description: only diagnostically important features recognized.

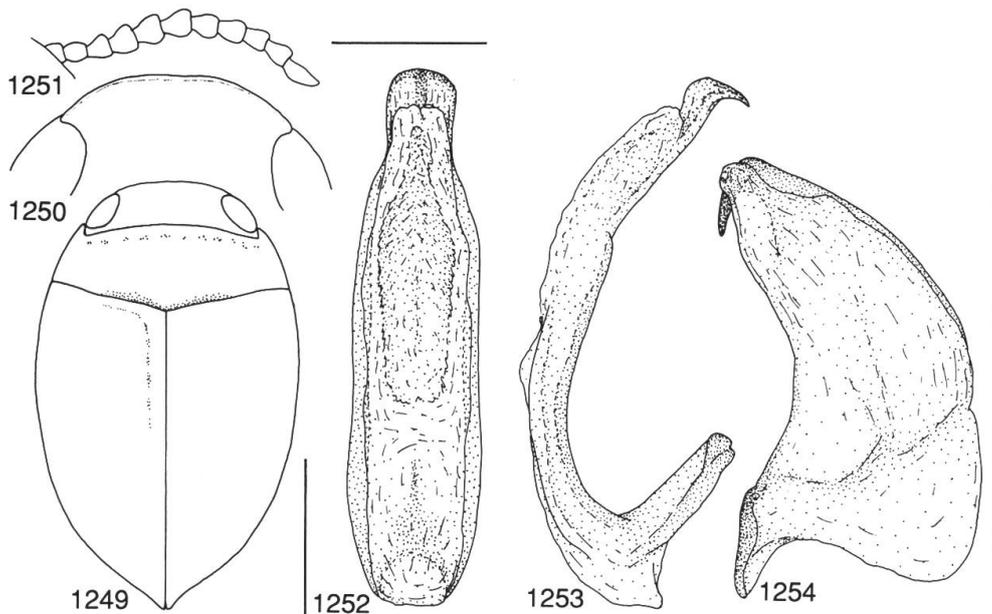
Length of body: 2.44–2.68 mm, breadth: 1.50–1.72 mm. Habitus in Fig. 1249.

Head: Frontal aspect of head (Fig. 1250). Male antenna in Fig. 1251.

Elytra: Punctuation rather fine, somewhat sparsely distributed. Apically punctures slightly finer.

Ventral side: Stridulatory apparatus consists of minute but clearly discernible ridges.

Male genitalia: Figs 1252–1254.



Figs 1249–1254: *Hydrovatus obtusus*. – 1249, habitus. – 1250, head, frontal aspect. – 1251, male antenna. – 1252, penis, dorsal aspect. – 1253, penis, lateral aspect. – 1254, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Distribution: Sri Lanka, with some hesitation Burma, Thailand, Laos, Malaysia, Indonesia: Sumatra, Siberut, S. Nias, Bali, Celebes. Uncertain record from China (marked on map with ?) (Fig. 1261). An unverified record is India (e.g. VAZIRANI, 1977a). Under the name *H. acutus*, the species has additionally been reported from Java and the Philippines (ZIMMERMANN, 1927) and Vietnam and Borneo (VAZIRANI, 1977a).

Biology: Badly documented. In Indonesia sampled in a rice-field. Often captured at light collection.

Synonymy: Lectotypes of *H. obtusus* and *H. acutus* have been designated and found to be conspecific. The older name *H. obtusus* is the valid name of the species.

***Hydrovatus samuelsoni* n.sp.**

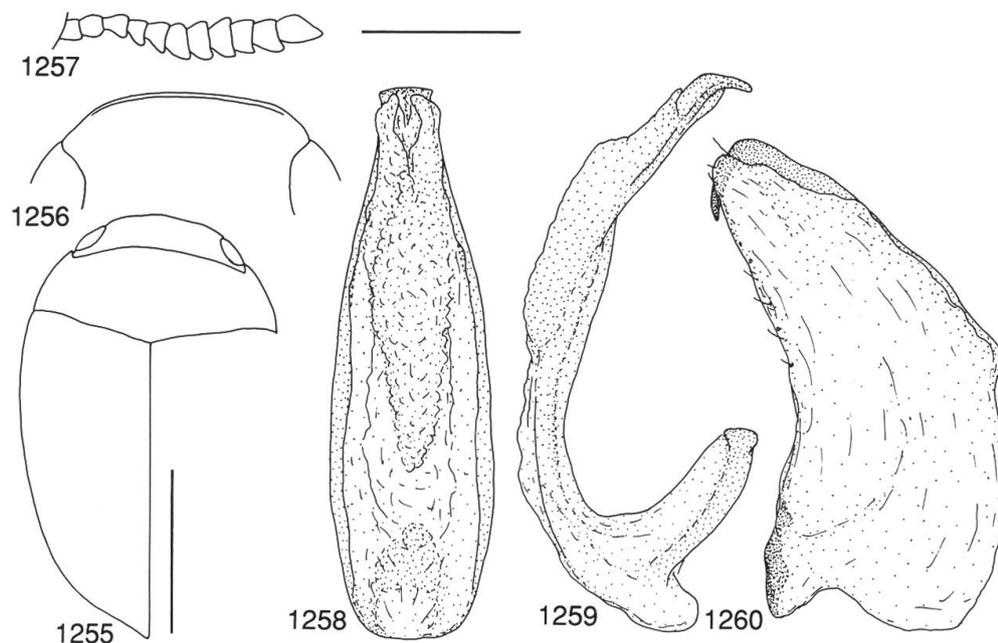
Figs 1255–1261.

Type locality: Tor River, (New Guinea), Indonesia.

Type material: Holotype, m: New Guinea (NW) River Tor (mouth) 4 km E of Hol Maffen 19.VII. 59/T. Maa Collector (BBM). – Paratypes: Same as holotype (2 exx. BBM, 1 ex. MZH); W. Newguinea/Paniai Prov. Nabire-Kali Bobo/IR 10, 19., 20. & 26.9. 90/leg. Balke & Hendrich (1 ex. coll. Balke & Hendrich, 1 ex. MZH); W. Newguinea/Paniai Prov. Wanggar-Kali Bumi/IR 14, 30.9. & 1.10. 90/leg. Balke & Hendrich (1 ex. coll. Balke & Hendrich). In all 7 exx.

Derivation of name: The new species is named after Dr. G.A. Samuelson, Honolulu, who repeatedly has provided me with valuable material for my studies of the Dytiscidae.

Diagnosis: A distinct species which is easily recognized and distinguished from closely related species (*H. confertus*, *H. obtusus* etc.) by study of the male antenna (segments 5–11 distinctly enlarged and almost equally broad) and by the shape of the penis-apex in lateral view.



Figs 1255–1260 *Hydrovatus samuelsoni*. – 1255, habitus. – 1256, head, frontal aspect. – 1257, male antenna. – 1258, penis, dorsal aspect. – 1259, penis, lateral aspect. – 1260, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Description: only differences to description of *H. obtusus* recognized.

Length of body: 2.36–2.56 mm, breadth: 1.44–1.54 mm. Habitus in Fig. 1255.

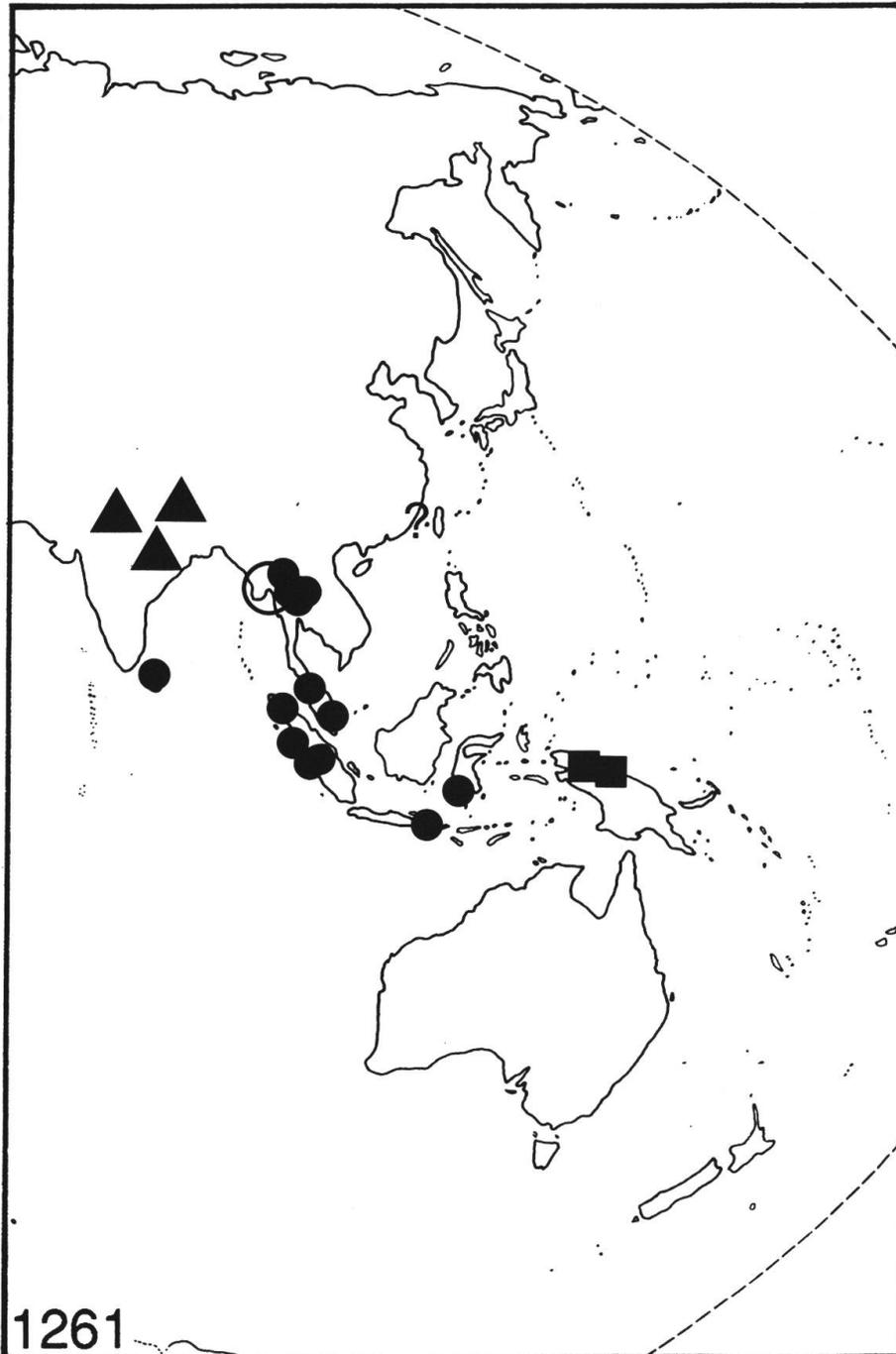


Fig. 1261: Distribution of *Hydrovatus obtusus* (dot), *H. samuelsoni* (square), *H. pinguis* (triangle) and *H. rangoonensis* (circle).

Head: Punctuation hardly visible. Frontal part of head (Fig. 1256). Frontal margin sometimes hardly visible. Male antenna distinctly modified (Fig. 1257).

Pronotum: Punctuation discally on broad area sparse, very fine, partly hardly visible.

Elytra: Punctuation fine to very fine, slightly coarser than punctures of pronotum. Punctures somewhat sparsely distributed.

Male genitalia: Figs 1258–1260.

Female: Apical segments of antenna not enlarged; all segments almost evenly broad.

Distribution: Indonesia: New Guinea (Fig. 1261).

Biology: Unknown.

Hydrovatus pinguis Régimbart

Figs 1261–1267.

Hydrovatus pinguis RÉGIMBART, 1892:114 (orig. descr., faun.); SEVERIN, 1892:472 (cat.); RÉGIMBART, 1899b:239 (descr., faun.); ZIMMERMANN, 1920a:35 (cat., faun.); 1924:194 (disc.); VAZIRANI, 1970b:101 (descr., faun.); 1977a:29 (faun.); ROCCHI, 1986a:33 (faun.).

Type locality: Konbir, India.

Type material studied: Lectotype, m, by present designation: Konbir P. Cardon/m/cotype (MNHN). – Paralectotypes: Principally with same data as lectotype (2 exx. MNHN).

Additional material studied: India: Konbir Cardon (2 exx. MNHN; belong possibly to type material); Rajasthan Bharatpur 11.VIII.1989 (1 ex. coll. Balke & Hendrich). – Nepal: Kathmandu 18–27.IX.1979/*H. pinguis* Régb. det. Satô, 1989 (2 exx. MZH). In all, 8 exx.

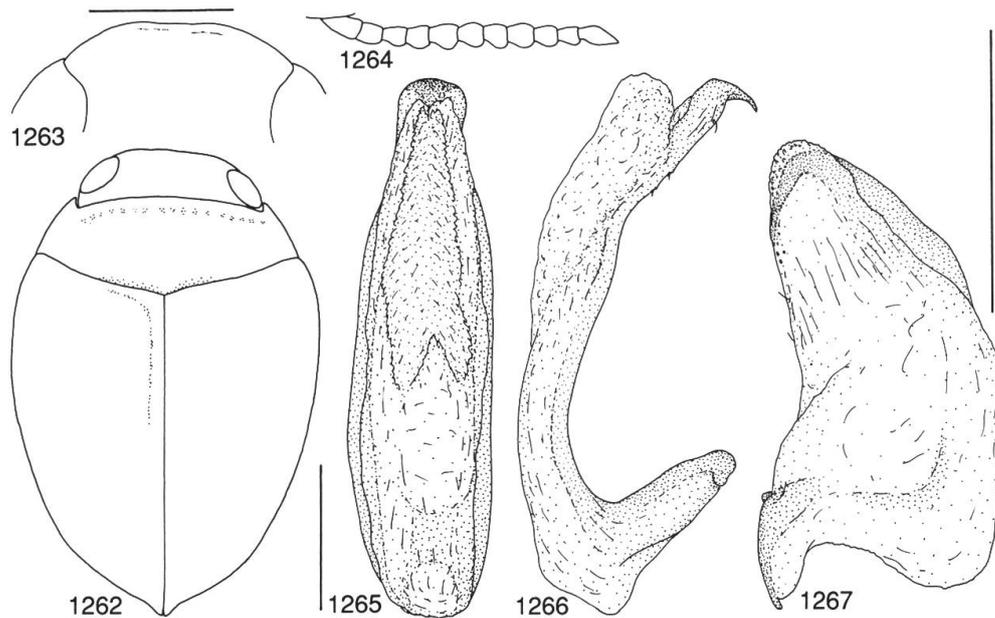
Diagnosis: *H. pinguis* is characterized by a combination of the following features: Body comparatively broad, the male antenna not distinctly modified, the ventral aspect of male provided with stridulatory files (file with minute ridges) and the hook of the penis apex bent strongly downwards.

Length of body: 2.66–2.90 mm, breadth: 1.76–1.96 mm. Habitus (Fig. 1262), body comparatively broad.

Head: Pale ferrugineous to ferrugineous. Punctuation fine to very fine, irregularly distributed, sparse to fairly dense. Submat, microsculptured (meshes distinct). Head frontally rounded, medially straightened and indistinctly margined (margin often broken in middle) (Fig. 1263). Frontal depressions rather shallow. Antenna pale ferrugineous, not distinctly modified (segments 3–11 slightly expanded) (Fig. 1264).

Pronotum: Pale ferrugineous to ferrugineous. Punctuation rather fine to fine, discally finer and sparser. Submat, microsculptured (meshes distinct). Lateral outline of pronotum rounded to almost straight.

Elytra: Pale ferruginous to ferruginous, generally without distinct colour pattern (sometimes with vague darkened areas). Punctuation rather fine, quite dense and quite evenly distributed. Apically punctures distinctly finer. Rows of punctures indistinct, almost absent. Submat to rather shiny, microsculptured (meshes distinct). Epipleuron pale ferruginous to ferruginous, finely microsculptured, and rather finely punctate (punctures concentrated to inner part of epipleuron).



Figs 1262–1267: *Hydrovatus pinguis*. – 1262, habitus. – 1263, head, frontal aspect. – 1264, male antenna. – 1265, penis, dorsal aspect. – 1266, penis, lateral aspect. – 1267, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Ventral side: Ferruginous to pale ferruginous. Punctuation fairly coarse to rather fine, fairly dense. Abdomen, except base, with distinctly finer and sparser punctures. Submat, distinctly microsculptured. Stridulatory files narrow, consisting of numerous minute ridges. Prosternal process laterally very finely margined, medial surface punctate and, approximately in the middle, provided with a minute tubercle.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus slightly enlarged.

Male genitalia: Figs 1265–1267.

Female: Lacks stridulatory apparatus.

Distribution: India, Nepal (Fig. 1261). Unverified records from Burma (VAZIRANI, 1977a, ROCCHI, 1986a).

Biology: Unknown.

Hydrovatus rangoonensis Guignot

Figs 1261, 1268–1273.

Hydrovatus rangoonensis GUIGNOT, 1954g:565 (orig. descr., faun.); VAZIRANI, 1977a:29 (faun.).

Type locality: Rangoon, Burma.

Type material studied: Holotype, m: Burma Rangoon 25–30/11.34 Malaise/m/Type/F. Guignot det., 1953 *Hydrovatus rangoonensis* Guign. Type m (RMS). In all, 1 ex. studied.

Diagnosis: A distinct species which is characterized by exhibiting the following features: Body-size quite large, shape of the body somewhat elongated, the male antenna slender and not distinctly modified, the stridulatory file narrow and consisting of very fine ridges, the apical hook of the paramere quite strongly built, and the penis narrowing almost evenly and gradually towards the obtuse apex (dorsal aspect).

Length of body: 3.06 mm, breadth: 1.86 mm. Habitus in Fig. 1268; body somewhat elongated.

Head: Pale brown to pale ferruginous, posteriorly somewhat darkened, brownish. Punctuation fine to rather fine, somewhat sparse and irregularly distributed. In shallow frontal depressions and narrowly at eyes punctures dense. Frontal outline of head somewhat uneven, medially indistinctly margined (Fig. 1269). Antenna pale brown, rather slender, not distinctly modified (Fig. 1270).

Pronotum: Pale brown to pale ferruginous. Mediobasally and anteriorly with vague, slightly darkened areas. Rather finely to finely and fairly densely punctate. Laterally on disc punctures finer (narrow area impunctate). Rather shiny, microsculptured (meshes distinct). Lateral outline of pronotum slightly rounded.

Elytra: Pale brown to dark brown, but without distinct colour pattern (darkest frontally at suture and palest laterally). Punctuation rather fine to fairly coarse, quite dense and almost evenly distributed. Rows of punctures absent. Apex of elytron with a small but quite distinct impression. Rather shiny, finely microsculptured. Meshes rather weakly developed but clearly discernible. Epipleura pale ferruginous, rather indistinctly punctate and finely microsculptured.

Ventral side: Pale ferruginous to brownish. Fairly coarsely to rather finely and quite densely punctate. Abdomen basally with a few punctures, otherwise almost impunctate. Rather shiny, finely microsculptured (meshes quite distinct). Stridulatory apparatus narrow, consists of minute ridges. Prosternal process laterally finely margined, medial surface slightly impressed, finely punctate.

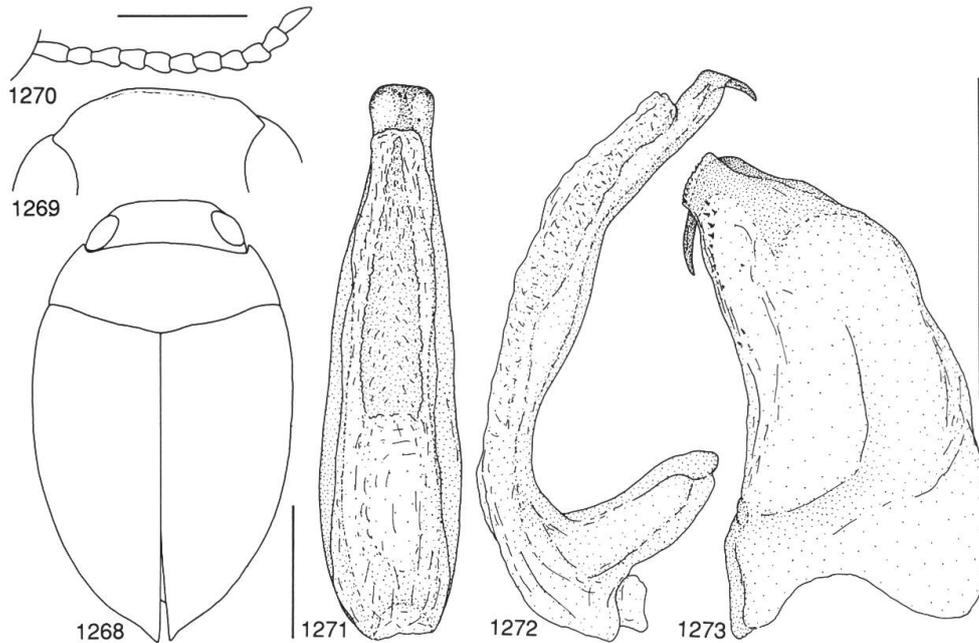
Legs: Pale brown to pale ferruginous. Pro- and mesotarsus somewhat enlarged.

Male genitalia: Figs 1271–1273.

Female: Unknown.

Distribution: Burma (Fig. 1261).

Biology: Unknown.



Figs 1268–1273: *Hydrovatus rangoonensis*. – 1268, habitus. – 1269, head, frontal aspect. – 1270, male antenna. – 1271, penis, dorsal aspect. – 1272, penis, lateral aspect. – 1273, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Hydrovatus opacus Sharp

Figs 1274–1280, 1299.

Hydrovatus opacus SHARP, 1882a:331 (orig. descr., faun.); BRANDEN, 1885:26 (faun.); ZIMMERMANN, 1919:127 (faun.); 1920a:34 (cat., faun.); WATTS 1978:16, 18, 19 (descr., faun.); 1985:23 (faun.); LAWRENCE & al., 1987:332 (faun., biol.).

Type locality: Brisbane, Queensland, Australia.

Type material studied: Lectotype, m, designated by Watts (1978): Lectotype/Type 12/Brisbane/Queensland Australia/*Hydrovatus opacus* n.sp./*Hydrovatus opacus* Sharp Det. C. Watts 1979 (BMNH; in original description Brisbane is not mentioned). – Paralectotypes: Rockhampton Qsld Australia (4 exx. BMNH).

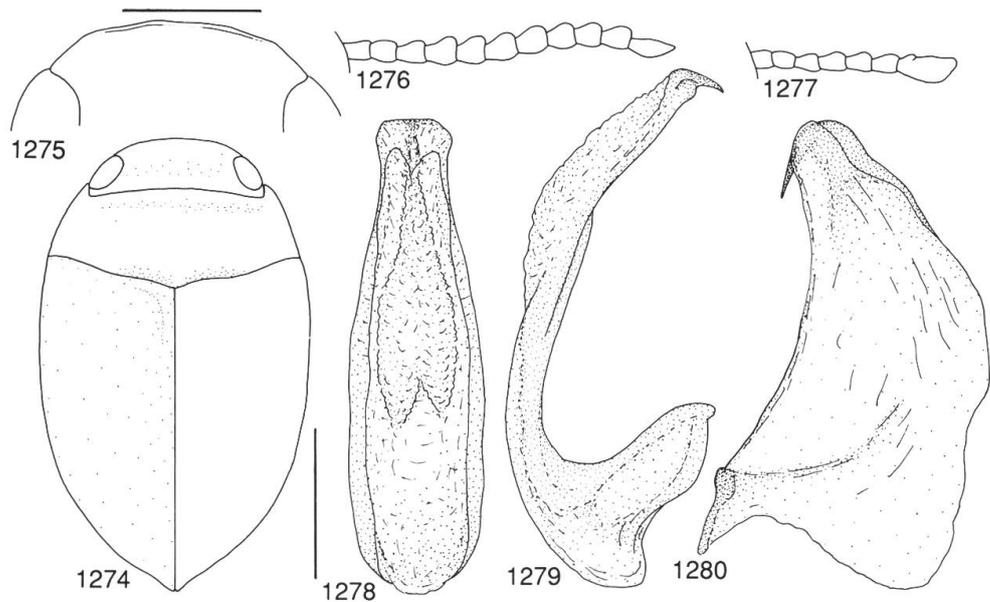
Additional material studied: Australia: NT Holmes Jungle, Palm Cr. 15 km E Darwin, 5 m, 13.III.1961/light trap (1 ex. BBM, 1 ex. MZH); NT 12.23S, 132.56E 7 km NW by N of Cahill Cr., E Allig. R. 27.V., 9.VI.1973 (10 exx. ANIC, 2 exx. MZH); NT 12.26S, 132.58E Cahill Cr. E Allig. R. 29.V.1973 (3 exx. ANIC, 1 ex. MZH); NT 12.23S, 132.57E, 5 km NNW Cahill Cr., E Allig. R. 8.VI.1973 (1 ex. ANIC); NT

12.25S,132.58E, 1 km N Cahills Cr., E. Allig. R. 31.X.1972 (1 ex. ANIC); NT 12.46S,132.39E 12 km NNW of Mt Cahill 20.V. 1973 (2 exx. ANIC); NT 12.47S,132.51E, 19 km NE by E of Mt Cahill 16.XI.1972 (1 ex. ANIC); NT 12.50S,132.51E, 16 km E by N of Mt Cahill 13.VI.1973 (1 ex. ANIC); NT 12.06S,133.04E Cooper Cr. 19 km E by S of Mt Borradaile 5.VI.1973 (2 exx. ANIC); NT 12.57S,132.33E Jim Jim Cr. 19 km WSW Mt Cahill 17.VI.1973 (1 ex. ANIC, 1 ex. MZH); NT 12.22S,133.01E, 6 km SW by S of Oenopelli 6.V.1973 (3 exx. ANIC); NT 12.36S, 132.52E Magela Cr. 1 km NNW of Mudginbarry 25.V.1973 (2 exx. ANIC); NT 12.31 S,132.54E, 9 km N by E of Mudginbarry HS 26.V.1973 (2 exx. ANIC); NT 12.48S,132.42E, Nourlangie Cr. 8 km N of Mt Cahill 21.V.1973 at light (2 exx. ANIC); NT 12.48S, 132.42E Nourlangie Cr. 8 km N Mt. Cahill, at light 26.X.1972 (1 ex. ANIC); NT 12.52S,132.47E, Nourlangie Cr. 8 km E Mt Cahill 27.X.1972, at light (1 ex. MZH, 3 exx. ANIC); NT 15.54S,136.32E Batten pt. 30 km NE by E of Borraloola, at light 18.IV. 1976 (7 exx. ANIC, 1 ex. MZH); NT 16.10S,136.15E Goose Lagoon 11 km SW by S of Borraloola, at light 17.IV.1976 (4 exx. ANIC, 1 ex. MZH); NT 16.08S,136.06E, 22 km WSW of Borraloola, at light 16.IV.1976 (1 ex. ANIC); NT Daly R. Mission 17.VIII.1974 (1 ex. ANIC); WA 14.25S, 126.38E Calm site 13/4, 12 km S Kalumburu miss. 7–11.VI.1988/at light open forest/*H. opacus* Shp det. Weir 1989 (14 exx. ANIC); WA 14.52S, 125.50E “The Crusher” Calm site 9/1, 4 km S by W Mining Camp, Mitchell Plat. 2–6.VI.1988/at light open forest (8 exx. ANIC); WA 14.49S,125.50E, Mining Camp Mitchell Plat. 9–19.V.1983, at light (2 exx. ANIC); WA 14.25, 126.40 E Calm Site 4/3, 14 km S by E Kalumburu miss. 3–6.VI.1988/at light, closed forest (7 exx. ANIC); WA 14.48S,125.49E, nr. Mitchell Plat. Airfield, at light 15.V.1983 (1 ex. ANIC); N Qsld, Mc Ivor R, 25 mi N Cooktown 6.V.1970/*H. opacus* Shp det. Watts 1974 (26 exx. ANIC); Q Cape York (3 exx. MNB); Q 15.25S,145.03E, 21 km W by N of Cooktown 17.V.1977 (1 ex. ANIC); Q 15.30S,145.15E, Keatings Gap 3 km S by W of Cooktown 16.V.1977 (1 ex. ANIC); Q 15.15S,145.06E, 29 km N W by N of Cooktown 18.V.1977 (1 ex. ANIC); Q Youngaburra Atherton trib. 30.III.1932 (1 ex. ANIC); Q 15.12S,143.52E Hann R. 73 km NW by W of Layra 27.VI.1986 (2 exx. ANIC); Q 12.44S,143.13E, 2 km NNE of Mt Tozer 3.VII.1986 (2 exx. ANIC, 1 ex. MZH); Q 12.43S,143.17E, 9 km ENE of Mt Tozer 5–10.VII.1986 (3 exx. ANIC); Q 12.44S,143.16E, 6 km ENE of Mt Tozer 30.VI.1986 (1 ex. ANIC); Q Strathgordon H’sted W of Musgrove, C York Pen. 24.XI.1983 (2 exx. ANIC); Q 23.13S,144.04E, 31 km NW by N of Longreach 10.V. 1973 (1 ex. ANIC); Q 15.10S,145.07E, 3.5 km SW by S Mt Baird 3–5.V.1981 (2 exx. ANIC); Q 15.03S,145.09E, 3 km NE Mt Webb 30.IV.–3.V.1981 (2 exx. ANIC); Q 6 mi SSE Yeppoon 30.I. 1970 (1 ex. ANIC); Q Eidsvold, at light XII.1965 (1 ex. ANIC); NSW, Valery Eucalyptus Pl. Mc Mulln’s, black light trap 10.I.1967 (1 ex. ANIC); NSW 30.24S,152.57E Valery 10.I.1967 at light (1 ex. ANIC); NSW Congo nr Morouya 16–17.III.1985 MV light, Euc. scrub coast (3 exx. ANIC); Vic. 35.35S,142.05E Wyperfeld Nat. P., Lowan track, light trap 16.XI.1973 (1 ex. ANIC). – Variation: Philippines: Manila lux. (3 exx. MNB, 1 ex. MZH); Manila 2.XI.1914 (2 exx. MNB, 1 ex. MZH). – Indonesia: New Guinea (NW) R. Tor, mouth, 4 km E of Hol 19.VIII.1959 (3 exx. BBM, 1 ex. MZH). In all 162 exx.

Diagnosis: *H. opacus* is separated from closely related species by the male antenna, which is practically unmodified and simple, by having a glabrous area at the location of the stridulation file, and by differences in the male genitalia (cf. diagnosis of *H. enigmaticus*,

below). A variation of *H. opacus* occurring outside Australia is recognized by having a rather narrow glabrous area, while in specimens from Australia the corresponding area is comparatively broad.

Length of body: 2.46–3.06 mm, breadth: 1.54–1.94 mm. Habitus in Fig. 1274.



Figs 1274–1280: *Hydrovatus opacus*. – 1274, habitus. – 1275, head, frontal aspect. – 1276, male antenna. – 1277, deformed male antenna. – 1278, penis, dorsal aspect. – 1279, penis, lateral aspect. – 1280, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Head: Pale ferrugineous to ferrugineous. Punctuation very fine, sparse, partly indistinct. Narrowly at eyes and in shallow frontal depressions punctures somewhat denser. Submat, microsculptured (meshes distinct). Frontal outline of head slightly uneven, medially rather indistinctly margined (often broken in middle) (Fig. 1275). Frontal margin sometimes quite distinct. Antenna simple; segments in basal half only indistinctly enlarged (Fig. 1276). Rarely antenna variously deformed, eg. as in Fig. 1277.

Pronotum: Ferrugineous, laterally with vague pale ferrugineous areas and mediobasally with a narrow, vague, darkened area. Punctuation fine, slightly sparse. Laterally on disc with a narrow impunctate area. Submat, microsculptured (meshes distinct). Lateral outline of pronotum almost straight to somewhat rounded.

Elytra: Brownish to dark ferrugineous. At epipleura pale ferrugineous. Without distinct colour pattern. Punctuation fine to rather fine,

fairly dense, almost evenly distributed. Apically and at epipleura with finer punctures. Size of elytral punctation slightly variable. Rows of punctures absent or very indistinct. Submat, microsculptured (meshes distinct). Epipleuron pale ferruginous to ferruginous, indistinctly punctate and finely reticulate.

Ventral side: Brownish to ferruginous to pale ferruginous. Punctation rather fine to fairly coarse, fairly dense. Abdomen, except basally, almost impunctate. Submat, microsculptured (meshes distinct). With binocular discernible stridulatory apparatus absent, but at location for file with a quite broad, glabrous area. Non-Australian variation has a narrower glabrous area. Prosternal process laterally rather indistinctly margined, medial surface slightly uneven, reticulated.

Legs: Pale ferruginous to ferruginous. Particularly basally pro- and mesotarsus somewhat enlarged.

Male genitalia: Figs 1278–1280.

Female: Ventrally without glabrous area. Antenna slender, not enlarged.

Distribution: Australia: West Australia, Northern Territory, Queensland, New South Wales, Victoria. Variation recorded from the Philippines and Indonesia (New Guinea). (Fig. 1299).

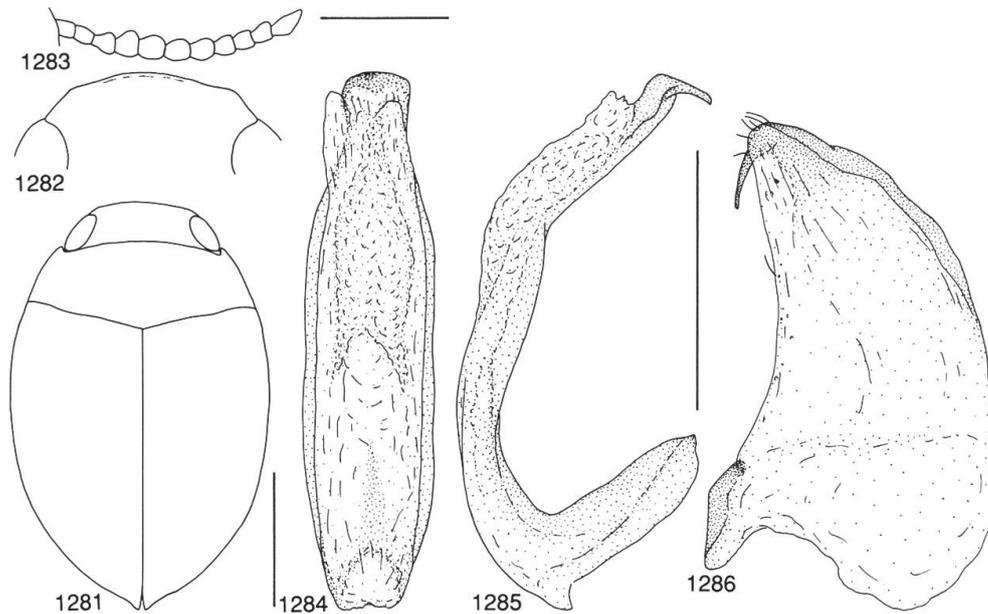
Biology: Often sampled at light collection, eg. in closed and open forest.

Hydrovatus enigmaticus n.sp.

Figs 1281–1286, 1299.

Type locality: W Sentani, Indonesia (New Guinea).

Type material: Holotype, m: New Guinea: Neth. Hollandia Area, W. Sentani, Cyclops Mts., 50–100 m. June 22–24 1959/Light trap J.D. Gressitt/T.C. Maa, light trap (BBM). – Paratypes: Same as holotype (1 ex. BBM); New Guinea (NW) River Tor (mouth) 4 km E of Hol, Maffen, 19.VII.1959/T.C. Maa Collector (1 ex. MZH); W Neuguinea/Panial Prov. Nabire-Kali Bobo/IR 10 19.,20. & 26.9. 90 leg. Balke & Hendrich (393 exx. coll. Balke & Hendrich, 30 exx. MZH); W Neuguinea/Baliem Valley Wamena (Ort) 1600 m/IR 1 & 6, 31.8. & 6.9. 1990 leg. Balke & Hendrich (1 ex. coll. Balke & Hendrich); W Neuguinea/Panial Prov. Wanggar-Kali Bumi/IR 14, 30.9. & 1.10. 90 leg. Balke & Hendrich (192 exx. coll. Balke & Hendrich, 10 exx. MZH); W Neuguinea/Baliem Valley Wamena (Minimocave) 1600 m, 1.9.1990/IR 2 leg. Balke & Hendrich (40 exx. coll. Balke & Hendrich, 10 exx. MZH); Indonesia, Ambon-Waai alt 40 m, in pool 16.XI.1991 leg. Moeliker & Hey/freshwater pool with *Eichhornia crassipes* veg. (1 ex. coll. Vondel); Indonesia 19 89 leg. Schödl/Ambon 3.2. Telaga Kodok (2 exx. NMW); Indonesia 1989 leg. Jäch 20/Ambon 26.2. Natsepa (1 ex. NMW); Indonesia 1989 leg. Jäch 2/Ambon 3.2. Hunut (5 exx. NMW, 2 exx. MZH); Indonesia 1989 leg. Jäch 12/Ceram 12.2. Umg. Wahai (8 exx. NMW, 4 exx. MZH); Indonesia 1989 leg. Schödl/Ceram 13.2. 0–300 m Paschari-Kaloha (1 ex. NMW). In all 703 exx.



Figs 1281–1286: *Hydrovatus enigmaticus*. – 1281, habitus. – 1282, head, frontal aspect. – 1283, male antenna. – 1284, penis, dorsal aspect. – 1285, penis, lateral aspect. – 1286, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Diagnosis: Undoubtedly very close to *H. opacus*, above. The two species are distinguished by the male antenna which is modified in the new species (more slender in *H. opacus*), and by differences in the male genitalia: In *H. enigmaticus* the apical part of the penis (lateral aspect) is more strongly bent, and the apical hook of the paramere is slightly longer.

Description: only differences from description of *H. opacus* recognized.

Length of body: 2.60–3.38 mm, breadth: 1.60–2.00 mm. Habitus in Fig. 1281.

Head: Frontal aspect in Fig. 1282. Fourth segment of antenna quite broad; from this segment antenna narrows towards apex (Fig. 1283).

Male genitalia: Figs 1284–1286.

Distribution: Indonesia: New Guinea, Ceram, Ambon (Fig. 1299).

Biology: In Ambon sampled in a fresh-water pool with *Eichhornia crassipes*. Also captured in light traps.

Remark: A number of specimens from Malaysia (Penang 15–17.I. 1981; 18 exx. UZI, 6 exx. MZH) possibly represent a variation (good species?) of *H. enigmaticus*. They differ from *H. enigmaticus* in

having a smaller body (length 2.36–2.60 mm, breadth 1.44–1.56 mm), by slightly finer elytral punctation and by exhibiting indistinct rudiments of a stridulatory file. The male genitalia and male antenna are as in *H. enigmaticus*.

Hydrovatus jaechi n.sp.

Figs 1287–1292, 1299.

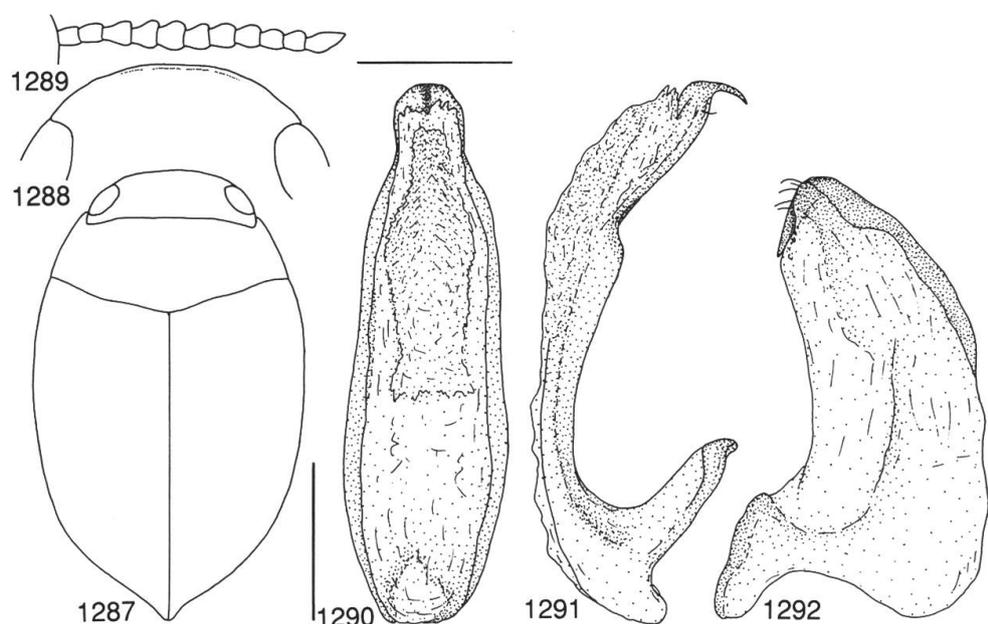
Type locality: Bakeuluk-Madobak, Siberut, Indonesia.

Type material studied: Holotype, m: Indonesien 1991 (23) Siberut, Bakeluk-Madobak leg. Jch 18.2. (NMW). – Paratypes: Same data as holotype (2 exx. NMW, 1 ex. MZH). In all, 4 exx.

Diagnosis: A distinct species, recognized above all by the absence of stridulatory files or glabrous areas at the location of the stridulation apparatus in male. Because of this, it is possible to confuse only with *H. agathodaemon*, below. These two species are easily separated by the slender male antenna and larger body size of *H. agathodaemon*. There are also distinct differences between the two species in the appearance of the male genitalia.

Description: only diagnostically important differences from the description of *H. opacus* are recognized)

Length of body: 2.44–2.50 mm, breadth: 1.48–1.50 mm. Habitus (Fig. 1287).



Figs 1287–1292: *Hydrovatus jaechi*. – 1287, habitus. – 1288, head, frontal aspect. – 1289, male antenna. – 1290, penis, dorsal aspect. – 1291, penis, lateral aspect. – 1292, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Head: Dark ferrugineous to dark brown. Punctuation almost absent. In shallow frontal depressions and at eyes with somewhat denser and coarser punctures. Frontal aspect of head in Fig. 1288. Antenna pale ferrugineous, segments 3–10 slightly enlarged; segment 4–6 broadest and almost evenly broad (Fig. 1289).

Pronotum: Dark ferrugineous to dark brown. Pronotal punctuation fine and sparse, laterally indistinct.

Elytra: Dark ferrugineous to dark brown.

Ventral side: Dark ferrugineous to dark brown. Punctuation very fine, sparse. Abdominal punctures hardly visible. Without stridulatory apparatus or glabrous area. Prosternal process laterally quite distinctly but narrowly margined. Medial surface of process slightly convex, distinctly reticulate but punctures indistinct.

Male genitalia: Figs 1290–1292.

Female: Antenna slender, without modifications.

Distribution: Indonesia: Siberut (Fig. 1299).

Biology: Unknown, not documented.

Hydrovatus agathodaemon n.sp.

Figs 1293–1299.

Type locality: Dolok-Merungir, N. Sumatra, Indonesia.

Type material: Holotype, m: N.-Sumatra, lux, Dolok-Merungir 1.10–14.11. 1984 leg. Kern/Mus. Zool. Berlin (MNB; badly broken in preparation). – Paratypes: Same data as holotype (2 exx. MNB, 1 ex. MZH). In all, 4 exx.

Diagnosis: Within the species group, it is easily distinguished from all but one species by the absence of stridulatory files or glabrous areas at the location of the files in the male. Additionally it is characterized by the parameral hook, which is weakly developed and short. Regarding separation of *H. agathodaemon* and *H. jaechi*, see diagnosis of the latter species: above, p. 543.

Description: only important differences from the description of *H. opacus*, above, are recognized.

Length of body: 2.90–3.02 mm, breadth: 1.72–1.84 mm. Habitus (Fig. 1293), body somewhat elongated.

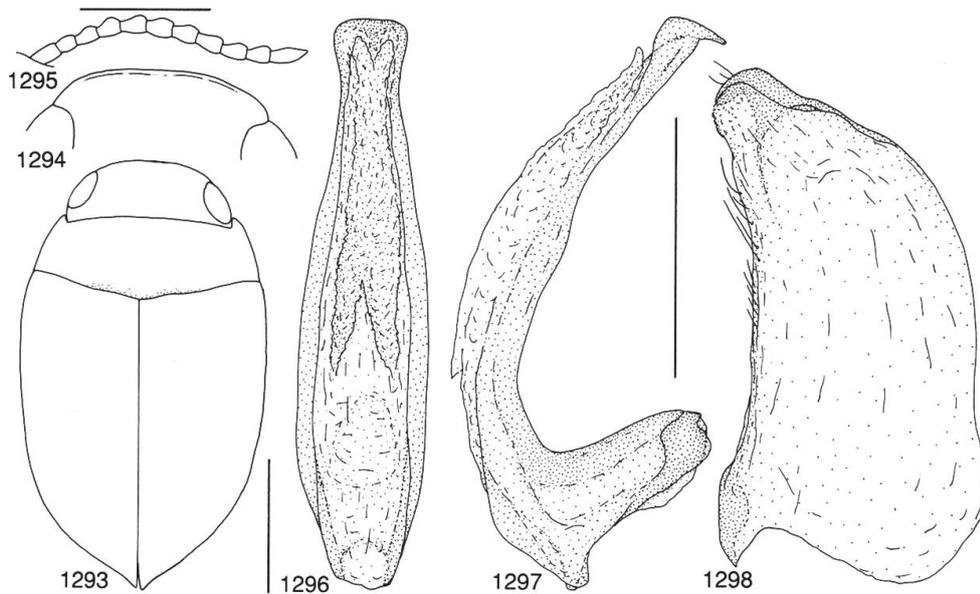
Head: Frontal aspect (Fig. 1294). Antenna quite slender, segments 4–10 very indistinctly enlarged (Fig. 1295).

Ventral side: Punctures rather fine to fine, sparse, abdomen with indistinct punctures. Without any visible stridulatory files or glabrous areas at location for files. Prosternal process laterally finely margined, medial surface uneven, distinctly microsculptured but almost impunctate.

Male genitalia: Figs 1296–1298.

Distribution: Indonesia: Sumatra (Fig. 1299). Exact location unknown; in map placed in northern part of Sumatra.

Biology: Badly known; sampled at light collection.



Figs 1293–1298: *Hydrovatus agathodaemon*. – 1293, habitus. – 1294, head, frontal aspect. – 1295, male antenna. – 1296, penis, dorsal aspect. – 1297, penis, lateral aspect. – 1298, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Hydrovatus grabowskyi Régimbart

Figs 1299–1305.

Hydrovatus grabowskyi RÉGIMBART, 1899b:238 (orig. descr., faun.); ZIMMERMANN, 1920a:34 (cat., faun.); 1927:19, 20 (descr., faun.); GUIGNOT, 1956g:51, 54 (faun.; given as *H. grabowskyi*).

Type locality: Borneo.

Type material studied: Holotype, m: Borneo/*grabowskyi* (Wk.) Borneo *grabowskyi* mihi (MNHN). In all, 1 ex. studied.

Diagnosis: *H. grabowskyi* resembles much *H. opacus*. Males of *H. grabowskyi* are easily separated by their exhibiting stridulation files (each with about 12 ridges), while the *H. opacus* male is provided with glabrous areas at the location of the files. *H. grabowskyi* is also characterized by the hook-like penis apex which projects somewhat forwards. The male antenna of the species is medially, probably only weakly modified. The complete male antenna was not studied by the author. At least six basal segments are simple, not distinctly enlarged (cf. original description).

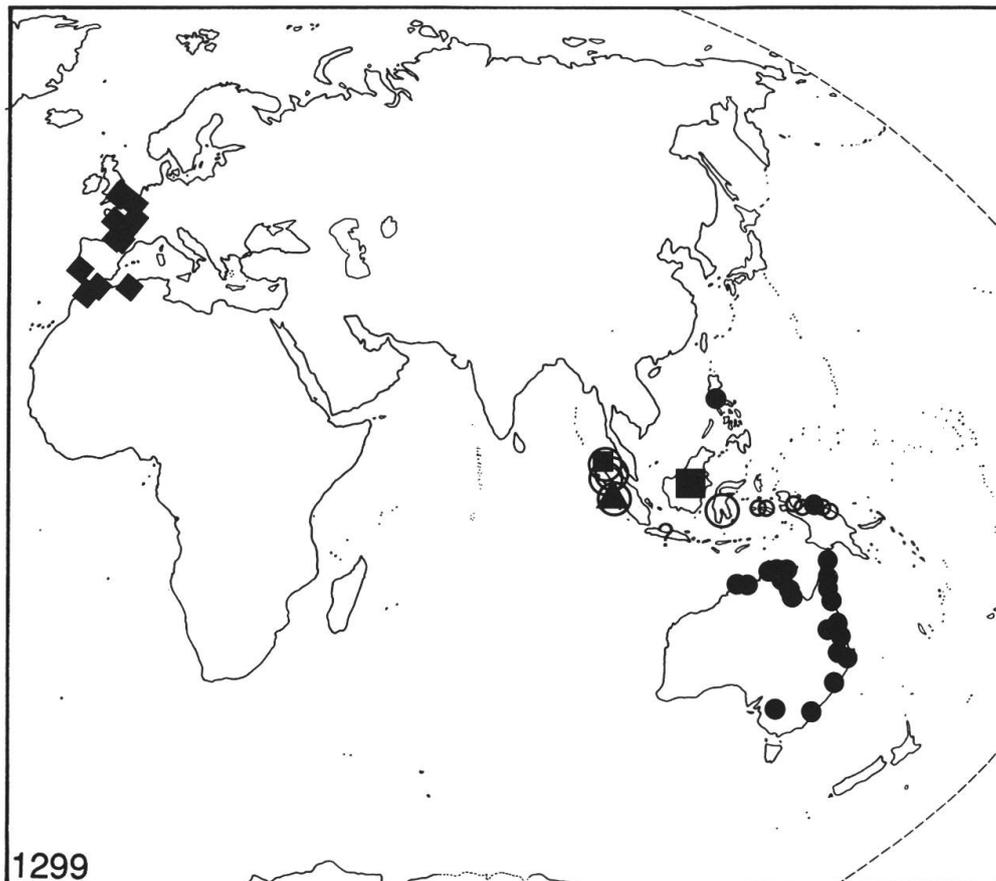


Fig. 1299: Distribution of *Hydrovatus opacus* (dot), *H. enigmaticus* (small circle), *H. jaechi* (triangle), *H. agathodaemon* (small square), *H. grabowskyi* (large square), *H. sumatrensis* (large circle, ?) and *H. clypealis* (slanting square).

Description: only differences from description of *H. opacus* are recognized.

Length of body: 2.80 mm, breadth: 1.80 mm. Habitus (Fig. 1300). Body slightly elongated.

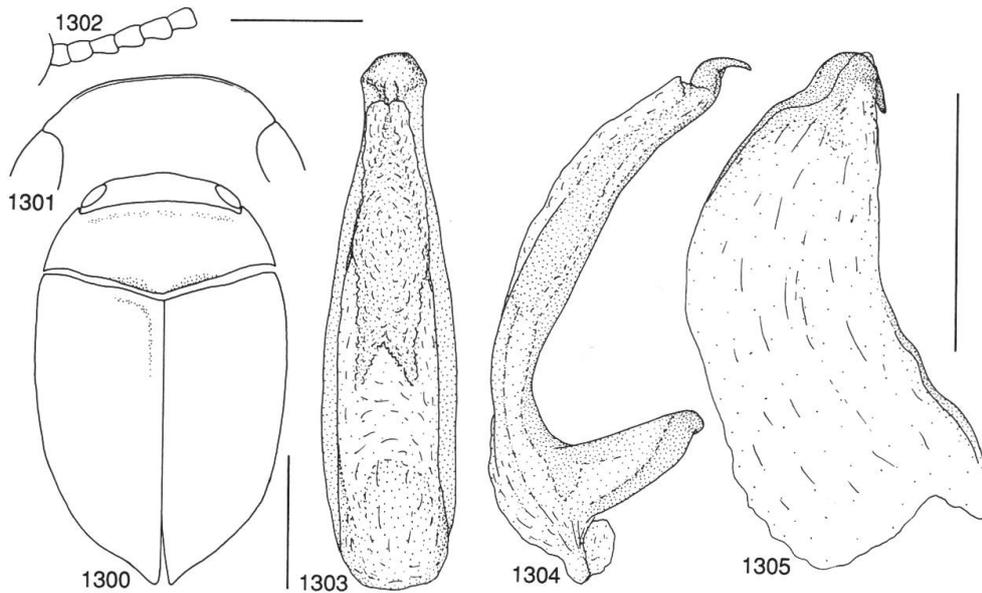
Head: Punctures only indistinctly discernible, in part totally absent. Frontal margin of head medially not broken (Fig. 1301). Basal segments of male antenna quite slender, not modified; five apical segments missing (Fig. 1302).

Ventral side: Stridulatory file consists of about 12 clearly visible although small ridges. Prosternal process laterally narrowly but distinctly margined.

Male genitalia: Figs 1303–1305.

Distribution: Borneo (exact location unknown) (Fig. 1299). Unverified records are Indonesia: Sumatra and Java and New Guinea (ZIMMERMANN, 1927, GUIGNOT, 1956g).

Biology: Unknown.



Figs 1300–1305: *Hydrovatus grabowskyi*. – 1300, habitus. – 1301, head, frontal aspect. – 1302, male antenna (segments 7–11 missing). – 1303, penis, dorsal aspect. – 1304, penis, lateral aspect. – 1305, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Hydrovatus sumatrensis Sharp

Figs 1299, 1306–1311.

Hydrovatus sumatrensis SHARP, 1882a:327 (orig. descr., faun.); BRANDEN, 1885:27 (faun.); RÉGIMBART, 1895a:339 (descr., faun.); 1899b:233 (descr., disc., faun.); ZIMMERMANN, 1919:126 (syn. *H. carbonarius* Clark); 1920a:32 (cat.; given as *H. carbonarius* ab. *sumatrensis*); 1927:20 (syn.); 1930:30 (syn.); VAZIRANI, 1977a:26 (syn.). **Re-established as a valid species.**

Type locality: Sumatra, Indonesia.

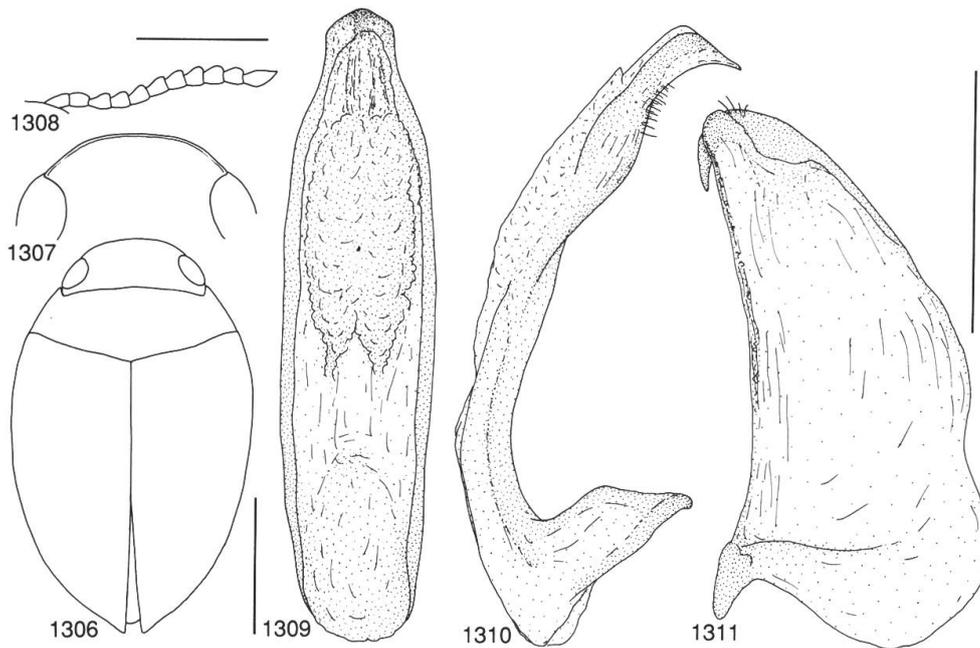
Type material studied: Lectotype, m, by present designation: Type/Types 447/Sumatra/Sumatra/Sharp Coll. 1905–313/*Hydrovatus sumatrensis* n.sp. (BMNH; mounted on top card on same pin as a paralectotype). – Paralectotypes: Same as lectotype; pinned together (1 ex. BMNH); Cotype/Sumatra 447/*Hydrovatus carbonarius* Clk ab. *sumatrensis* Shp Co-type (1 ex. BMNH).

Additional material studied: Indonesia: Sumatra; Tobasee 2.II.1991 (1 ex. NMW); Tobasee ca. 900, Samosir 3.II.1990 (1 ex. NMW); W Sumatra Bungus Beach 10 m, 14.II.–23.II.1991 (1 ex. NMW); Siberut 15.II. 1991 Murarasiberut (10 exx. NMW, 5 exx. MZH); Siberut Bakeuluk-Madobak 8.II.1991 (2 exx. NMW); S Nias Umg. Telukdalam 12.II.1990 (1 ex. NMW); Java (1 ex. ASC; uncertain record); Celebes (1 ex. coll. Wewalka). In all, 26 exx.

Diagnosis: A distinct species which is separated from closely related species by the generally dark-coloured body (often blackish), by the generally almost completely margined frontal part of the head, by stridulatory files consisting of numerous minute striae, by the slender, unmodified male antenna and by distinct structures on

the penis apex: The penis is ventrally close to the apex provided with hairs. *H. sumatrensis* externally resembles *H. fasciatus* in species group 9, but is provided with stridulatory files, while the *H. fasciatus* male lacks them.

Length of body: 2.60–2.90 mm, breadth: 1.62–1.72 mm. Habitus in Fig. 1306. Almost all specimens studied with mainly blackish body.



Figs 1306–1311: *Hydrovatus sumatrensis*. – 1306, habitus. – 1307, head, frontal aspect. – 1308, male antenna. – 1309, penis, dorsal aspect. – 1310, penis, lateral aspect. – 1311, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Head: Dark ferrugineous to blackish, anteriorly with a vague, paler area. Punctuation fine to very fine, rather sparse to sparse, partly indistinct or absent. Narrowly at eyes and in shallow frontal depressions with somewhat denser punctures. Rather shiny, microsculptured (meshes distinct). Head frontally rounded, generally with quite distinct margin (margin sometimes broken) (Fig. 1307). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 1308).

Pronotum: Dark ferrugineous to blackish. Laterally pronotum with vague paler areas. Punctuation fine, fairly dense but somewhat indistinct. Laterally on disc, punctures quite broadly sparser and more irregularly distributed. Rather shiny, microsculptured (meshes distinct). Lateral outline of pronotum rounded.

Elytra: Dark ferrugineous to blackish. Laterally elytra become gradually paler; at epipleura ferrugineous to brownish. Elytra without distinct colour pattern. Punctuation fine to very fine, fairly dense to rather sparse, somewhat irregularly distributed. Punctures densest anteriorly at suture. Apically and laterally finest, in part almost absent. Discal and dorsolateral rows of punctures rather irregular but clearly discernible, although mixed with adjacent punctures. Lateral row of punctures sparse, slightly irregular but still quite distinct. Rather shiny, very finely microsculptured (meshes in part almost obliterated). Epipleuron pale ferrugineous to brown, finely to rather finely punctate (punctures concentrated in inner part of epipleuron), indistinctly reticulated.

Ventral side: Pale brown to dark ferrugineous. Punctuation fine to fairly coarse, somewhat sparse. Abdomen, except basally, almost impunctate. Rather shiny, indistinctly microsculptured. Abdomen with fine reticulation. Stridulatory apparatus narrow, consisting of numerous ridges. Prosternal process laterally quite distinctly margined, medial surface slightly convex, distinctly punctate.

Legs: Pale ferrugineous to pale brown to ferrugineous. Pro- and mesotarsus slightly enlarged.

Male genitalia: Figs 1309–1311.

Female: Externally as male but lacks stridulatory apparatus.

Distribution: Indonesia: Sumatra, Siberut, Nias, Celebes (Fig. 1299). Uncertain record from Java is mapped with a ?.

Biology: Unknown, not documented.

Hydrovatus punctipennis Motschulsky Figs 1299, 1312–1314.

Hydrovatus punctipennis MOTSCHULSKY, 1859:41 (orig. descr., faun.); 1869:29 (faun.); SHARP, 1882a:815 (descr., faun.); BRANDEN 1885:27 (faun.); RÉGIMBART, 1899b:239 (faun.); ZIMMERMANN, 1920a:35 (cat., faun.).

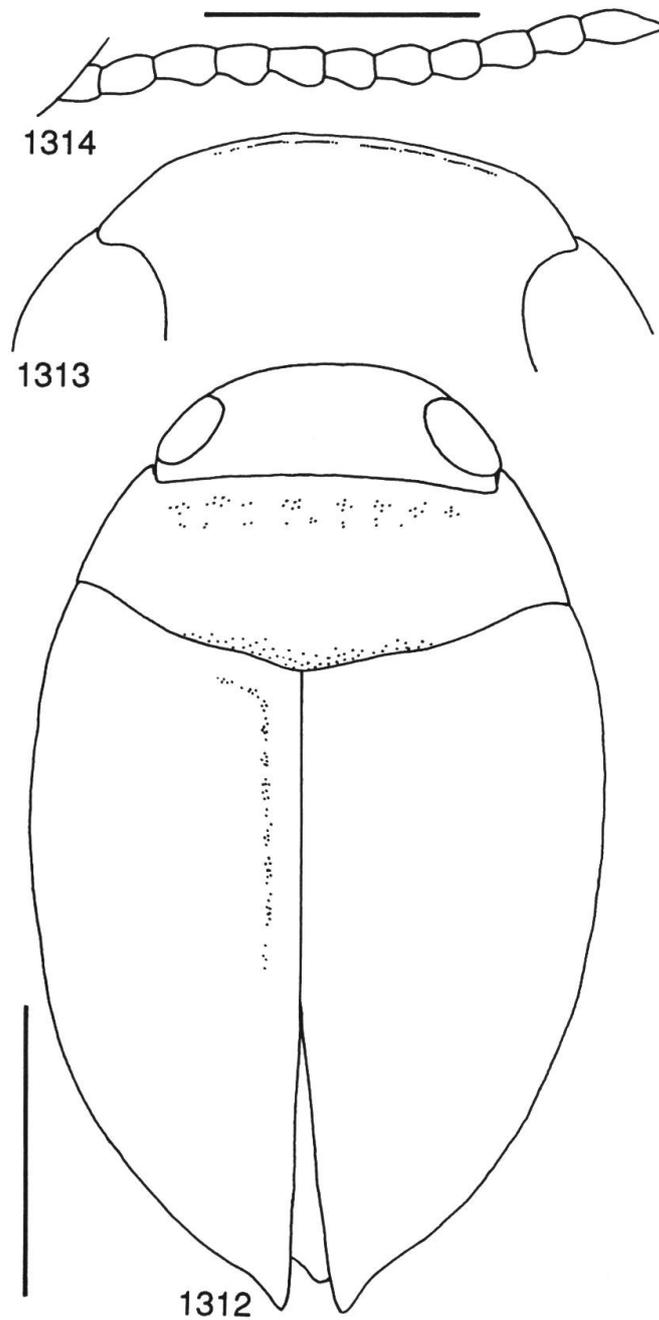
Type locality: "India continent".

Type material studied: Holotype, f: *Hydrovatus punctipennis* Motsch. I. or. Birma ? (ZMM). In all 1 ex. studied.

Diagnosis: Useful characters for determination cannot be given because only the female has been examined. I simply refer to MOTSCHULSKY (1859) and the re-description below.

Description: based on female.

Length of body: 3.10 mm, breadth: 1.94 mm. Habitus (Fig. 1312).



Figs 1312–1314: *Hydrovatus punctipennis*, female. – 1312, habitus. – 1313, head, frontal aspect. – 1314, antenna. Horizontal scale 0.5 mm, head and antenna; vertical scale 1 mm, habitus.

Head: Pale brown to brown; palest anteriorly. Punctuation fine to very fine, rather irregularly distributed. Narrowly at eyes and in shallow frontal depressions punctures denser and somewhat coarser. Submat to rather shiny, microsculptured (meshes distinct). Frontal

outline of head somewhat uneven, medially rather indistinctly margined (Fig. 1313). Antenna pale brown, rather slender and not distinctly modified (Fig. 1314).

Pronotum: Brown to pale brown. Laterally pronotum becomes gradually paler; at somewhat rounded lateral outline, pronotum pale brown. Punctuation rather fine to fine, fairly dense. Laterally on disc with sparser punctures. Rather shiny, microsculptured (meshes clearly visible).

Elytra: Brown, laterally with vague pale brown areas, but without distinct colour pattern. Punctuation rather fine, fairly dense, almost evenly distributed. Rows of punctures absent (mixed with ordinary punctures). Rather shiny, finely microsculptured (meshes generally discernible although rather weakly developed). Epipleura pale brown, fairly distinctly punctate, finely microsculptured.

Ventral side: Brown to pale brown. Punctuation rather fine to fairly coarse, fairly dense. Abdomen with sparse and indistinct punctuation. Submat, microsculptured (meshes distinct). Stridulatory apparatus absent, as always, in females. Prosternal process laterally rather finely margined, medial surface slightly impressed.

Legs: Pale brown. Pro- and mesotarsus slightly enlarged.

Male: Unknown.

Distribution: Mainland of India, possibly Burma; exact location unknown. Not mapped.

Biology: Unknown.

6.5.15. Species group 15 (sp.gr. *clypealis*)

Hydrovatus clypealis Sharp

Figs 19, 1299, 1315–1323.

Hydrovatus clypealis SHARP, 1876:61 (orig. descr., faun.); LEPRIEUR, 1879:LX-XXIII (disc.); RÉGIMBART, 1880:213 (disc.); SHARP, 1882a:321 (descr., faun.); 1882b:15 (disc.); BRANDEN, 1885:25 (faun.); GANGLBAUER, 1892:447 (descr., faun.); RÉGIMBART, 1895b:107 (descr., disc., faun.); JAKOBSON, 1905:418 (faun.); REITTER, 1908:207 (descr., faun.); DORSSELAER, 1919:79 (descr.); ZIMMERMANN, 1919:126 (list.); 1920a:32 (cat., faun.); WINKLER, 1924:218 (faun.); BEDEL, 1925:334, 335 (descr., faun., biol.); BARRINGTON, 1927:175, 179 (faun., biol.; given as *Oxynoptilus clypealis*); BERTRAND, 1928:42, 43 (descr., faun.); PORTEVIN, 1929:180 (descr., faun.; given as *Oxynoptilus clypealis*); ZIMMERMANN, 1930:27, 29 (descr., faun.); GUIGNOT, 1933:280 (descr., faun., biol.); HOULBERT, 1934:45, 138 (descr., faun., biol.); F. BALFOUR-BROWNE, 1936:28 (faun.); F. BURMEISTER, 1939:217 (faun., biol.); LINDBERG, 1939:29 (faun., biol.); F. BALFOUR-BROWNE, 1940a:187 (descr., disc., faun., biol.); 1940b:198 (faun.); HORION, 1941:369 (faun.); GSCHWENDTNER, 1943:422 (descr.); GUIGNOT, 1947b:58, 59,